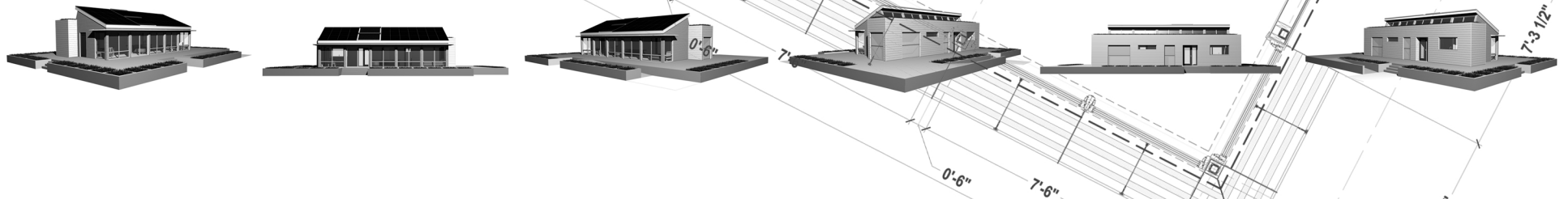


Solar Decathlon 2007 | Project Specifications

NYIT



New York Institute of Technology
Solar Decathlon 2007
Specifications
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SPECIFICATION OVERVIEW

DIVISION	DIVISION TITLE	DESCRIPTION	MANUFACTURER	VENDOR / COMPANY / INDIVIDUAL	MODEL / SKU	PRODUCT WEBSITE
01 00 00	GENERAL REQUIREMENTS					
01 50 00	TEMPORARY FACILITIES AND CONTROLS					
01 51 00	<u>TEMPORARY UTILITIES</u>					
01 51 13	Temporary Electricity	Honda EU6500is Super Quiet Portable Generator	Honda	-	EU6500is	www.hondapowerequipment.com
01 51 16	Temporary Fire Protection	Kidde 2.5 Lb. ABC Multipurpose Fire Extinguisher	Kidde	-	250MB-1-KFF	www.kidde-fire.com
01 51 26	Temporary Lighting					
01 51 36	Temporary Water	Colorite 5/8 In. X 150 Ft. Medium Duty Hose	Colorite	Home Depot	WW3958150	www.coloriteplastics.com
01 51 36	Temporary Water	Colorite 3/4 In. X 75 Ft. Industrial Grade Hose	Colorite	Home Depot	WW7534075	www.coloriteplastics.com
01 52 00	<u>CONSTRUCTION FACILITIES</u>					
01 52 13	Field Offices and Sheds	Cassone DA832 Field Office / Tool Shed	Cassone	Cassone	DA832	www.cassone.com
01 52 16	First Aid Facilities	Professional 50 Person First Aid Kit	AOSafety	Home Depot	534DY/00534-4	www.aosafety.com
01 55 00	<u>VEHICULAR ACCESS AND PARKING</u>					
01 55 26	Traffic Control	28" Orange Safety Cone	AOSafety	Home Depot	90129-00001	www.aosafety.com
01 55 26	Traffic Control	Master Lock 2.5" Universal Laminated Padlock	Master Lock	Home Depot	1UPLJ	www.masterlock.com
01 55 26	Traffic Control	Master Lock 1.5" Contractor Grade Padlock (3 Pack)	Master Lock	Home Depot	5TRILFPF	www.masterlock.com
01 56 00	<u>TEMPORARY BARRIERS AND ENCLOSURES</u>					
01 56 26	Temporary Fencing	8' Chain Link Fence w/ 2 Hinge Gates	RFC	RFC	N/A	www.rfcfence.com
01 58 00	<u>PROJECT IDENTIFICATION</u>					
01 58 13	Temporary Project Signage	Jobsite "Call For Volunteers" Banners	Mediastreet	Mediastreet	N/A	www.mediastreet.com
01 70 00	EXECUTION AND CLOSEOUT REQUIREMENTS					
01 71 00	<u>EXAMINATION AND PREPARATION</u>					
01 71 13	Mobilization	Student Labor	N/A	N/A	N/A	-
01 71 13	Mobilization	Marriot Crystal Gateway (January 5 - 7, 2007)	N/A	N/A	N/A	www.marriott.com
01 71 13	Mobilization	L'Enfant Plaza Hotel (October 2 - 12, 2007)	N/A	N/A	N/A	www.lenfantplazahotel.com
01 71 13	Mobilization	L'Enfant Plaza Hotel (October 13 - 18, 2007)	N/A	N/A	N/A	www.lenfantplazahotel.com
01 71 13	Mobilization	L'Enfant Plaza Hotel (October 19 - 23, 2007)	N/A	N/A	N/A	www.lenfantplazahotel.com
01 73 00	<u>EXECUTION</u>					
01 73 16	Erection	Axis Global Trucking and Rigging (NY to DC to NY)	N/A	Axis Global	N/A	www.axisg.com
01 73 19	Installation	January Conference - Amtrak & Taxi to Hotel	N/A	N/A	N/A	-
01 74 00	<u>CLEANING AND WASTE MANAGEMENT</u>					
01 74 19	Construction Waste Management and Disposal	20 Yard Debris Container	N/A	Town of Oyster Bay	N/A	N/A
01 76 00	<u>PROTECTING INSTALLED CONSTRUCTION</u>					
01 76 13	Protection Against Water Infiltration	40' X 60' Blue Heavy Gauge Vinyl Tarp	Thermwell	Home Depot	4060GP04	www.homedepot.com
01 76 13	Protection Against Water Infiltration	20' X 30' Blue Heavy Gauge Vinyl Tarp	Thermwell	Home Depot	2030GP04	www.homedepot.com
05 00 00	METALS					
05 10 00	STRUCTURAL METAL FRAMING					
05 12 00	<u>STRUCTURAL STEEL FRAMING</u>					
05 12 23	Structural Steel for Buildings	Roman Iron Works - Structural Steel Frames (3)	Roman Iron Works	Roman Iron Works	N/A	
05 12 23	Structural Steel for Buildings	1/2" Steel Threaded Rod for Roof Pond, 12" Length	-	Home Depot	30699170401	www.homedepot.com
05 12 23	Structural Steel for Buildings	1/2" Steel Threaded Rod for Roof Pond, 36" Length	-	Home Depot	30699173600	www.homedepot.com
05 12 23	Structural Steel for Buildings	1/2" Steel Threaded Rod for Roof Pond, 72" Length	-	Home Depot	30699174409	www.homedepot.com
05 12 23	Structural Steel for Buildings	1/2" Fender Washers 25 pcs	-	Home Depot	30699080748	www.homedepot.com
05 12 23	Structural Steel for Buildings	1/2" Hex Nuts 25 pcs	-	Home Depot	30699084647	www.homedepot.com
05 12 23	Structural Steel for Buildings	1/2" Hex Nuts (Individual)	-	Home Depot	655465	www.homedepot.com
05 40 00	COLD-FORMED METAL FRAMING					
05 45 00	<u>METAL SUPPORT ASSEMBLIES</u>					
05 45 16	Electrical Metal Supports	Aluminum Frames for BIPV Overhang	-	-	N/A	
05 45 16	Electrical Metal Supports	UniRac Solar Panel Mounting System	UniRac	SunWize	321239	www.unirac.com
05 50 00	METAL FABRICATION					
05 51 00	<u>METAL STAIRS</u>					
05 51 33	Metal Ladders	10' Aluminum Surface Mounted Ladder for Roof Pond	-	-	N/A	
05 70 00	DECORATIVE METAL					
05 73 00	<u>DECORATIVE METAL RAILINGS</u>					
05 73 16	Wire Rope Decorative Metal Railings	Wire Rope Railing Assembly for Ramps and Stairs	-	-	N/A	

06 00 00	WOOD, PLASTICS & COMPOSITES						
06 10 00	ROUGH CARPENTRY						
06 10 53	Miscellaneous Rough Carpentry	2" X 4" X 16' Douglas Fur	N/A	Nassau Suffolk Lumber	N/A		www.nassausuffolklumber.com
06 10 53	Miscellaneous Rough Carpentry	2" X 6" X 10' Douglas Fur	N/A	Nassau Suffolk Lumber	N/A		www.nassausuffolklumber.com
06 10 53	Miscellaneous Rough Carpentry	2" X 6" X 8' Pressure Treated Douglas Fur	N/A	Nassau Suffolk Lumber	N/A		www.nassausuffolklumber.com
06 12 00	<u>STRUCTURAL PANELS</u>						
06 12 16	Stressed Skin Panels	Murus Structural Insulated Panels for Roof and Floor - R40	Murus	Murus	OSB-2165PUR		www.murus.com
06 14 00	<u>TREATED WOOD FOUNDATIONS</u>						
06 14 13	Treated Lumber	4" X 12" X 20' Pressure Treated Douglas Fur	N/A	Riverhead Building Supply	N/A		www.nassausuffolklumber.com
06 15 00	<u>WOOD DECKING</u>						
06 15 33	Wood Patio Decking	5/4" x 6" x 8' Cedar Decking	N/A	-	N/A		
06 16 00	<u>SHEATHING</u>						
06 16 23	Subflooring	3/4" CDX Plywood	N/A	Nassau Suffolk Lumber	N/A		www.nassausuffolklumber.com
06 16 33	Wood Board Sheathing	1/2" CDX Plywood	N/A	Nassau Suffolk Lumber	N/A		www.nassausuffolklumber.com
06 20 00	FINISH CARPENTRY						
06 20 16	Interior Finish Carpentry	5/4" X 6" Interior Trim, NOFMA Clear Cherry	N/A	Rex Lumber Company	N/A		www.hardwood.org
07 00 00	THERMAL AND MOISTURE PROTECTION						
07 10 00	DAMPPROOFING AND WATERPROOFING						
07 13 00	<u>SHEET WATERPROFFING</u>						
07 13 13	Bituminous Sheet Waterproofing	36" x 144', #15 Asphalt Felt	Woodland Industries	Home Depot	PRO15-RDC01		www.homedepot.com
07 13 26	Self-Adhering Sheet Waterproofing	Grace Ice & Water Shield 18" X 50' Roll	Grace	Home Depot	55280		www.graceathome.com
07 15 00	<u>SHEET METAL WATERPROFFING</u>						
07 15 13	Aluminum Flashing	14" x 50' Aluminum Flashing .0092 Gauge	N/A	Home Depot	68014		www.homedepot.com
07 15 13	Aluminum Flashing	14" x 10' Ft Aluminum Flashing .0092 Gauge	N/A	Home Depot	68314		www.homedepot.com
07 19 00	<u>WATER REPELLENTS</u>						
07 19 19	Silicone Water Repellents	GE Silicone II Window and Door with BioSeal	GE	Home Depot	GE5000		www.geadvancedmaterials.com
07 20 00	THERMAL PROTECTION						
07 21 00	<u>THERMAL INSULATION</u>						
07 21 29	Sprayed Insulation	NCFI Closed-Cell Spray Foam Installation (5-1/2" Walls)	NCFI / Honeywell	New York Spray Foam	N/A		www.ncfi.com
07 21 29	Sprayed Insulation						
07 25 00	WEATHER BARRIERS						
07 26 00	<u>VAPOR BARRIERS</u>						
07 26 13	Above-Grade Vapor Barriers	DuPont Tyvek HomeWrap 9' X 150' Roll	DuPont	Home Depot	212107555		www.dupont.com
07 26 13	Above-Grade Vapor Barriers	DuPont Tyvek HomeWrap Tape 2" X 164' Roll	DuPont	Home Depot	DP0001		www.dupont.com
07 40 00	ROOFING AND SIDING PANELS						
07 42 00	<u>WALL PANELS</u>						
07 42 13	Metal Wall Panels	Rheinzink 1mm Horizontal Reveal Façade Panels	Rheinzink	Litsco	-		www.litsco.com
07 46 00	<u>SIDING</u>						
07 46 23	Wood Siding	6" Tongue and Groove Clear Cedar Siding	-	-	-		
07 50 00	MEMBRANE ROOFING						
07 53 00	<u>ELASTOMETRIC MEMBRANE ROOFING</u>						
07 53 23	Ethylene-Propylene-Diene-Monomer Roofing	60 Mill Black Rubber Roof Membrane (EPDM) 10' X 50'	CentiMark	CentiMark	600579		www.centimark.com
07 60 00	FLASHING AND SHEET METAL						
07 61 00	<u>SHEET METAL ROOFING</u>						
07 61 13	Standing Seam Sheet Metal Roofing	ATAS .032 Gauge Standing Seem Roof Assembly	ATAS	ATAS	MRD150F316S		www.atas.com

08 00 00	OPENINGS					
08 10 00	DOORS AND FRAMES					
08 14 00	<u>WOOD DOORS & WINDOWS</u>					
08 14 23	Clad Wood Doors & Windows	Anderson 400 Series Windows and Doors	Anderson	Anderson	Misc.	www.andersenwindows.com
08 14 76	BiFolding Wood Doors & Windows	NanaWall WD66 Bifolding Door System	NanaWall	NanaWall	WD66 / WD68TT	www.nanawall.com
08 30 00	SPECIALTY DOORS AND FRAMES					
08 34 00	<u>SPECIAL FUNCTION DOORS</u>					
08 34 16	Hangar Doors	Custom Hangar Type Horizontal Bifolding Doors	-	-	-	-
08 36 00	<u>PANEL DOORS</u>					
08 36 16	Single-Panel Doors	Stretched Fabric Interior Panel Doors	DesignTex	DesignTex	-	www.designtex.com
08 70 00	HARDWARE					
08 71 00	<u>DOOR HARDWARE</u>					
08 71 13	Automatic Door Operators	Von Duprin 5100 Electric Strike	Von Duprin	T.M. Biers	5100	www.vonduprin.com
08 74 00	<u>ACCESS CONTROL HARDWARE</u>					
08 74 19	Biometric Identity Access Control Hardware	V-Pass FX Biometric Reader	Bioscrypt	T.M. Biers	V-Pass FX	www.bioscrypt.com
08 78 00	<u>SPECIAL FUNCTION HARDWARE</u>					
08 78 13	Tracks, Frames And Assemblies	Hafele Hardware For Kitchen, Closets And Sliding Doors	Hafele	Hafele	Misc.	www.hafele.com
09 00 00	FINISHES					
09 20 00	PLASTER AND GYPSUM BOARD					
09 28 00	<u>BACKING BOARDS AND UNDERLAYMENTS</u>					
09 28 13	Cementitious Backing Boards	1/2" X 3' X 5' Cement Board For Shower				
09 29 00	<u>GYPSUM BOARD</u>					
09 29 82	Gypsum Board Fireproofing	1/2" X 4' X 8' Drywall (Taped and Finished)				
09 29 82	Gypsum Board Fireproofing	5/8" X 4' X 8' Type X Drywall (Taped and Finished)				
09 30 00	TILING					
09 30 29	Metal Tiling	Ecofriendly Flooring Recycled Metal Aluminum Tile 2" X 2"	Ecofriendly Flooring	Ecofriendly Flooring		www.ecofriendlyflooring.com
09 30 33	Stone Tiling	Crossville EC105 Night Air Ecocycle Floor Tile 12" X 12"	Crossville	Crossville	EC105	www.crossvilleinc.com
09 60 00	FLOORING					
09 64 00	<u>WOOD FLOORING</u>					
09 64 29	Wood Strip And Plank Flooring	3/4" X 4" Hardwood Flooring, NOFMA Clear Cherry	N/A	Rex Lumber Company	N/A	www.hardwood.org
09 90 00	PAINTING AND COATING					
09 91 00	<u>PAINTING</u>					
09 91 13	Interior Painting	Sherwin Williams Interior Primer 5 Gallon Bucket	Sherwin Williams	Sherwin Williams	N/A	www.sherwin-williams.com
09 91 13	Interior Painting	Sherwin Williams Green Sure Interior Latex Paint, White	Sherwin Williams	Sherwin Williams	N/A	www.sherwin-williams.com
09 91 13	Interior Painting	Sherwin Williams Green Sure Interior Latex Paint, Grey	Sherwin Williams	Sherwin Williams	N/A	www.sherwin-williams.com
09 93 00	<u>STAINING AND TRANSPARENT FINISHING</u>					
09 93 13	Exterior Staining and Finishing	Sherwin Williams Exterior Alkyd Wood Preservative Stain	Sherwin Williams	Sherwin Williams	N/A	www.sherwin-williams.com
09 93 23	Interior Staining and Finishing	Sherwin Williams Armor Seal Urethane Floor Enamel	Sherwin Williams	Sherwin Williams	N/A	www.sherwin-williams.com
09 97 00	<u>SPECIAL COATINGS</u>					
09 97 13	Steel Coatings	Rustoleum Auto Light Grey Primer	Rustoleum	Home Depot	212680	www.rustoleum.com
11 00 00	EQUIPMENT					
11 30 00	RESIDENTIAL EQUIPMENT					
11 31 00	<u>RESIDENTIAL APPLIENCES</u>					
11 31 13	Residential Kitchen Appliances	Sub Zero 611 Refrigerator, Stainless Steel	Sub Zero	-	611	www.subzero.com
11 31 13	Residential Kitchen Appliances	GE Profile SCB-2001 KSS Convection Oven, Stainless Steel	GE	-	SCB-2001 KSS	www.geappliances.com
11 31 13	Residential Kitchen Appliances	Diva de Provence DDP-3 Cooktop	Diva de Provence	-	DDP-3	www.divadeprovince.com
11 31 13	Residential Kitchen Appliances	Wolf Down Draft Vent DD301	Wolf	-	DD301	www.wolfappliance.com
11 31 13	Residential Kitchen Appliances	Wolf Down Draft Control Panel DDCONTROLS/S	Wolf	-	DDCONTROLS/S	www.wolfappliance.com
11 31 13	Residential Kitchen Appliances	Asko D3531XLFI Dishwasher With Custom Wood Panel	Asko	Asko	D3531XLFI	www.askousa.com
11 31 13	Residential Kitchen Appliances	Heavy Duty Door Spring For Asko Wood Panel Door	Asko	Asko	8076163-77	www.askousa.com
11 31 23	Residential Laundry Appliances	LG WM3431HW Combination Washer/Dryers	LG	Creative Laundry	WM3431HW	www.creativelaudry.com

12 00 00	FURNISHINGS					
12 20 00	WINDOW TREATMENTS					
12 24 00	<u>WINDOW SHADES</u>					
12 24 13	Roller Window Shades	Mecho Shade System for South Wall	Mecho Shade	Mecho Shade	-	www.mechoshade.com
12 30 00	CASEWORK					
12 35 00	<u>SPECIALTY CASEWORK</u>					
12 35 30	Residential Casework	Casework For Entry Closet and Bookcase	ACI	Atlantic Plywood	N/A	-
12 35 30	Residential Casework	Custom Kitchen Cabinets	ACI	Atlantic Plywood	N/A	-
12 36 00	<u>COUNTERTOPS</u>					
12 36 61	Simulated Stone Countertops	CaesarStone Quartz Kitchen Countertop	CaesarStone	CaesarStone	N/A	www.caesarstoneus.com
12 40 00	FURNISHINGS AND ACCESSORIES					
12 41 00	<u>OFFICE ACCESSORIES</u>	Misc.	Misc.	Misc.	Misc.	
12 42 00	<u>TABLE ACCESSORIES</u>	Misc.	Misc.	Misc.	Misc.	
12 43 00	<u>PORTABLE LAMPS</u>	Misc.	Misc.	Misc.	Misc.	
12 44 00	<u>BATH FURNISHINGS</u>	Misc.	Misc.	Misc.	Misc.	
12 45 00	<u>BEDROOM FURNISHINGS</u>	Misc.	Misc.	Misc.	Misc.	
12 46 00	<u>FURNISHING ACCESSORIES</u>	Misc.	Misc.	Misc.	Misc.	
12 50 00	FURNITURE					
12 58 00	<u>RESIDENTIAL FURNITURE</u>					
12 58 83	Custom Residential Furniture	Misc.	Misc.	Misc.	Misc.	
12 59 00	<u>SYSTEMS FURNITURE</u>					
12 59 13	Panel-Hung Component System Furniture	Newmat Aluminum Framed Stretched Ceiling Membrane	Newmat	Newmat	Misc.	www.newmatusa.com
22 00 00	PLUMBING					
22 10 00	PLUMBING PIPING AND PUMPS					
22 11 00	<u>FACILITY WATER DISTRIBUTION</u>					
22 11 16	Domestic Water Piping	Misc.	-	-	-	-
22 11 16	Domestic Water Pumping	Taco 007-F4 Cartridge Circulator Pump	Taco	Empire Clean Energy	00007	www.htproducts.com
22 11 16	Domestic Water Pumping	Taco 0011-F4 Cartridge Circulator Pump	Taco	Empire Clean Energy	00011	www.htproducts.com
22 11 19	Domestic Water Piping Specialties	Extrol #30 4.4 Gallon Expansion Tank	Extrol	Empire Clean Energy	#30	www.amtrol.com/extrol
22 11 19	Domestic Water Piping Specialties	1" Air Scoop	-	Empire Clean Energy	-	-
22 11 19	Domestic Water Piping Specialties	3/4" Flange Kit	-	Empire Clean Energy	-	-
22 12 00	<u>FACILITY WATER STORAGE TANKS</u>					
22 12 19	Ground-Mounted Water Storage Tanks	350 Gallon Polyethylene Water Storage Tanks	P.E.P. Plastics	P.E.P. Plastics	-	www.pep-plastic.com
22 13 00	<u>FACILITY SANITARY SEWERAGE</u>					
22 13 16	Sanitary Waste and Vent Piping	Misc.	-	-	-	
22 13 16	Sanitary Waste and Vent Piping	4" X 24" PVC for Roof Pond Drain	-	Home Depot	611942109487	www.homedepot.com
22 13 16	Sanitary Waste and Vent Piping	General Purpose Floor Drain for Roof Pond	OATEY	Home Depot	43583	www.homedepot.com
22 30 00	PLUMBING EQUIPMENT					
22 33 00	<u>ELECTRIC DOMESTIC WATER HEATERS</u>					
48 14 13	Solar Energy Collectors	Apricus AP-20 Evacuated Tube Solar Thermal Collectors	Apricus	Apricus	AP-20	www.apricus.com
22 33 30	Residential, Electric/Solar Electric Water Heaters	SuperStor 30 Gal. Single Coil Heat Exchanger Tank	SuperStor	Empire Clean Energy	SSU-30LB	www.htproducts.com
22 40 00	PLUMBING FIXTURES					
22 41 00	<u>Residential Plumbing Fixtures</u>					
22 41 13	Water Closets, Urinals and Bidets	Kohler San Raphael K-3393 Toilet, White	Kohler	Davis Warshow	K-3393	www.daviswarshow.com
22 41 16	Lavatories and Sinks	Kohler Purist K-2313 Bathroom Sink, White	Kohler	Davis Warshow	K-2313	www.daviswarshow.com
22 41 16	Lavatories and Sinks	Enex Single Bowl Zero Radius Stainless Kitchen Sink	Enex	Davis Warshow	CTS-2300	www.daviswarshow.com
22 41 26	Disposers	Elkay Soap Dispenser LK313CR, Stainless Steel	Elkay	Davis Warshow	LK313CR	www.daviswarshow.com
22 41 39	Faucets, Supplies and Trim	Elkay Arezzo Kitchen Faucet LK7228SS, Stainless Steel	Elkay	Davis Warshow	LK7228SS	www.daviswarshow.com
22 41 39	Faucets, Supplies and Trim	Kohler K-304-K Rite-Temp Pressure-Balancing Valve	Kohler		K-304-K	
22 41 39	Faucets, Supplies and Trim	Kohler K-8506 Shower Head, Brushed Chrome	Kohler	Davis Warshow	K-8506	www.daviswarshow.com
22 41 39	Faucets, Supplies and Trim	Kohler Purist K-T14490-3 Valve Trim, Brushed Chrome	Kohler	Davis Warshow	K-T14490-3	www.daviswarshow.com
22 41 39	Faucets, Supplies and Trim	Kohler Purist K-702010-L Shower Door, Bright Silver	Kohler	Davis Warshow	K-702010-L	www.daviswarshow.com
22 41 39	Faucets, Supplies and Trim	Kohler Purist K-14435 Towel Bar, Brushed Chrome	Kohler	Davis Warshow	K-14435	www.daviswarshow.com
22 41 39	Faucets, Supplies and Trim	Kohler Purist K-14444 Toilet Tissue Holder, Brushed Chrome	Kohler	Davis Warshow	K-14444	www.daviswarshow.com
22 41 39	Faucets, Supplies and Trim	Kohler Purist K-14443 Robe Hook, Brushed Chrome	Kohler	Davis Warshow	K-14443	www.daviswarshow.com

23 00 00	HEATING, VENTILATING, AND AIR CONDITIONING					
23 30 00	HVAC AIR DISTRIBUTION					
23 31 16	<u>HVAC DUCTS AND CASINGS</u>					
23 31 16	Nonmetal Ducts	Unico High Velocity HVAC Distribution System With Trim	Unico	Unico	Misc.	www.unicosystem.com
23 50 00	CENTRAL HEATING EQUIPMENT					
23 57 00	<u>HEAT EXCHANGERS FOR HVAC</u>					
23 71 13	Liquid to Liquid Heat Exchanger	Unico M Series Hot Water Coil Module	Unico	Unico	HW2430	www.unicosystem.com
23 70 00	CENTRAL HVAC EQUIPMENT					
23 71 00	<u>THERMAL STORAGE</u>					
23 71 13	Thermal Heat Storage	SuperStor Contender 80 Gal. Dual Coil Heat Exchanger Tank	SuperStor	Empire Clean Energy	SSC-80SB	www.htproducts.com
23 71 16	Chilled-Water Storage Tank	SuperStor 80 Gal. Storage Tank	SuperStor	Empire Clean Energy	GL-80	www.htproducts.com
23 72 00	<u>AIR-TO-AIR ENERGY RECOVERY EQUIPMENT</u>					
23 72 19	Fixed-Plate Air-to-Air Energy-Recovery Equipment	RenewAire Energy Recovery Ventilator EV-130	RenewAire	Technical Air Systems, Inc.	EV-130	www.renewaire.com
23 73 00	<u>INDOOR CENTRAL-STATION AIR-HANDLIN UNITS</u>					
23 73 13	Modular Indoor Central-Station Air-Handling Units	Unico M Series Blower Module	Unico	Unico	MB2430LCB	www.unicosystem.com
23 73 13	Modular Indoor Central-Station Air-Handling Units	Unico M Series Heating Module	Unico	Unico	MH2430	www.unicosystem.com
23 73 13	Modular Indoor Central-Station Air-Handling Units	Unico M Series Cooling Module	Unico	Unico	MC2430W	www.unicosystem.com
23 80 00	DECENTRALIZED HVAC EQUIPMENT					
23 81 00	<u>DECENTRALIZED UNITARY HVAC EQUIPMENT</u>					
23 81 46	Water-Source Unitary Heat Pumps	Hydron Module W036 Water-To-Water Heat Pump	Hydron Module	Scandia Contractors	W036-11NS	www.hydronmodule.com
25 00 00	INTEGRATED AUTOMATION					
25 50 00	INTEGRATED AUTOMATION FACILITY CONTROLS					
25 51 00	Integrated Automation Control of Facility Equipment	T.M. Biers Integrated Automation Equipment and Services	T.M. Biers	T.M. Biers	Misc.	www.tmba.com
26 00 00	ELECTRICAL					
26 50 00	LIGHTING					
26 51 00	<u>INTERIOR LIGHTING</u>					
26 51 13	Interior Lighting Fixtures, Lamps, And Ballasts	Interior Lighting Scheme	Misc.	Misc.	Misc.	-
26 56 00	<u>EXTERIOR LIGHTING</u>					
26 56 26	Landscape Lighting	Exterior Lighting Scheme	Misc.	Misc.	Misc.	-
28 00 00	ELECTRONIC SAFETY AND SECURITY					
28 20 00	ELECTRONIC SURVEILLANCE					
28 23 00	<u>VIDEO SURVEILLANCE</u>					
28 23 13	Video Surveillance Control & Management Systems	Outdoor Cameras	-	T.M. Biers	-	-
28 23 13	Video Surveillance Control & Management Systems	Indoor Cameras	-	T.M. Biers	-	-
28 23 13	Video Surveillance Control & Management Systems	Access Controller	-	T.M. Biers	-	-
28 30 00	ELECTRONIC DETECTION AND ALARM					
28 31 00	<u>FIRE DETECTION AND ALARM</u>					
28 31 46	Smoke Detection Sensors	Kidde PE120E Photoelectric Smoke Alarm	Kidde	-	PE120E	www.kidde.com
28 31 49	Carbon-Monoxide Detection Sensors	Kidde 900-0121 AC Wire-In Carbon Monoxide Alarm	Kidde	-	900-0121	www.kidde.com
48 00 00	ELECTRICAL POWER GENERATION					
48 10 00	ELECTRICAL POWER GENERATION EQUIPMENT					
48 14 00	<u>SOLAR ENERGY ELECTRICAL POWER GENERATION EQUIPMENT</u>					
48 14 13	Solar Energy Collectors	SunPower SPR-215-BLK Photovoltaic Module	SunPower	SunPower	SPR-215-BLK	www.sunpowercorp.com
48 14 13	Solar Energy Collectors	EPV Custom Thin Film Laminated Modules, 10.3 W	Energy Photovoltaic's	Energy Photovoltaic's	NA	www.epv.net
48 17 00	<u>ELECTROCHEMICAL ENERGY ELECTRICAL POWER GENERATION EQUIPMENT</u>					
48 17 13	Electrical Power Generation Battery Charging Equip.	Concorde Sun Xtender 12V AGM Battery PVX-2120L	Concorde	SunWize	PVX-2120L	www.concordebattery.com
48 19 00	<u>ELECTRICAL POWER CONTROL EQUIPMENT</u>					
48 19 13	Electrical Power Generation Battery Charging Equip.	Xantrex C-35 Charge Controller	Xantrex	Xantrex	C-35	www.xantrex.com
48 19 13	Electrical Power Generation Battery Charging Equip.	Xantrex XW Power Distribution Panel	Xantrex	Xantrex	865-1015	www.xantrex.com
48 19 13	Electrical Power Generation Battery Charging Equip.	Xantrex XW Automatic Generator Start	Xantrex	Xantrex	865-1060	www.xantrex.com
48 19 13	Electrical Power Generation Battery Charging Equip.	Xantrex XW System Control Panel	Xantrex	Xantrex	865-1050	www.xantrex.com
48 19 16	Electrical Power Generation Inverters	Xantrex XW Hybrid Inverter/Charger 6048-120/240-60	Xantrex	Xantrex	865-1000	www.xantrex.com
48 19 16	Electrical Power Generation Inverters	SunPower SPR-4000X Power Inverter	SunPower	SunPower	SPR-4000X	www.sunpowercorp.com
48 19 23	Electrical Power Generation Transformers					
48 19 26	Electrical Power Generation Voltage Regulators					

SPECIFICATION SHEETS

Division 01 00 00 – General Requirements

Temporary Electricity



Honda EU6500is

The EU6500is maintains the impressive rating of 60dB (less than that of common speech even at rated load), and it will run for up to 14 hours on a single tank of gas when used with the Eco-Throttle feature. This impressive generator provides 6500 watts of power and weighs only 253lbs. The Honda Inverter Technology makes this generator ideally suited for use with sensitive electronics (e.g., computer, fax, printer, telephone, stereo) because the generator produces a clean sine wave of energy that results in no surging. To prevent any possible damage to the unit, the Oil Alert will shut the unit off when the oil drops below a safe operating level. The available power is commonly used for the following typical electric devices:

- Full Size Freezer / Refrigerator
- Large Power Tools (i.e. table saw, 1HP Air Compressor)
- Resistive Load Kitchen Appliances (i.e. Electric Range - 8in element)
- Duel RV Air Conditioner Units
- Emergency Home Back up power where 220 power is required

Features & Benefits

- Honda Overhead Valve Engine
- Lightweight and Compact
- High Quality, Stable and High Power Output
- Quiet Operation
- Low Fuel Consumption
- Oil Alert®
- Electronic Ignition
- Electronic Circuit Breakers
- i-Monitor
- 120/240v Selector Switch Inverter (Computer Friendly)
- USDA-Qualified Spark Arrestor/Muffler
- Eco Throttle™ (load dependent operation)
- Battery Standard
- 2 Year Residential Warranty
- 1 Year Commercial Warranty

Options

- Storage Cover
- DC Charging Cord
- Transfer Switch

Specifications

Engine	GX390
Displacement	389 cc
AC Output	120/240V 6500W max.(54.1/27.1A) 5500W rated (45.8/22.9A)
Receptacles	C,F,H
DC Output	N/A
Starting System	Recoil, Electric
Fuel Tank Capacity	4.5 gallons
Run Time on One Tankful	4.7 hrs. @ rated load 14 hrs. @ 1/4 load
Dimensions (L x W x H)	33.5" x 26.4" x 27.5"
Noise Level	60 dB(A) @ rated load
Dry Weight	253 lbs.



March 5, 2007

Mr. Thomas Rochan
New York Institute of Technology
Northern Boulevard
Old Westbury, NY 11568

Dear Tom,

Thanks again for allowing Axis Global Logistics the opportunity to bid on the logistics coordination required for the 2007 Solar Decathlon event.

Axis Global Logistics in conjunction with Mike Williams Specialized Inc will provide the project management, manpower, materials, and equipment to assist NYIT with the disassembly and relocation of the "Solar House" per your site operations plan.

Axis Global/Williams will provide the following list of equipment

- 3 - 48' Air Ride Step Deck trailers.
- 1 - 48' Air Ride Enclosed van
- 1 - 48' Air Ride electronic van with tailgate.
- 1 - 48' Air Ride Open Top Trailer (canvass top)
- 1 - 35 Ton Hydraulic Truck Crane in NY, DC and then back in NY.
- 1 - Forklift Truck on site at both locations.
- 1 - 4 crane days NY based (Williams employee) Crane Operator for all moves.
- 8 - Trained rigging personnel on both sides of event.

We will supply Spreader bars (16' to 17') to lift house sections if needed.

We believe 6 trailers will be needed for the transport of all material. We will secure the necessary permits required for the oversized loads. (Lead Time for permit is approx 7 business days).

We believe 6 trailers will be needed for the transport of all material. We will secure the necessary permits required for the oversized loads. (Lead Time for permit is approx 7 business days).

Work Lights to be supplied by NYIT.

Williams is a common carrier, authorized to transport property by motor vehicle.

Certificate MC- 446289C
Identification US DOT 1078009.

Please see attached Certificate of Liability Insurance. We have added NYIT as certificate holder.

Our all inclusive price for this project is - \$80,000.

Thanks again Tom for this opportunity. We look forward to being a part of your Decathlon Team. We are confident we will provide the logistical expertise and synergy to produce a successful outcome for this project.

If you have any questions please free to give me a call at 718 458-3666.

Sincerely,

Brian Harvey
Executive Vice President

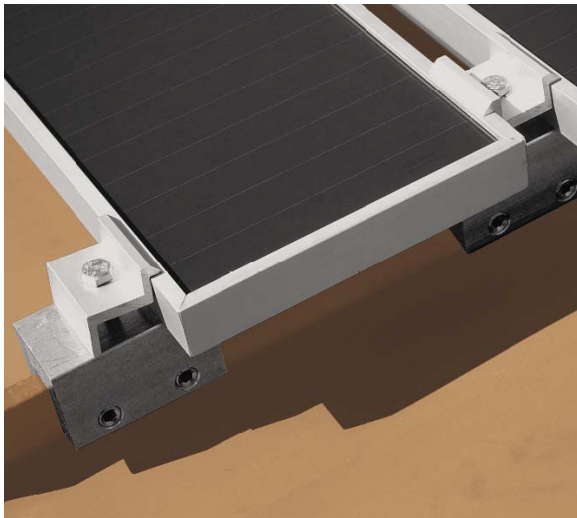
Cc: Mike Williams
Pam Bottge

Division 05 00 00 - Metals

Cold-Formed Metals



THE STANDARD IN PV MOUNTING STRUCTURES™



SolarMount S-5 Top Mounting Clamps

Modules are attached directly the S-5! PV clamps with SolarMount top mounting clamps. No mounting rails required, dramatically reducing PV mounting costs. Stainless steel mounting bolts with serrated heads provide secure fastening without lock washers.

S-5! PV Clamp

The patented S-5! clamp is the longstanding leader for attaching a variety of devices to standing-seam roofs. Its bull-nosed set screws provide a secure, nonpenetrating grip. No penetrations mean no leaks—period. The S-5! PV clamp is designed specifically for PV modules. Its extra length provides plenty of support under the module frame. Its centered 1/4-inch mounting hole accepts SolarMount mounting bolts.

Code Compliant

The SolarMount® system is PE certified. Call UniRac for documentation applicable to your building code.

Component Specifications

6105-T5 aluminum extrusion

- SolarMount® rails
- Mounting clips and clamps
- Tilt legs and L-feet
- Two-piece standoffs

Severe Condition 4 (very severe) zinc-plated welded steel

- One-piece standoffs

18-8 stainless steel

- Fasteners

Division 06 00 00 – Woods, Plastics & Composites

Structural Insulated Panel System (SIPS)



ICC Evaluation Report #: 97-36

Insulating Core Properties ³ Design Values		
K FACTOR: (aged foam)	.148	ASTM C-518
COMPRESSIVE STRENGTH:	23 psi	ASTM D1621
COMPRESSIVE ¹ MOE:	682 psi	ASTM D1621
SHEAR STRENGTH:	31 psi	ASTM C-273
SHEAR MODULUS:	203 psi	ASTM C-273
FLEXURE ² MOR:	52 psi	ASTM C203
FLEXURE MODULUS (³ MD):	587 psi	ASTM C203
TENSILE STRENGTH:	37 psi	ASTM D1623
TENSILE MODULUS:	611 psi	ASTM D1623
WVT/PERM INCHES:	1.0	ASTM E-96
FOAM FIRE RATING:	Class 1	**UL723
FLAME SPREAD:	20	**UL723
SMOKE DEVELOPED:	300	**UL723
¹ MOE: Modulus of Elasticity. ² MOR: Modulus of Rupture. ³ MD: Machine Direction. ⁴ Design Values are mean derived from multiple specimens. ⁵ Specification or value is the same as the OSB-2145 Panel. **UL723 is not necessarily a representation of performance in an actual fire. Class 1 is the highest rating available for combustible materials.		
Outside Skins		
TYPE:	APA or equivalent rated oriented strand board (OSB)	
GRADE:	Exposure-1	
THICKNESS:	7/16"	

Dimensions and Weights			
Series	2145	2155	2165
OVERALL THICKNESS:	4-5/8"	5-5/8"	6-5/8"
THICKNESS TOLERANCE:	+/- 1/8"	*	*
WIDTH:	48"	*	*
WIDTH TOLERANCE:	+0", -1/8"	*	*
(Finish Size)			
STANDARD LENGTHS:	4', 6', 8', 9', 10', 12',	*	*
(Feet)	14', 16', 18', 20'	*	*
LENGTH TOLERANCE:	+/- 1/4"	*	*
WEIGHT:	3.75 lb./sq. ft.	3.95 lb./sq. ft.	4.15 lb./sq. ft.
Insulating Core			
TYPE:	Polyurethane Closed Cell Foam		
THICKNESS:	3-11/16"	4-11/16"	5-11/16"
DENSITY:	2.2 lb./cu. ft.	*	*
R-VALUE:	6.76 per in. thickness	*	*
System R-VALUE:	26	33	40

P.O. Box 220, 3234 Route 549
Mansfield, PA, USA 16933
Phone 570-549-2100 Fax 570-549-2101
www.murus.com • info@murus.com





ICC Evaluation Service, Inc. www.icc-es.org

Business/Regional Office ■ 5380 Workman Mill Road, Whittier, California 90601 ■ (562) 699-0543
Regional Office ■ 900 Montclair Road, Suite A, Birmingham, Alabama 35213 ■ (205) 999-9800
Regional Office ■ 4051 West Flossmoor Road, Country Club Hills, Illinois 60478 ■ (708) 796-2305

Legacy report on the BOCA® National Building Code/1999

DIVISION: 06—WOOD AND PLASTICS
Section: 06120—Structural Panels

EVALUATION SUBJECT:

MURUS PANELS

MANUFACTURER:

THE MURUS COMPANY
P.O. BOX 220
MANSFIELD, PA 16933

EVALUATION SCOPE

Compliance with the following code:

BOCA® National Building Code/1999

- Section 1603.1 General
- Section 1708.1 Where required
- Section 1710.3.1 Test procedure
- Section 2305.7 Wind bracing
- Section 1404.2 Durability
- Section 2603.2 Labeling
- Section 2603.3 Surface burning characteristics
- Section 2313.2 Sandwich panels
- Section 1704.3 Labeling

DESCRIPTION

The Murus Panel is a composite panel used for exterior wall and roof applications. The Murus Panel, when used as an exterior wall panel, is used either as a curtain wall panel, which resists transverse loads only, or an exterior wall panel, which resists axial and transverse loads. The composite panel is 4 1/2 inches thick, 4 feet wide and is available in various lengths. See Figure 1 of this report for a diagram of the Murus Panel.

- Table 1 of this report contains allowable transverse loads and spans for the Murus Panel.
- Table 2 of this report contains allowable loads and spans for Murus Panels subjected to uniform transverse and concentric axial loads.
- Table 3 of this report contains allowable loads and spans for Murus Panels subjected to uniform transverse and axial loads with an eccentricity of 3/4 in.

- Table 4 of this report contains the allowable horizontal racking load of the Murus Panel, with and without openings.

■ Panel Components

- **Core:** The foam plastic core consists of one of two available foam plastic systems which are as follows: Flexible Products CIP 1416-HC#2 and Flexible Products PPG 442-22D. The Flexible Products CIP 1416-HC#2 core is made up of a rigid urethane foam which consists of an isocyanurate and polyol catalyst blend. The Flexible Products PPG 442-22D core is made up of a rigid urethane foam which consists of an isocyanurate and a resin component blend. The foam plastic cores have a density of 2.2 pounds per cubic foot.
- **Exterior skins:** Each face of the Murus Panel consists of 7/16-inch exterior grade, Exposure 1, Oriented Strand Board (OSB) complying with the United States Department of Commerce PS 2-95 (DOC PS 2-95).
- **Joinery:** The Murus Panel has a tongue-and-groove edge. The connection between the panels is made with a cam lock system, which consists of two parts, as shown in Figure 2 of this report. The cam lock is located along the vertical edge of the Murus Panel at 2-foot intervals, beginning 1 foot from the top or bottom of the panel. Two Murus panels are secured together by aligning two Murus Panels with cam locks next to each other, with spray foam applied to the tongue (or groove) of one panel, and rotating the cam turning gear in the cam lock with a hex head wrench. After the connection is completed, spray foam is applied in the exterior channel between the two panel skins. The excess foam is removed prior to the application of the exterior wall covering.

CONDITIONS OF USE

This report is limited to the applications and products as stated in this report. The ICC-ES Subcommittee on National Codes intends that the report be used by the code official to determine that the report subject complies with the code requirements specifically addressed, provided that this product is installed in accordance with the following conditions:

- Murus Panels shall be installed in accordance with this report and the manufacturer's instructions. Where the manufacturer's installation instructions differ from this report, this report shall be null and void.
- Murus Panels shall be limited to use as an exterior wall or roof panel in Type 5 construction.
- The use of Murus Panels in fire-resistance rated wall or roof assemblies is beyond the scope of this report.

- The design loads on the system shall not exceed those given in Tables 1, 2, 3 and 4 of this report. Design values are for normal duration under dry use conditions and temperatures less than 160°F.

- Openings in the Murus Panels shall be limited to the sizes given in Figures 6 and 7 of this report. Openings larger than those shown in Figures 6 and 7 are beyond the scope of this report.

- The routing of chaseways into the Murus Panel wall for electrical, plumbing, HVAC or other purposes is beyond the scope of this report.

- A top in-let plate, as shown in Figure 3 of this report, shall be provided along the top edge of all Murus wall panels. The top in-let plate shall be installed in such a manner as to be continuous through the vertical panel joints. The top in-let plate shall consist of 2-inch by 4-inch dimension lumber. The plate shall be located in a 1 1/2-inch-deep routed channel at the top of the panel with spray foam applied between the foam core and the in-let plate. The OSB faces of the Murus Panel shall be secured to the top plate with 8d nails at 4 inches on center. The fasteners on the OSB faces shall be staggered from each other.

- A bottom in-let plate, as shown in Figure 4 of this report, shall be provided along the bottom edge of all Murus wall panels. The bottom in-let plate shall consist of 2-inch by 4-inch dimension lumber. The foam core of the panel shall be routed to completely embed the in-let plate in the panel, so that the OSB faces of the panel will bear completely on the surface which supports the Murus Panels. The in-let plate is to be fastened securely to the supporting structure as required by the approved construction documents. The void in the Murus Panel is sprayed with foam, as described above, prior to placing the panel over the in-let plate. The Murus Panel is then secured to the in-let plate on both faces with 8d nails at 4 inches on center. The fasteners on the OSB faces shall be staggered from each other.

- Openings in the Murus Panels for door and windows shall be rough framed with 2-inch by 4-inch dimension lumber embedded into the foam core of the panel in the same manner as the top and bottom in-let plates. The lumber framing shall be provided on all sides of the opening, as shown in Figure 5 of this report, and shall be secured to the OSB faces of the panel on both sides with 6d nails at 8 inches on center, staggered.

- The manufacturer shall provide the user of this report with instructions for the erection of Murus Panels. These instructions shall include, but not be limited to, details of panel to panel and panel to other building components interfaces.

- This report is subject to periodic re-examination. For information on the current status of this report, contact the ICC-ES.

ITEMS REQUIRING VERIFICATION

The following items are related to the use of the report subject, but are not within the scope of this evaluation. However, these items are related to the determination of code compliance:

- ✓ Product identification consistent with this report.
- ✓ Special inspections in accordance with Section 1705.0 of the BOCA® National Building Code/1999, and consistent with the following:

• SPECIAL INSPECTIONS

Special inspections are required for the installation of Murus Panels, in that it is work which is of an unusual design wherein installation, fabrication, erection and placement of components requires special expertise to ensure adequacy.

Therefore, the Committee's evaluation of Murus Panels is based upon monitoring and control of the installation of Murus Panels through the use of special inspections in accordance with Section 1705.0 of the BOCA® National Building Code/1999. The following items shall be inspected:

- **Bottom in-let plates, top in-let plates and preparation of rough openings for doors and windows**

- Foam core of panel properly routed (not over routed) to receive 2-in by 4-in nailer
- Condition of foam core (clean and dry)

- **Application of foam spray**

- Sufficient quantity of spray applied
- Ambient temperature/substrate temperature
- Appropriate mix proportions of foam
- Label on ingredients

- **Framing of door and window openings**

- Framing full length on all sides of the opening
- Framing properly lapped

- **Fastening of panel to in-let plates and opening framing**

- Size of fasteners
- Spacing of fasteners
- Fasteners on both sides of panel

- **Cam locks**

- Properly secured, as required by the manufacturer's installation instructions

- ✓ Thermal barrier separation, when required, in accordance with Section 2603.4 of the BOCA® National Building Code/1999.

- ✓ Where installed in roofing applications, roof covering complies with the applicable provisions of Chapter 15 of the BOCA® National Building Code/1999.

- ✓ Where installed in exterior wall applications, exterior wall covering complies with the applicable provisions of Chapter 14 of the BOCA® National Building Code/1999.

INFORMATION SUBMITTED

STRUCTURAL

- "Structural Evaluation of the Murus Stress-Skin Urethane Sandwich Panel," by Harvey B. Manbeck, P.E., Ph.D. of the NAHB/NRC Designated Housing Research Center at Penn State, dated August 1991, containing the following:

- Results of adhesion testing of the OSB facers and the foam plastic core material when subjected to ASTM Standard C481-62 Aging Cycle A.
- Results of flatwise tension testing in accordance with ASTM C297.
- Results of edgewise compression testing in accordance with ASTM C364.
- Results of flatwise compression testing in accordance with ASTM C365.
- Results of flexural testing in accordance with ASTM C393.
- Results of transverse and compression testing in accordance with ASTM E72.

The results of the above test are the basis for Tables 1 through 3 of this report.

- Results of horizontal racking testing in accordance with a modified version of ASTM E72 performed on Murus Panels with and without door and window openings. The modification was that no stud framing was provided, and the panels were 10 feet high rather than 8 feet high. The panels were secured to the base beam and top beam of the test assembly with #6 sheetrock screws at 8 inches on center. The results of the testing are given in Table 4 of this report. The door and window openings tested are shown in Figures 6 and 7 of this report.
- Report No. 30, "Creep Behavior of the Murus Stress-Skin Urethane Composite Sandwich Panel," by Harvey B. Manbeck, P.E., Ph.D. of the NAHB/NRC Designated Housing Research Center at Penn State, dated January 1993, containing results of testing in accordance with Section 1710.3.1 of the BOCA® *National Building Code* 1999.
- Celotex Corporation Testing Services, MTS Job No. 258498, dated June 3, 1998 and June 29, 1998, containing results of tensile, compressive, flexural and shear testing of the CIP 14-8557 (PPG 442-22D) foam plastic in accordance with ASTM D1623, ASTM D1621, ASTM C203 and ASTM C273. The results indicate that the CIP 14-8557 (PPG 442-22D) foam plastic has structural properties at least equivalent to the CIP 1416-HC#2 foam plastic.

FOAM PLASTIC

- Omega Point Laboratories, Report No. 8926-98159, dated March 2, 1995, containing results of testing of the Flexible Products CIP 1416-HC#2 foam plastic in accordance with ASTM E84 at a thickness of 1 in and 5 3/4 in.
- Omega Point Laboratories, Report Nos. 9056-103120 and 9056-103121, dated May 11, 1998, containing results of testing of the Flexible Products CIP 14-8557 (PPG 442-22D) foam plastic in accordance with ASTM E84 at a thickness of 5 3/4 in.

LABELING

- The Murus Company, *Quality Control Manual*, dated March 1999, Revision D, signed by representatives of the Murus Company and PFS Corporation, containing procedures for the manufacture of the Murus Panel, in-house plant inspections, and product labeling.

APPLICATION FOR PERMIT

To aid in the determination of compliance with this report, the following represents the minimum level of information to accompany the application for permit:

- The language "See ICC-ES Legacy Report No. 97-36" or a copy of this report;
- Manufacturer's name.
- Product model name and number.
- Design calculations and details for construction utilizing Murus Panels shall be furnished to the code official verifying compliance with this report. The individual preparing such documents shall be competent and qualified in the application of the structural design principals involved, and shall possess the registration or license in accordance with the professional registration laws of the state in which the project is constructed. The calculations shall include, but not be limited to, the following:

- The minimum required design loads for the building for the building system, consistent with the requirements of Chapter 16 of the BOCA® *National Building Code* 1999.
- The allowable design loads of the panels, consistent with this report.
- The ability of all connections between the panel and adjacent building components to transfer all the imposed design loads to the building foundation and footing system.
- Details of panel openings, consistent with this report.
- Statement of Special Inspections

PRODUCT IDENTIFICATION

- Murus Panels or product packaging shall be marked at the plant with the identifying language "See ICC-ES Legacy Report No. 97-36."
- Additionally, each panel shall bear a label containing the manufacturer name, product name, and identification of the inspection agency, PFS Corporation.

This report is subject to re-examination in one year.

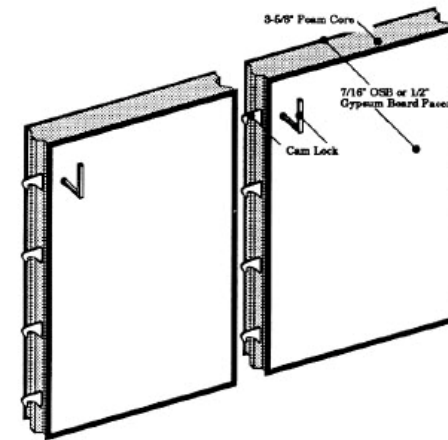


FIGURE 1—"MURUS PANELS"

The panels are 48 inches wide. Cam Locks, if provided, are located 1 ft. from the top and bottom and at 2 ft. intervals in between.

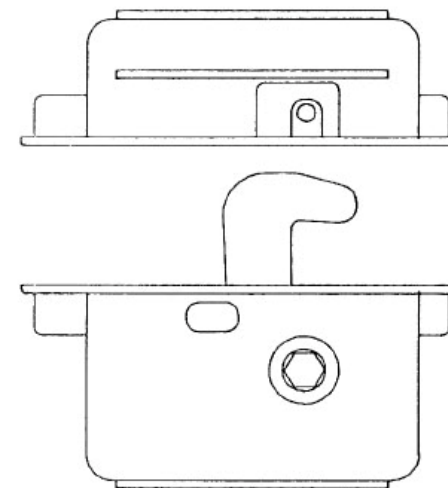


FIGURE 2"—CAM LOCK

CONSTRUCTION ADHESIVE
 2 ROWS 3" GALVANIZED SCREWS
 6" O.C., STAGGERED
 TOP SILL PLATE RIPPED
 TO 4 1/2"
 COATED 8D NAILS 4' O.C.
 2X4 TOP IN-LET PLATE
 1 1/2" STRUCTURAL INSULATING
 PANEL (SIP)

FIGURE 3*—TOP IN-LET PLATE

2X4 BOTTOM
 IN-LET PLATE
 FASTENERS AS REQUIRED
 COATED 8D NAILS 4' O.C.
 PRESSURE TREATED
 SILL PLATE
 ANCHOR BOLTS AS
 REQUIRED
 MASONRY FOUNDATION

FIGURE 4*—BOTTOM IN-LET PLATE

2" x 4" DIMENSION LUMBER
 FULLY HOUSED AT ROUGH
 OPENING PERIMETER. ENDS
 TO BE LAPPED AS SHOWN
 W/6d COMMON NAILS 6-8" O.C.
 4 1/2" STRUCTURAL INSULATING
 WALL PANEL (SIP)

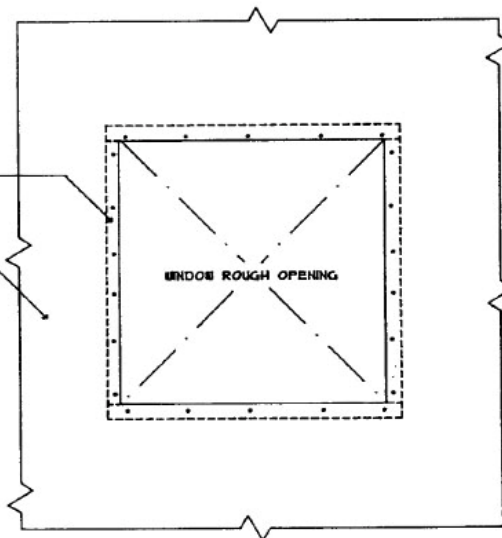


FIGURE 5*—FRAMING AT ROUGH OPENINGS FOR WINDOWS AND DOORS

TABLE 1
 TRANSVERSE LOAD-SPAN TABLE FOR THE MURUS PANEL
 (Customary Units)

UNIFORM TRANSVERSE LOAD ¹ (psf)	ALLOWABLE PANEL SPAN ^{2,3,4} (ft - in)			
	DEFLECTION LIMITS			
	L/180	L/240	L/360	L/480
5	20'-8"	18'-9"	16'-4"	14'-9"
10	16'-4"	14'-9"	13'-0"	11'-9"
15	14'-3"	13'-0"	11'-4"	10'-3"
20	13'-0"	11'-9"	10'-3"	9'-4"
25	12'-1"	11'-0"	9'-7"	8'-8"
30	11'-4"	10'-3"	9'-0"	8'-2"
35	10'-9"	9'-9"	8'-7"	7'-9"
40	10'-3"	9'-4"	8'-2"	7'-6"
45	9'-11"	9'-0"	7'-10"	7'-2"
50	9'-7"	8'-8"	7'-7"	6'-11"
55	9'-3"	8'-4"	7'-4"	6'-8"
60	9'-0"	8'-2"	7'-2"	6'-6"
65	8'-9"	8'-0"	7'-0"	6'-3"
70	8'-7"	7'-9"	6'-9"	6'-2"
75	8'-4"	7'-7"	6'-8"	6'-0"
80	8'-2"	7'-5"	6'-9"	5'-11"

1. Uniform load for normal load durations only.
2. Values given are for full (four foot) panel widths with facing strands oriented parallel to the panel span assuming proper end support and connections. The transverse load-carrying capacity of panels that contain openings is beyond the scope of this report.
3. Values given are computed from the continuous span uniform deflection equation using the flexural stiffness parameter $(EI)_p$ developed from the full scale transverse panel assembly test of the Murus Panel (ASTM E72-80).
4. Design values are for normal load duration under dry use conditions and temperatures less than 160°F.

TABLE 2
ALLOWABLE AXIAL LOAD/UNIT WIDTH FOR THE MURUS PANEL WITH NO ECCENTRICITY
(Customary Units)

TRANSVERSE LOAD ¹ psf	ALLOWABLE AXIAL LOAD ^{1,2,3,4} lb/ft											
	PANEL LENGTHS ft											
	4	5	6	7	8	9	10	11	12	13	14	
0	9025	8720	8165	7250	5870	4640	3755	3105	2610	2220	1915	
2	8975	8630	8030	7075	5690	4470	3600	2955	2460	2080	1775	
4	8920	8540	7900	6905	5510	4310	3445	2805	2315	1940	1635	
6	8865	8455	7765	6740	5340	4150	3295	2660	2175	1800	1500	
8	8815	8365	7640	6575	5170	3990	3145	2515	2035	1660	1365	
10	8760	8275	7510	6415	5005	3840	3000	2375	1900	1530	900*	
12	8710	8190	7380	6255	4840	3690	2855	2235	1765	1240*	35*	
14	8655	8100	7255	6100	4685	3540	2715	2100	1630	435*	NP	
16	8600	8015	7130	5950	4530	3395	2575	1965	1180*	NP	NP	
18	8550	7925	7010	5800	4375	3250	2440	1835	440*	NP	NP	
20	8495	7840	6885	5650	4230	3110	2305	1665*	NP	NP	NP	
22	8445	7755	6765	5505	4080	2975	2170	990*	NP	NP	NP	
24	8390	7670	6645	5365	3940	2835	2040	310*	NP	NP	NP	
26	8340	7585	6525	5220	3795	2705	1910	NP	NP	NP	NP	
28	8285	7500	6410	5085	3655	2570	1590*	NP	NP	NP	NP	
30	8235	7415	6295	4945	3520	2440	975*	NP	NP	NP	NP	

* Load limited by L/240 deflection criterion

NP = Not Permitted

1. Uniform transverse and axial loads are for normal load durations only.
2. Values given are for full (four foot) panel widths with facing strands oriented parallel to the panel span assuming proper end support and connections. The load-carrying capacity of panels that contain openings is beyond the scope of this report.
3. Values given are computed from the combined load case and limiting deflection criterion using the flexural stiffness parameter (EI), developed from the full-scale transverse panel assembly test of the Murus Panel (ASTM E72-80), F_c developed from the compression edgewise test of the Murus Panel (ASTM C364-61), F_t from published data for Oriented Strand Board.
4. Design values are for dry end use conditions and temperatures less than 160°F.

TABLE 3
ALLOWABLE AXIAL LOAD/UNIT WIDTH FOR THE MURUS PANEL WITH A 0.75-IN. ECCENTRICITY

TRANSVERSE LOAD ¹ psf	ALLOWABLE AXIAL LOAD ^{1,2,3,4} lb/ft											
	PANEL LENGTHS ft											
	4	5	6	7	8	9	10	11	12	13	14	
0	4925	4605	4245	3835	3340	2930	2570	2260	1990	1765	1565	
2	4895	4560	4190	3765	3260	2840	2475	2155	1885	1655	1455	
4	4870	4520	4135	3695	3180	2755	2380	2055	1780	1545	1345	
6	4845	4482	4080	3625	3100	2665	2285	1955	1680	1440	1130*	
8	4815	4440	4025	3555	3020	2575	2190	1860	1575	1170*	760*	
10	4790	4400	3970	3490	2945	2490	2095	1760	1335*	840*	385*	
12	4760	4355	3915	3420	2865	2405	2005	1630*	1045*	510*	NP	
14	4735	4315	3860	3350	2785	2320	1915	1380*	755*	180*	NP	
16	4705	4275	3805	3280	2710	2235	1820	1128*	460*	NP	NP	
18	4680	4235	3750	3215	2630	2150	1640*	875*	170*	NP	NP	
20	4650	4195	3695	3145	2555	2065	1420*	620*	NP	NP	NP	
22	4625	4155	3640	3080	2480	1980	1205*	365*	NP	NP	NP	
24	4595	4115	3585	3010	2400	1895	990*	115*	NP	NP	NP	
26	4570	4070	3530	2945	2325	1770*	775*	NP	NP	NP	NP	
28	4540	4030	3475	2880	2250	1585*	555*	NP	NP	NP	NP	
30	4515	3990	3420	2810	2175	1405*	340*	NP	NP	NP	NP	

* Load limited by L/240 deflection criterion

NP = Not Permitted

1. Uniform transverse and axial loads are for normal load durations only.
2. Values given are for full (four foot) panel widths with facing strands oriented parallel to the panel span assuming proper end support and connections. The load-carrying capacity of panels that contain openings is beyond the scope of this report.
3. Values given are computed from the combined load case and limiting deflection criterion using the flexural stiffness parameter (EI), developed from the full-scale transverse panel assembly test of the Murus Panel (ASTM E72-80), F_c developed from the compression edgewise test of the Murus Panel (ASTM C364-61), F_t from published data for Oriented Strand Board, and an eccentricity of 0.75 inch, the same as required in the compression test of the Murus Panel (ASTM E72-80).
4. Design values are for dry end use conditions and temperatures less than 160°F.

TABLE 4
HORIZONTAL RACKING RESISTANCE OF MURUS PANELS

Panel Assembly	Allowable Racking Resistance ¹	
	lbs	plf
Full Panel Assemblies	430	53.75
Panel with Door Opening ²	400	50
Panel with Window Opening ²	430	53.75

1. The connection at the head and sill of the panel shall conform to Figures 3 and 4 of this report.
2. The size of the door and window openings shall not exceed those shown in Figures 6 and 7 of this report, and the opening shall be rough framing with 2x4 dimension lumber, as shown in Figure 5 of this report.
3. The values in this table were obtained from panels attached with sheet rock screws at 8 inch on center.

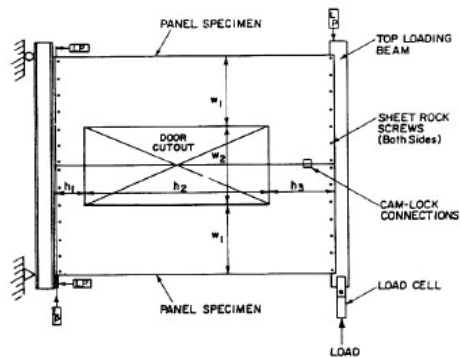


FIGURE 6*
PANEL TESTED WITH DOOR OPENING

$h_1 = 12$ inches (30 cm)
 $h_2 = 84$ inches (210 cm)
 $h_3 = 24$ inches (60 cm)
 $w_1 = 29 \frac{1}{4}$ inches (74 cm)
 $w_2 = 37 \frac{1}{2}$ inches (95 cm)

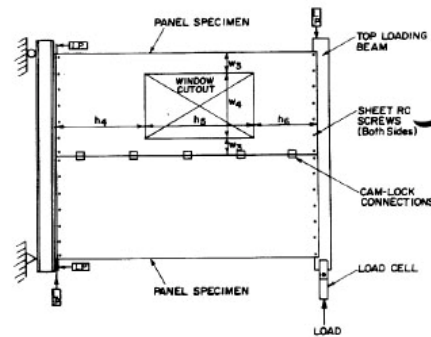


FIGURE 7*
PANEL TESTED WITH WINDOW OPENING

$h_4 = 42$ inches (107 cm)
 $h_5 = 54$ inches (137 cm)
 $h_6 = 24$ inches (60 cm)
 $w_3 = 8$ inches (20 cm)
 $w_4 = 32$ inches (81 cm)

*THESE DRAWINGS ARE FOR ILLUSTRATION PURPOSES ONLY. THEY ARE NOT INTENDED FOR USE AS CONSTRUCTION DOCUMENTS FOR THE PURPOSE OF DESIGN, FABRICATION OR ERECTION.

Division 07 00 00 – Thermal & Moisture Protection

Damp Proofing and Water Proofing



Product Data

Roll length	75 ft (22.9 m)	36 ft (11.0 m)
Roll width	36 in. (914 mm)	36 in. (914 mm)
Roll size	225 ft ² (20.9 m ²)	108 ft ² (10.4 m ²)
Packaging	Corrugated cartons	Corrugated cartons
Roll weight	61.4 lbs (27.9 kg)	33.6 lbs (15.3 kg)
Rolls per pallet	35	25

Performance Properties

Property	Value	Test Method
Color	Gray-black	
Thickness, membrane	40 mil (1.02 mm)	ASTM D3767 method A
Tensile strength, membrane	250 psi (1720 kN/m ²)	ASTM D412 (Die C modified)
Elongation, membrane	250%	ASTM D412 (Die C modified)
Low temperature flexibility	Unaffected @ -20°F (-29°C)	ASTM D1970
Adhesion to plywood	3.0 lbs/in. width (525 N/m)	ASTM D903
Permeance (max)	0.05 perms (2.9 ng/m ² s Pa)	ASTM E96
Material weight installed (max)	0.3 lb/ft ² (1.3 kg/m ²)	ASTM D461



TYPICAL PHYSICAL PROPERTIES

Description:	Closed-cell spray polyurethane foam insulation
Closed-cell content:	Greater than 90%
Density:	2.0 lb./cu.ft. nominal
Compressive strength:	32 psi nominal
Tensile strength:	45 psi nominal
R-value:	R-14 at 2 inches nominal
Anti-bacterial:	Yes
Fire rating:	Class 1
Flame spread:	<25 (ASTM E84)
Smoke development:	<450 (ASTM E84)
Code compliant:	Yes**

Numerical flame spread and smoke development ratings are not intended to reflect hazards presented by this, or any other material, under actual fire conditions.

*Warranty available through Gold StarSM certified insulation contractors upon request and approval of specifications.

**InsulStar[®] complies with the provisions of the International Building Code (IBC), International Residential Code (IRC), and Uniform Building Code (UBC).



Toll Free: 1-866-678-5283 (866-NSULATE)

Website: www.InsulStar.com

A Product of

NCFI
POLYURETHANES
P.O. BOX 1528,
MOUNT AIRY, NC 27030

ICC Evaluation Service, Inc. www.icc-es.org

Business/Regional Office ■ 5380 Workman Mill Road, Whittier, California 90601 ■ (562) 899-0543
Regional Office ■ 600 Montclair Road, Suite A, Birmingham, Alabama 35213 ■ (205) 599-9800
Regional Office ■ 4051 West Flossmoor Road, Country Club Hills, Illinois 60478 ■ (708) 796-2305

DIVISION: 07—THERMAL AND MOISTURE PROTECTION
Section: 07210—Building Insulation

REPORT HOLDER:

NORTH CAROLINA FOAM INDUSTRIES
POST OFFICE BOX 1528
MOUNT AIRY, NORTH CAROLINA 27030
(336) 789-9161
www.ncfi.com

EVALUATION SUBJECT:

INSULSTAR SPRAY-APPLIED POLYURETHANE FOAM

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2003 International Building Code® (IBC)
- 2003 International Residential Code® (IRC)
- 1997 Uniform Building Code™ (UBC)

Properties evaluated:

- Physical properties
- Surface-burning characteristics
- Thermal transmission

2.0 USES

Insulstar Spray Foam Insulation is used as a thermal insulating material, installed as a nonstructural component of floor/ceiling and wall assemblies.

3.0 DESCRIPTION

3.1 General:

Insulstar Spray Foam Insulation is a spray-applied, semirigid, cellular polyurethane foam plastic insulation having a maximum thickness of 2 inches (51 mm) and a nominal density of 2.0 pcf (32 kg/m³). The insulation is produced by combining a polymeric isocyanate (A component) and a blend of polyols, flame-retardants, blowing agents, surfactants, catalysts and other additives (R component).

3.2 Surface-burning Characteristics:

The insulation, at a thickness of 2 inches (51 mm) and a nominal density of 2.0 pcf (32 kg/m³), has a flame-spread index of less than 25 and a smoke-developed index of less than 450 when tested in accordance with ASTM E 84.

3.3 Thermal Transmission:

The insulation has a thermal resistance (R-value) of 5.77 ft²·°F/Btu (1.016 m²·K/W) at a 1-inch (25.4 mm) thickness.

4.0 INSTALLATION

4.1 General:

Insulstar Spray Foam Insulation shall be installed in accordance with the North Carolina Foam Industries (NCFI) published installation instructions and this report. The NCFI installation instructions and this report shall be strictly adhered to and a copy of the instructions shall be available at all times on the jobsite during installation. If there are any conflicts between the NCFI published installation instructions and this report, this report shall govern.

Insulstar Spray Foam Insulation shall be spray-applied on the jobsite using a volumetric positive displacement pump as identified in the NCFI application manual. The Insulstar R component shall not be stored at temperatures below 65°F (18°C) or above 85°F (29°C). Insulstar shall not be used in areas that have a maximum in-service temperature greater than 180°F (82°C). The foam plastic shall not be used in electrical outlet or junction boxes or in direct continuous contact with water. In jurisdictions that have adopted the IRC, contact with soil is permitted except in areas where the probability of termite infestation is "very heavy" as determined in accordance with IRC Figure R301.2 (6).

4.2 Thermal Barrier:

Insulstar Spray Foam Insulation shall be separated from the interior of the building by an approved thermal barrier of 1/2-inch (12.7 mm) gypsum wallboard or an equivalent 15-minute thermal barrier complying with, and installed in accordance with, Section 2603.4 of the IBC, Section R314.1.2 of the IRC, or Section 2602.4 of the UBC.

When installation is within attics or crawl spaces where entry is made only for service of utilities, an ignition barrier consisting of either a 1.5-inch-thick (38 mm) mineral fiber insulation; or a 0.25-inch-thick (6.4 mm) wood structural panel, particle board or hardboard; or 0.375-inch-thick (9.5 mm) gypsum wallboard; or corrosion-resistant steel having a base-metal thickness of 0.016 inch (0.4 mm); or some other approved material, shall be installed in a manner so that the foam plastic insulation is not exposed. The protective covering shall be consistent with the requirements of the applicable code. Ventilation of the attic or crawl space shall be provided in accordance with the applicable code.

5.0 CONDITIONS OF USE

The Insulstar Spray Foam Insulation described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The insulation shall be installed in accordance with the manufacturer's published installation instructions, this evaluation report and the applicable code. The insulation shall be applied by contractors certified by NCFI.

- 5.2 The insulation shall be separated from the interior of the building by an approved 15-minute thermal barrier complying with Section 2603.4 of the IBC, Section R314.1.2 of the IRC or Section 2602.4 of the UBC, except as noted in Section 4.2 of this report.

- 5.3 The insulation shall be protected from the weather after application in accordance with Section 1404.2 of the IBC, Section R703 of the IRC or Section 1402.1 of the UBC.

- 5.4 In jurisdictions that have adopted the IRC, use of the foam plastic insulation in areas where the probability of termite infestation is "very heavy" shall be in accordance with IRC Section R320.4.

- 5.5 The insulation shall be limited to use in Type V-B construction under the IBC, Type V-N under the UBC and to dwellings under the IRC.

- 5.6 The Insulstar Spray Foam Insulation components A and R are produced in Mount Airy, North Carolina, under a

quality control program with inspections by Underwriters Laboratories (AA-668).

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated October 2004.
- 6.2 Manufacturer's published installation instructions.
- 6.3 A quality control manual.

7.0 IDENTIFICATION

Each package of components for the Insulstar Spray Foam Insulation shall be identified with the North Carolina Foam Industries name and address, the product trade name (Insulstar), use instructions, the evaluation report number (ESR-1615), and the name and/or logo of the inspection agency (Underwriters Laboratories).



DuPont™ Tyvek® HomeWrap®

PHYSICAL PROPERTIES DATA SHEET

PROPERTIES	METHOD	DUPONT™ TYVEK® HOMEWRAP®
Air Penetration Resistance	ASTM E2178 (cfm/ft²@1.57 psf)	.007
	Gurley Hill (TAPPI T-460) (sec/100cc)	300
	ASTM E1677	Type 1
Water Vapor Transmission	ASTM E96-00 Method A (g/m²·24 hrs) (perms)	325 48
	Method B (glm²·24 hrs) (perms)	400 58
Water Penetration Resistance	ATTCC 127 (cm)	210
Basis Weight	TAPPI T-410 (oz/yd²)	1.8
Breaking Strength	ASTM D882 (lbs/in)	30/30
Tear Resistance (Trapezoid)	ASTM D1117 (lbs)	6/6
Surface Burning Characteristics	ASTM E84 Flame Spread Index	5 Class A
	Smoke Developed Index	20 Class A
Ultra Violet Light Exposure (UV)		120 days (4 months)

These values represent roll averages. Individual roll results may differ due to normal manufacturing variations.

For more information about DuPont™
Tyvek® Weatherization System products,
please call 1-800-44-Tyvek or visit us at
www.Construction.Tyvek.com

WARNING: DuPont™ Tyvek® is combustible and
should be protected from a flame and other high heat
sources. If the temperature of DuPont™ Tyvek®
reaches 750 °F (400 °C), it will burn and the fire may
spread and fall away from the point of ignition.





Rheinzink

general characteristics

Rheinzink is a material fit for the double saddle joint system: it is a zinc-copper-titanium alloy created to meet the specific requirements of the designers.

The material is characterised by a good resistance to weather agents; the protective patina that is formed on the exposed surface makes the fabric maintenance-free and long lasting.

Available with bright finishing or with a "pre-patinated" DBP surface, **Rheinzink** has a grey-zinc colour with aesthetic values emphasised by the toning that the material assumes with time. **Rheinzink is ecological: the raw material can be easily found, it has a low energy consumption for production, it does not harm the environment and it is completely reusable.**

morphological and dimensional characteristics

Produced continuously, by means of an exclusive process of fusion-casting-rolling-winding, the **Rheinzink** patented alloy (**DIN EN 988 + Quality Zinc/Tüv + Iso 9001**) consists of electrolytic zinc (**Din En 1179**) with a purity of 99.995% Zn, with copper and titanium as attached elements. The sheet is supplied in strips or plates having a width up to 1000 mm with thicknesses from 0.70 to 2.00 mm.

technical and performance characteristics

Rheinzink has a good resistance to weather agents. The surface of the zinc reacts with the atmospheric oxygen and forms the zinc oxide.

Water (rain, humidity) forms the zinc hydroxide, which is transformed, thanks to its reaction with carbon dioxide contained in the air, in a firmly adhering layer insoluble in water. Its good resistance to corrosion, maintenance-free and long life derives from this protective layer consisting of zinc carbonate. If the protective layer is damaged, it is reintegrated by means of the equivalent consumption of underlying zinc, since the zinc is not only present on the surface but also over all the thickness of the sheet.

physical characteristics

specific weight 7,15 g/cm

melting point: 418 °C

coefficient of thermal expansion: 0,022 mm / m°C

design specifications

The execution of the covering occurs generally with the traditional systems, with strips or plates with crimped joints or pegs, supported by a continuous structure (wooden planking) and ventilated. The suggested thicknesses for these cases are 0.70 and 0.80 mm.

The innovative laying technologies by means of special forming machines and folding brakes make the saddle joint system particularly fit also for curved or conical geometries, dormers, unions with emerging bodies, etc.

Corrugated plates are also provided for less binding covering shapes, as well as box-type panel systems or different kinds of stave panels to be used specifically in facade sheathing.

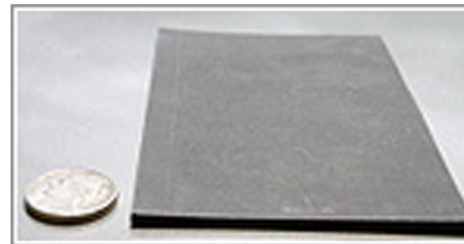
For the purpose of a proper planning and installation, the book entitled **Rheinzink applications in Architecture** is useful; moreover the **Rheinzink** company offers a specific technical advice service.

flat roof solutions



45 mil

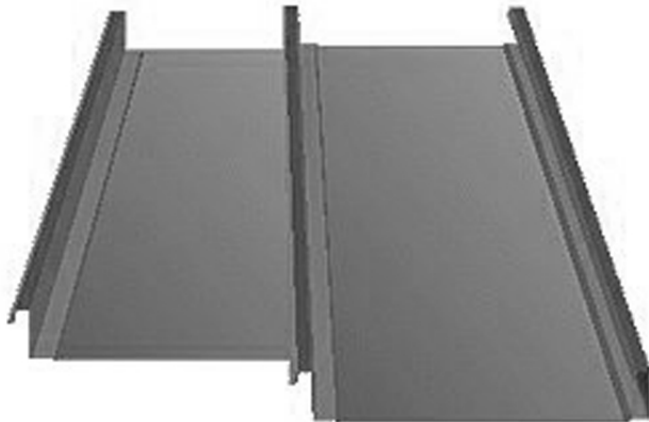
Item #	Width	Length	Sq feet	Cost Sq feet	/ Total cost	Weight/Sq feet	Total weight-Lbs
451005	10	5	50	\$0.46	\$23.00	0.31	16
451010	10	10	100	\$0.46	\$46.00	0.31	31
451015	10	15	150	\$0.46	\$69.00	0.31	47
451020	10	20	200	\$0.46	\$92.00	0.31	62
451025	10	25	250	\$0.46	\$115.00	0.31	78
451030	10	30	300	\$0.46	\$138.00	0.31	93
451035	10	35	350	\$0.46	\$161.00	0.31	109
451040	10	40	400	\$0.46	\$184.00	0.31	124
451045	10	45	450	\$0.46	\$207.00	0.31	140
451050	10	50	500	\$0.46	\$230.00	0.31	155
451055	10	55	550	\$0.46	\$253.00	0.31	171
451060	10	60	600	\$0.46	\$276.00	0.31	186
451065	10	65	650	\$0.46	\$299.00	0.31	202
451070	10	70	700	\$0.46	\$322.00	0.31	217
451075	10	75	750	\$0.46	\$345.00	0.31	233
451080	10	80	800	\$0.46	\$368.00	0.31	248
451085	10	85	850	\$0.46	\$391.00	0.31	264
451090	10	90	900	\$0.46	\$414.00	0.31	279
451095	10	95	950	\$0.46	\$437.00	0.31	295
4510100	10	100	1000	\$0.46	\$460.00	0.31	310
451505	15	5	75	\$0.46	\$34.50	0.31	23
451510	15	10	150	\$0.46	\$69.00	0.31	47
451515	15	15	225	\$0.46	\$103.50	0.31	70
451520	15	20	300	\$0.46	\$138.00	0.31	93
451525	15	25	375	\$0.46	\$172.50	0.31	116
451530	15	30	450	\$0.46	\$207.00	0.31	140
451535	15	35	525	\$0.46	\$241.50	0.31	163



Flat Roof Solutions, home of
EPDM roofing membrane and accessories.



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SKU: MRD110, MRD150, MRD194
Gauge:

- .032, .040 Aluminum
- 24, 22* gauge metallic coated Steel
- 24 gauge 55% Al-Zn alloy coated Steel with acrylic coating
- 16*, 20* oz. Copper

- Panel Width: 11", 15", 19-1/4" (Specify with or without stiffening ribs.)
- Panel Length: cut to customer specifications with a min. of 2'-0", max. to transportation limitations
- Seam Height: 1-1/2" Nominal
- Texture: Embossed, Smooth
- Finish: KYNAR 500® or HYLAR 5000®
- Anodized: Clear, Bronze
- Colors: Choice of 30 standard colors.
- Accessories: Same gauge and finish as the panel or as specified.
- Minimum Pitch: 2:12
- Inquire for availability



ATAS INTERNATIONAL, INC.

SPECIFICATION DATA SHEET

1. PRODUCT NAME **DUTCH SEAM PANEL**

2. MANUFACTURER
ATAS INTERNATIONAL, INC.
Allentown, PA
Phone: (610) 395-8445
Fax: (610) 395-9342
Mesa, AZ
Phone: (480) 558-7210
Fax: (480) 558-7217
Maryville, TN
Phone: (800) 468-1441

website: www.atas.com

email: info@atas.com

3. PRODUCT DESCRIPTION

Basic Uses:

DUTCH SEAM panels with the WIND-LOK™ application are used for roofing on both new construction and re-roof applications. This is a structural panel and can be fastened directly to purlins as well as to solid underlayment. DUTCH SEAM panels can be tapered for placement on a conical roof.

Composition and Materials:

DUTCH SEAM panels are roll-formed from .032, .040 Aluminum or 24 gauge G90 galvanized Steel. 16 oz. Copper and 22 gauge G90 galvanized Steel are available, subject to minimum quantities and lead times.

Sizes and Profiles:

DUTCH SEAM panels are 11" wide (MRD110), 15" wide (MRD150), or 19-1/4" wide (MRD194). Panel lengths are cut to customer specifications, with a minimum of 4' and a maximum to transportation limitations. Specify with or without stiffening ribs.

Color and Finish:

A choice of 29 colors is available in the KYNAR 500® or HYLAR 5000® finish. (Request color chart or chips). An anodized finish is available in clear or bronze. Texture may be smooth or stucco embossed.

4. TECHNICAL DATA

KYNAR 500® or HYLAR 5000® finishes tested by Akzo Nobel for:
Dry Film Thickness (Nominal): ASTM D1005
Specular Gloss: ASTM D523
Pencil Hardness: ASTM D3363
Flexibility T-Bend: ASTM D4145
Adhesion: ASTM D3359
Abrasion Resistance, Falling Sand Test: ASTM D968
Mortar Resistance: AAMA 2605, Test #7.7.2

Acid Pollutants Resistance:

ASTM D1308-87; AAMA 605.2, Test #7.7.3.1

Salt Fog: ASTM B117

Humidity Test: ASTM D2247

Color Retention, Florida Exposure:

ASTM D2244-93

Chalking Resistance: ASTM D4214 Method A-D659

Operating Light and Water Exposure

Apparatus: ASTM D822 & ASTM G23

Corrosive Environments: ASTM D1654

Blistering: ASTM D714

Mandrel: ASTM D522

Resistance to Rapid Deformation

(Impact): ASTM D2794-93

Panel testing/ratings:

Uplift/Load data

Resistance Wind Testing

Class A & B Fire Rating

ASTM A 653/A653M-01a Steel

FSR Flame Spread Rating

Field Tested and Approved

UL Fire Resistance Rating Design

Numbers: P224, P225, P227, P230,

P237, P250, P259, P508, P510, P516,

P701, P711, P801, P803, P814, P815,

P818 and P824.

5. INSTALLATION

Consult ATAS' product installation guide for specific details.

6. AVAILABILITY AND COST

Availability:

DUTCH SEAM panels are readily available through ATAS product distributors. A complete line of accessories in matching or coordinating colors is available to complete a project. Valleys, ridge and hip caps, gable and eave trims are formed to customer specifications. Soffit or other trim designs can be lanced for ventilation. Coil stock or flat sheet can be provided for field fabrication of custom flashings.

Cost:

Contact ATAS product distributors for cost.

7. WARRANTY

The fluoropolymer KYNAR 500® or HYLAR 5000® finish carries a twenty (20) year limited warranty against chipping, cracking, peeling, chalking and fading.

8. MAINTENANCE

DUTCH SEAM panels are virtually maintenance free. Surface residue is easily removed by conventional cleaning methods. Minor scratches may be touched up with matching manufacturer-supplied paint.

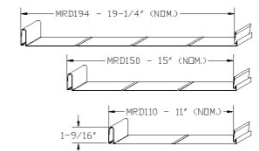
9. TECHNICAL SERVICES

Complete technical information and literature is available from ATAS International, Inc. ATAS will assist with design ideas and shop drawings.

10. FILING SYSTEM

- Sweet's Catalog
- Sweet's CD
- www.atas.com
- Additional product information is available from the manufacturer upon request.

ATAS International Inc. has the ability to customize panels per specific projects. Please contact the factory to discuss options for your project.



Division 08 00 00 – Openings

Doors and Windows

		Andersen Windows - Abbreviated Quote Report Project Name: SOLAR DECATHLON					
		Quote #:	Print Date:	Quote Date:	IQ Version:		
Dealer: BLACK MILLWORK CO., INC. 230 W. Crescent Avenue Allendale, NJ 07401 Tel: 201-934-0100 X251 Sales Rep:		Customer: Billing Address: Phone: Contact:			Fax:		
		000861	06/21/2007	06/03/2007	iq7.0		
	Item	Qty	Item Size (Operation)	Location			
	0001	1	P5535-CN135 (F-R)	KITCHEN A			
	RO Size = 7' 2" W x 3' 5 3/8" H Unit Size = 7' 1 7/16" W x 3' 4 13/16" H Composite Unit, White/White - Vinyl Wrapped, High Performance Low-E4 Glass, No Grille(s), 6 9/16" White - Vinyl Wrapped Complete Unit Extension Jambs, Mulling Location: Factory (Direct), Mull Type: Narrow Mull, Mull Priority: Vertical Insect Screen, White Hardware Pack, PSC, Andersen Classic Series - White Perimeter Extension Jambs, White - Vinyl Wrapped, 6 9/16", Factory (Direct) Applied, Complete Unit						
	0002	1	AN351 (V)	BATHROOM B			
	RO Size = 3' 5 3/8" W x 1' 9" H Unit Size = 3' 4 13/16" W x 1' 8 1/2" H Unit, White/White - Vinyl Wrapped, V Hanging, High Performance Low-E4 Glass (Includes 6 9/16" Factory Applied White - Vinyl Wrapped Extension Jambs) Insect Screen, White Hardware Pack, PSA, Andersen Classic Series - White COMMENT: WINDOW SCHEDULE CALLS FOR A 3'-8" WIDTH. THE FLOOR PLAN SHOWS 2'-8" VERIFY OUR WIDTH IS ACCEPTABLE.						
	0003	5	A351-2 (V-V)	CELESTORY C			
	RO Size = 6' 10 1/4" W x 2' 0 5/8" H Unit Size = 6' 9 3/4" W x 2' 0 1/8" H Composite Unit, White/White - Factory Painted, High Performance Low-E4 Glass, No Grille(s), Mulling Location: Factory (Direct), Mull Type: Narrow Mull, Mull Priority: Vertical Insect Screen, White Perimeter Extension Jambs, Pre-finished White, 6 9/16", Job Site Applied, Complete Unit						
	0004	3		CELESTORY C electric operator kit			
	RO Size = N/A Unit Size = N/A Operator Kit, Window, Electric, Stone						

* High Performance Low-E4 glass will be available as a running change on Andersen Architectural Specialty Windows. See order acknowledgement to verify glass type. *



Andersen Windows - Abbreviated Quote Report
Project Name: SOLAR DECATHLON



Quote #: 000861

Print Date: 06/21/2007

Quote Date: 06/03/2007

iQ Version: iq7.0

Dealer: BLACK MILLWORK CO., INC.
230 W. Crescent Avenue
Allendale, NJ 07401
Tel: 201-934-0100 X251

Customer:

Billing

Address:

Phone:

Contact:

Fax:

Sales Rep:

Item Qty Item Size (Operation)
0005 7 PSA ONLY
RO Size = N/A Unit Size = N/A

Location
CELESTORY C electric operators

PSA ONLY, OPERATOR, STONE POWER



0006 1 FWH31611-FWSL17611 (AL-S)

NORTH ENTRY DOOR 1

RO Size = 4' 7 7/8" W x 6' 11" H Unit Size = 4' 7 1/8" W x 6' 10 3/8" H

Composite Unit, White/Pre-finished White, High Performance Low-E4 Tempered Glass, No Grille(s), Mulling Location: Distributor, Mull Type: Narrow Mull,
Mull Priority: Vertical

Hinged Insect Screen, White

Kit, Extension Jamb, Exterior, 6 9/16", White

Hardware Trim Set, FWH/FWO, LH, Tribeca - White

Lock, FWH/FWO, Exterior Keyed, White

Kit, Extension Jamb, Exterior, 6 9/16", White

COMMENT: VERIFY DIMENSIONS AND OPTIONS



0008 1 FWO31611 (AR)

KITCHEN WEST

RO Size = 3' 1" W x 6' 11" H Unit Size = 3' 0 1/8" W x 6' 10 3/8" H

Unit, AR Handing, White/PI White, High Performance Low-E4 Tempered Glass

Kit, Extension Jamb, AR Handing, Interior, Pre-finished White, 6 9/16"

Hardware Trim Set, FWH/FWO, Tribeca - White

Lock, FWH/FWO, Exterior Keyed, White

* High Performance Low-E4 glass will be available as a running change on Andersen Architectural Specialty Windows. See order acknowledgement to verify glass type. *

NanaWall®

The Leader in Opening Glass Walls



WD66

Specifications and details subject to change without notice.

NanaWall
Bringing the Outdoors In

Performance of the WD66 NanaWall - Testing Results

RAISED SILL		
Type of Test	Inward Opening Units	Outward Opening Units
* Air Infiltration: ASTM E-283, ft. ³ /min/ft.	@ 1.57 psf (25 mph): 0.01 @ 6.24 psf (50 mph): 0.03	@ 1.57 psf (25 mph): 0.07 @ 6.24 psf (50 mph): 0.18
* Water Penetration: ASTM E-547-86	No uncontrolled water entry @ 12 psf (68 mph)	No uncontrolled water entry @ 12 psf (68 mph)
* Structural Load Deflection ASTM E-330-90: pass See design windload charts for other sized panels. Note that the structural test pressures were 50% higher than the design pressures.	<u>Top and Bottom Reinforced Locking Point Unit</u> Design Pressure Positive @ 35 psf (116 mph) Design Pressure Negative @ 50 psf (140 mph)	<u>Top and Bottom Reinforced Locking Point Unit</u> Design Pressure Positive @ 50 psf (140 mph) Design Pressure Negative @ 35 psf (116 mph)
Thermal Performance: Rated, certified and labeled in accordance with NFRC 100	With 15/16" (24 mm) thick Insulated Glass: Glass thickness of .157" (4 mm) and gap thickness of .623" (16 mm) <u>U-Factor</u> <u>Solar Heat Gain Coefficient</u> Clear (air filled) .47 .57 Low E (air filled) .34 .43 Low E (argon filled) .31 .43 Lower values are achievable with Heat Mirror™ options.	With 15/16" (24 mm) thick Insulated Glass: Glass thickness of .157" (4 mm) and gap thickness of .623" (16 mm) <u>U-Factor</u> <u>Solar Heat Gain Coefficient</u> Clear (air filled) .47 .57 Low E (air filled) .34 .43 Low E (argon filled) .31 .43
* Forced Entry Resistance	In accordance with AAMA-1303.5 and CAWM 300-96 requirements.	

Excerpts of results of 9'2" W x 7'10 1/2" H three panel units with raised sill tested by Architectural Testing, Inc., Fresno, CA, an independent testing laboratory in February 2003.

LOW PROFILE SADDLE SILL, LOW PROFILE STEPPED SILL, STANDARD FLUSH SILL		
Type of Test	Inward Opening Units	Outward Opening Units
Water Penetration: ASTM E-547-86 Internally Tested Not applicable for standard flush sill	No uncontrolled water entry @ 3.75 psf (38 mph) subject to the following adaptations in the field by others: 1. Remove the gaskets covering the inner channel. 2. Drill weep holes through the bottom of this channel (about one 1" x 1/4" weep hole per panel.) 3. Drill weep holes through the bottom of the sill or lower front face of the sill to drain water collected to a lower point (about one 1" x 1/4" weep hole per panel.) Please note that due to varying site requirements and conditions, these sills will not be prepared for drainage by Nana Wall Systems, Inc. If this drainage system is desired, we recommend that a qualified professional construct this system on the project site strictly in accordance with instructions provided by Nana Wall Systems, Inc. and in accordance with good waterproofing techniques. Note that in some applications drain connections may not be possible.	
* Structural Load Deflection ASTM E-330-90: pass per engineering letter based on raised sill testing. See design windload charts for other sized panels. Note that the structural test pressures were 50% higher than the design pressures.	<u>Top and Bottom Reinforced Locking Point Unit</u> Design Pressure Positive @ 35 psf (116 mph) Design Pressure Negative @ 50 psf (140 mph)	<u>Top and Bottom Reinforced Locking Point Unit</u> Design Pressure Positive @ 50 psf (140 mph) Design Pressure Negative @ 35 psf (116 mph)
Thermal Performance: Summary of NFRC U-Factor Computer Simulation Report prepared by Architect Testing	With 15/16" (24 mm) thick Insulated Glass: Glass thickness of .157" (4 mm) and gap thickness of .623" (16 mm) <u>U-Factor</u> <u>Solar Heat Gain Coefficient</u> Clear (air filled) .52 .58 Low E (air filled) .39 .44 Low E (argon filled) .36 .37 Lower values are achievable with Heat Mirror™ options.	With 15/16" (24 mm) thick Insulated Glass: Glass thickness of .157" (4 mm) and gap thickness of .623" (16 mm) <u>U-Factor</u> <u>Solar Heat Gain Coefficient</u> Clear (air filled) .53 .58 Low E (air filled) .40 .44 Low E (argon filled) .36 .37
* Forced Entry Resistance	In accordance with AAMA-1303.5 and CAWM 300-96 requirements.	

VON DUPRIN. The leader in versatility, convenience and durability



Each electric strike kit comes standard with three faceplates, a 12/24 dual-voltage solenoid, fail safe/fail secure selectability and an adjustable keeper.

The Von Duprin 5100 Electric Strike has been designed and manufactured to meet the needs of locksmiths and security professionals. This easy-to-install electric strike was created for medium duty applications, specifically to control traffic flow through interior and exterior openings in retail and commercial environments.

And because it's the Von Duprin brand, you know that you can depend on the product quality and performance.

VERSATILITY:

Fewer products to inventory and more value for your money.

- Three faceplates included for hollow metal, wood or aluminum frames.
- Internal 12/24 dual-voltage solenoid.
- Adjustable keeper.
- Fail-safe/fail-secure selectability.

CONVENIENCE:

The right parts in the box means getting the job done right the first time, every time.

- Reduce labor expense.
- Fewer return trips to the job site.
- Reduces SKU's.

DURABILITY:

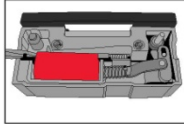
Developed with Von Duprin's high standards and engineering expertise.

- Heavy-duty construction.
- Tamper resistant design.
- Tested to over one million cycles.
- 1300 lbs. holding strength.

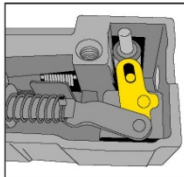
JOB SITE VERSATILITY.

The Von Duprin 5100 Electric Strike can meet the application needs of six or more competitive models for standard installation, which saves time, money, and labor.

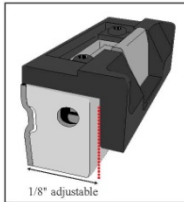
1. The solenoid has four wires, allowing you to configure the strike at the job site so you can use it in either 12 or 24 volt DC applications.



2. The 5100 Electric Strike is easily changeable between fail-safe and fail-secure in the field without the need for additional parts.



3. The 5100 Electric Strike has a 1/8" horizontally adjustable keeper. This mechanism, which is designated by the dark gray region of the diagram, allows the installer to adjust the strike where a door and frame are not properly aligned or where weather stripping is causing too much pressure on the strike.



5100 Electric Strike *The industry's most versatile electric strike.*

POWER OPTIONS:

DC: Regulated Power Supplies (Recommended)

- Von Duprin PS 861
- Von Duprin PS 873
- Locknetics 505
- Locknetics 510
- Locknetics 515

DC: 24V Unregulated Power Supplies (Acceptable)

- Locknetics 593 PI-24DC (Plug-In)
- Locknetics 592-24RC (Hard-Wired)

AC/DC Conversion:

- Von Duprin SO-24 Kit

SPECIFICATIONS:

- ANSI/BHMA 156.5 Grade 1
- UL 1034 Burglary Listing

	12VDC	24VDC
Resistance (Ohms)	32	128
Power (watts)	4.5	4.5
Current (amps)	.38	.19
All specs ± 10% @ 77°F/25°C		

STANDARD CONFIGURATION:

- 24 volts DC
- Fail-secure

DIMENSIONS:

Backbox: 3 3/8" x 1" x 1 1/2"

Overall Strike Depth: 1 1/4"

Faceplates:

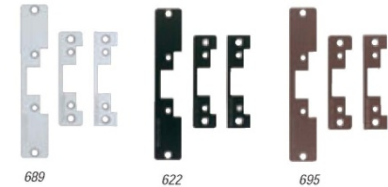
- 4 7/8" round corner ANSI A115.2 standard frame prep
- 4 7/8" square corner ANSI A115.2 standard frame prep
- 7 1/8" long, round corner wood frame prep

Keeper pocket: 1 7/8"L x 1/2"D x 1 1/8" - 1 3/8"W (adjustable)

Lip Attachment cut-out depth: 1 1/8"

HOW TO ORDER:

- 5100-689 (Aluminum)
- 5100-622 (Black)
- 5100-695 (Dark Brown)



©2003 Ingersoll-Rand Form VD-GN-1147 Rev. 8/03 Printed in USA

VON DUPRIN

2720 Tobey Drive,
Indianapolis, IN 46219
317-613-8944 phone
317-613-8302 fax
www.vonduprin.com
www.ingersollrand.com

An **IR** Ingersoll Rand business



enterprise access control

Bioscrypt® V-Pass FX™

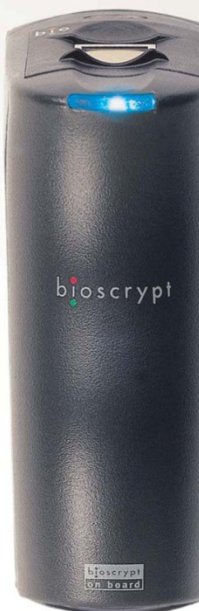
flexible security options

FEATURES

- Industry's most accurate finger-scan algorithm (#1 at FVC 2002 & FVC 2004)
- RoHS Compliant
- User configurable 1:N mode or 1:1 mode
- New blue LED power signal
- Self-contained reader stores approximately 4,000 finger-scan templates in 1:1 mode, 500 in 1:500 mode, and 200 in 1:200 mode
- USB communications to AUX port
- VeriAdmin software included free of charge offers a simple approach to template management (enrollment, distribution) and reader configuration
- User-friendly installation with pigtail connections and single-gang or mullion mount capability
- Simple one-touch enrollment
- Intuitive user interface with multi-colored LED signals and audible signals
- Flexible communication options supporting Wiegand formats up to 64 bits
- Duress finger option

Finger only security in 1:N mode or dual-factor authentication in 1:1 mode with an external Wiegand reader

Ideal for retrofits with an existing legacy system or dual biometric/authentication solutions in 1:1 mode



www.bioscrypt.com

Bioscrypt® V-Pass FX™

TECHNICAL INFORMATION

DIMENSIONS

Length: 130 mm (5.12")
Width: 50 mm (1.97")
Depth: 63.5 mm (2.5")

COMMUNICATIONS:

Pigtail wire connection for RS-232, RS-485, WiegandIN/OUT.
USB Aux port

ALGORITHM TYPE: Verification (1:1)

Enrollment Time: < 3 seconds
Verification Time: < 1 seconds
(EER) Equal Error Rate (FAR=FRR): 0.1%
Adjustable FAR and FRR
Number of Templates: ~ 4000 per unit
Template Size: ~ 350 bytes

ALGORITHM TYPE: Identification (1:N)

Enrollment Time: < 3 seconds
Verification Time: < 2 seconds
False Acceptance Rate (FAR): 0.2%
False Rejection Rate (FRR): 1.0%
Number of Templates: 500 per reader in 1:500 mode; 200 per reader in 1:200 mode
Template Size: ~ 2500 bytes

VOLTAGE:

9-24 VDC

CURRENT DRAW:

Idle: 0.20 amps @ 12 VDC
Max: 0.40 amps @ 12 VDC

MOUNTING:

Flat surface, single-gang or mullion mountable.
Wall mount plate will accept #6 screws or bolts.
Clearance hole diameter is 0.155". Trim plate included to cover single-gang box.

OPERATING TEMPERATURE:

0° - 60°C

CERTIFICATIONS:

FCC, CE, UL294, cUL, RoHS

ORDERING INFORMATION

V-PASS-FX-A,R:

Finger-scan reader requiring external Wiegand device

DESKTOP-VS-FX-A,R:

V-PASS-FX-A,R reader mounted on a plastic stand, with power supply

DEMO-VS-FX-A,R:

V-PASS-FX-A,R reader mounted on stand, power supply and case

BIO-SDK:

Development software CD (supports all Bioscrypt products)

*Please note this reader ships default 1:500 mode, and will need to be configured for 1:200 mode or 1:1 mode

BIOSCRYPT INC. P. 905 940 7750
505 Cochrane Drive F. 905 940 7643
Markham, ON L3R 8E3 info@bioscrypt.com

www.bioscrypt.com

Top Hung System

Junior 80/GS – Hawa

- For 1 and 2 sliding glass doors
- Smooth, quiet operation
- Maintenance-free
- Rattle-free bottom guide
- Simple installation
- No glass cut-outs required
- Vertical adjustment without removing the glass door
- Maximum door weight: 80 kg (176 lbs.)
- For glass thickness of 6 - 12.7 mm (¼" - ½")



Installation hints:

When using 2 sliding doors on the same track, please make sure that glass panels do not collide. Please use a lower guide channel with a door stopper or use protective edge trim.

Top Hung System

Junior 80/GS – Hawa

Fitting set, for a single sliding glass door without upper track and lower guide channel

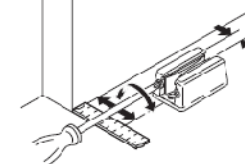
1 set				940.81.000
consisting of	Description	Material/Color	Qty.	Item No.
	Double roller running gear		2 pcs.	940.80.012
	Suspension bolt, M10		2 pcs.	941.00.072
	Clamp shoe, adjustable from 6 - 12.7 mm (¼" - ½")	aluminum	2 pcs.	941.00.020
	Track stopper		2 pcs.	940.80.041
	Floor guide, adjustable from 6 - 12.7 mm (¼" - ½")		1 pc.	941.00.031
	Buffer	rubber, black	1 pc.	407.01.930

Note: • Item numbers are valid for only 1 piece, when ordering individual components please state the desired amount
• For 2 bi-parting sliding glass doors please order 2 sets

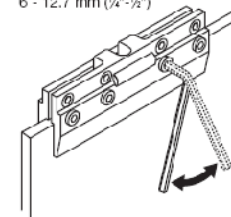
Upper tracks, pre-drilled



Lower guide adjustment:
6 - 12.7 mm (¼" - ½")



Clamp shoe adjustment:
6 - 12.7 mm (¼" - ½")



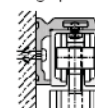
Material: aluminum, anodized

Length	clear
1.4 m (4' 7 1/8")	940.80.140
1.6 m (5' 3")	940.80.160
1.8 m (5' 10 1/8")	940.80.180
2.0 m (6' 6 3/4")	940.80.200
2.2 m (7' 2 5/8")	940.80.220
2.5 m (8' 2 1/4")	940.80.250
3.0 m (9' 10 1/8")	940.80.300
4.0 m (13' 1 1/2")	940.80.400
6.0 m (19' 8 1/4")	940.80.600

Packing: 1 pc.

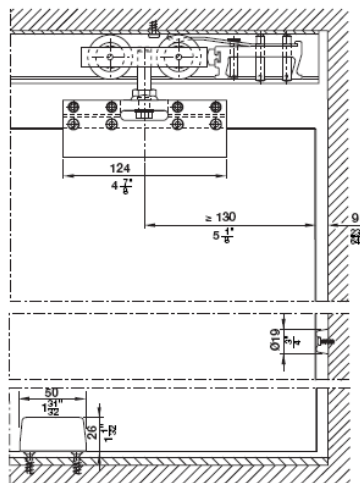
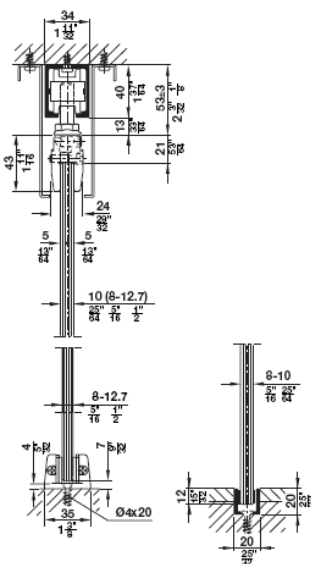
Accessories:

- Angle profile for wall mounting (pages 321 - 322)



- Sliding door lock Hawa Toplock, (pages 323 - 327)
- Lower guide channel, (page 277)
- Clip-on fascias and end caps to clamp shoe, (page 296)
- Floor mounted door stop, (page 277)

Installation plan: (included in fitting set), mounting instructions for planning and execution available upon request.



Division 09 00 00 – FINISHES

Tiling



EcoCycle

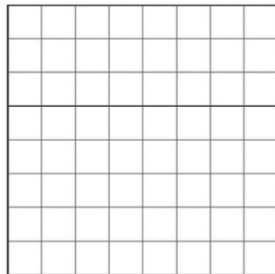


PORCELAIN STONE.



Floor: EcoCycle Series

Color Code	Color Name	Size	Pattern %
EC105	Night Air	12"x12"	100%



12"x 12" Grid Pattern

EcoCycle

- 8 earth-toned colors
- Cost-effective and environmentally responsible
- Stone-look exudes a feeling of rustic elegance
- Ideal for all types of commercial and residential applications
- Contributes to the efforts of companies seeking LEED certification of new buildings and major renovations
- Available only from Crossville

Sizes Available

Nominal Size	Actual Size	Metric (cm)	Thickness
8" x 8"	7-3/4" x 7-3/4"	19.6 x 19.6	5/16"
12" x 12"	11-3/4" x 11-3/4"	29.8 x 29.8	5/16"

*EC001 only

Trim Sizes

Nominal Size	Actual Size	Metric (cm)	Thickness
4" x 12" Single Bullnose	3-3/4" x 11-3/4"	9.5 x 29.8	5/16"
6" x 12" Cove Base	5-3/4" x 11-3/4"	14.6 x 29.8	5/16"



4" x 12" Single Bullnose



6" x 12" Cove Base

Trim Sizes (EC001 only)

Nominal Size	Actual Size	Metric (cm)	Thickness
6" x 8" Cove Base	5-7/8" x 7-3/4"	14.9 x 19.7	5/16"
6" x 8" Cove Base Corner Left	5-7/8" x 7-3/4"	14.9 x 19.7	5/16"
6" x 8" Cove Base Corner Right	5-7/8" x 7-3/4"	14.9 x 19.7	5/16"
1" x 6" Cove Base Inside Corner	1" x 5-7/8"	2.5 x 14.9	-
1" x 6" Cove Base Outside Corner	1" x 5-7/8"	2.5 x 14.9	-



6" x 8" Cove Base



6" x 8" Cove Base Corner Left



6" x 8" Cove Base Corner Right



Inside & Outside Cove Base Corner

Shade & Texture Index

EcoCycle has a shade variation of V3.
EcoCycle EC001 has a shade variation of V1.



V1



V2



V3



V4

V1=Uniform Appearance
V2=Slight Variation
V3=Moderate Variation
V4=Substantial Variation

Recommended Usage

EcoCycle is recommended for interior floors and walls and exterior walls in both commercial and residential applications. EcoCycle is not recommended for exterior horizontal use, with the exception of EC001 in the Cross-Tread finish, which is suitable for exterior horizontal surfaces and paving.

Care and Maintenance

Regular cleaning is the best way to keep EcoCycle tile looking good for years to come. Use clean, hot water (combined with a household cleaner for more aggressive cleaning). Rinse thoroughly and dry with a soft cloth to prevent water spots. No waxes or sealers are needed. More information regarding the care and maintenance of Crossville products is available at www.crossvilleinc.com.

Product Performance

	EcoCycle	EC001 (CTS only)	
Breaking Strength	>350 lbf.	>350 lbf.	ASTM C648
Bond Strength	>200 psi	>200 psi	ASTM C482
Chemical Resistance	Unaffected	Unaffected	ASTM C650
Frost Resistance	Resistant	Resistant	ASTM C1026
Water Absorption	<.10%	<.10%	ASTM C373
Scratch Hardness	7	6	MOH's Scale
COF-Dry	>0.65	>0.8	ASTM C1028-89
COF-Wet	>0.6	>0.8	ASTM C1028-89



Crossville, Inc. • P.O. Box 1168, Crossville, TN 38557
Phone: 931.484.2110 • Fax: 931.456.2956
E-Mail: crossc@crossvilleinc.com • www.crossvilleinc.com



recycled metal tiles | bamboo | cork | recycled glass tiles | linoleum | stones | reclaimed & sustainable woods

recycled metal tiles



Recycled metal tiles add a versatile and textural design element to your kitchen or bathroom wall or floor designs. Metal tiles may also help you achieve balance in your kitchen design when you start to feel overcome by all of the wood. For the urban loft or the suburban ranch, metal tiles appeal to our textural and visual senses and can be designed as funky or finessed as your design tastes allow.

Construction: 2" x 2", 4" x 4", 6" x 6", 8" x 8", 12" x 12" field tiles as well as many different accent tiles and sinks available

Metals: 100% recycled aluminum or brass

Finishes: Available in polished, vibrated (matte), or sandblasted (rough) (sb not available in 12" x 12")

Installation: Install similar to other tile using mortar and grout. Use metal cutting blade for a tile grinder to cut.

Maintenance: Clean with mild dishsoap and water.



Prunus serotinas. Cherry is a highly prized furniture wood well known for its color, subtle grain pattern and unsurpassed finishing qualities. Cherry has a uniform texture and finishes extremely well. Cherry grows across the eastern United States, with the preferred lumber coming primarily from the northern Appalachian region, especially Pennsylvania. Cherry represents less than 5% of the total volume of timber and lumber production in the eastern United States.

USES	AVAILABILITY	PRICE
Furniture, cabinets, interior decoration including paneling, woodenware, decorative items.	Good availability in 4/4 through 8/4 thickness. Limited availability in 10/4 and heavier.	Valuable.

Relative Working Properties

 Machining	 Resistance to Splitting in Nailing	 Resistance to Splitting in Screwing	 Gluing
Excellent	Fair	Fair	Very Good

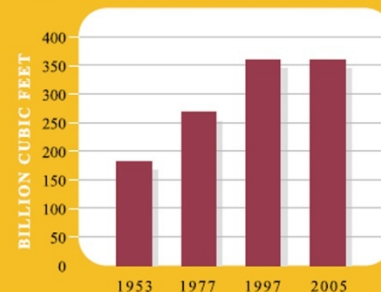
Physical Properties

Specific Gravity (12% M. C.)	Average Shipping Weight kilograms (kg) per cubic metre (m³) Air Dry	Average Volumetric Shrinkage (oven dry % of Green)	Modulus of Rupture (Kilopascals)	Modulus of Elasticity (Megapascals)	Side Hardness (Newtons)
0.50	625	11.5	55,000	9,000	2,900

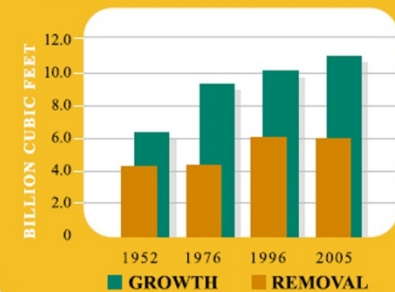


AMERICAN HARDWOOD FOREST SUSTAINABILITY

The Volume of Hardwood in American Forests



Hardwood Growth Far Exceeds Removal



107.21



BUILDERS SOLUTION™ SYSTEM

INTERIOR LATEX PRIMER/SURFACER

A63W100

CHARACTERISTICS	SPECIFICATIONS	SURFACE PREPARATION
<p>Builders Solution™ Interior Surfer is a high quality product designed for the professional. This product is recommended for interior application on walls and ceilings of plaster and wallboard.</p> <p>The Builders Solution System is a two-coat system that delivers a superior final appearance for the Builder and an upgraded, washable wall finish to the new homeowner.</p> <p>The Builders Solution System delivers superior results when compared to entry-level Builders products.</p> <ul style="list-style-type: none"> - Superior washability - Superior final appearance - High Build Surfer that hides minor surface defects - Minimizes callbacks - Improved touch-up <p>Builders Solution Interior Surfer</p> <ul style="list-style-type: none"> - Fills and surfaces rough and uneven new drywall construction - Uniforms various porosities between drywall paper and joints - Ensures the finish coat will be a smooth and uniform sheen - Minimizes minor surface imperfections: paper fuzz, minor sanding grooves, nicks, pinholes. <p>When properly applied to a drywall surface with a minimum of a Level 4 finish, Builders Solution Interior Surfer will provide a Level 5 finish. Based on the Gypsum Association publication GA-214 and ASTM C840.</p>	<p>Color: White</p> <p>Coverage: can be applied from: 400 sq ft/gal @ 4 mils wet; 1.8 mils dry to: 64 sq ft/gal @ 25 mils wet; 11 mils dry</p> <p>Drying Time, @ 77°F, 50% RH: temperature and humidity dependent Touch: 1 hour Recoat: 4 hours Flash Point: N/A Finish: 0-5 units @ 85° Solvent/Reducer: Water Vehicle Type: Vinyl Acrylic A63W100 VOC (less exempt solvents): 99 g/L; 0.82 lb/gal Volume Solids: 43 ± 2% Weight Solids: 63 ± 2% Weight per Gallon: 12.7 lb OTC Compliant</p> <p>Drywall 1 ct. Builders Solution Primer/Surfer 1 or 2 cts. Builders Solution Latex Flat or Eg-Shel</p> <p>Plaster 1 ct. Builders Solution Primer/Surfer 1 or 2 cts. Builders Solution Latex Flat or Eg-Shel</p>	<p>WARNING! Removal of old paint by sanding, scraping or other means may generate dust or fumes that contain lead. Exposure to lead dust or fumes may cause brain damage or other adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For more information, call the National Lead Information Center at 1-800-424-LEAD (in US) or contact your local health authority.</p> <p>Remove all surface contamination by washing with ProClean Professional® Prep Wash Concentrated Cleaner or other appropriate cleaner, rinse thoroughly and allow to dry. Existing peeled or checked paint should be scraped and sanded to a sound surface. Glossy surfaces should be sanded dull. Stains from water, smoke, ink, pencil, grease, etc. should be sealed with PrepRite ProBlock Primer Sealer.</p> <p>Use on new, bare drywall construction Joint compound must be thoroughly dry and sanded smooth. Repair any significant surface damage, cracks, holes, etc. Remove all sanding dust and construction dust by sweeping or vacuuming. Seal stains from water, ink, pencil, grease, etc. with PrepRite ProBlock Primer Sealer.</p> <p>Plaster Bare plaster must be cured and hard. Textured, soft, porous, or powdery plaster should be treated with a solution of 1 pint household vinegar to 1 gallon of water. Repeat until the surface is hard, rinse with clear water and allow to dry.</p>

107.21

BUILDERS SOLUTION™ SYSTEM

INTERIOR LATEX PRIMER/SURFACER

A63W100



SURFACE PREPARATION	APPLICATION	CAUTIONS
<p>Special Recommendations When topcoating with enamels, 2 topcoats are required for full sheen development, reducing the potential for areas of uneven sheen when touching up.</p> <p>Mildew Remove before painting by washing with ProCleanProfessional® Mildew Eliminator or a solution of 1 part liquid bleach and 3 parts water. Apply the solution and scrub the mildewed area. Allow the solution to remain on the surface for 10 minutes. Rinse thoroughly with water and allow the surface to dry before painting. Wear protective eyewear, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with your skin. Do not add detergents or ammonia to the bleach/water solution.</p> <p>Caulking Gaps between walls, ceilings, crown moldings, and other interior trim can be filled with the appropriate Pro Select® caulk after priming the surface.</p>	<p>The Builders Solution System is designed to deliver the best performance when applied by airless spray.</p> <p>Apply at temperatures above 50°F. No reduction necessary.</p> <p>Spray—Titan Airless Unit..... PT 8900 GHD Gun LX-80 (no filter) Pressure..... 2100 psi Tip021"</p> <p>Brush - Use a nylon/polyester brush. Roller - Use a 1/2" - 1-1/2" nap synthetic cover.</p> <p>CLEANUP INFORMATION</p> <p>Clean spills, spatters, hands and tools immediately after use with soap and warm water. After cleaning, flush spray equipment with mineral spirits to prevent rusting of the equipment. Follow manufacturer's safety recommendations when using mineral spirits.</p>	<p>For interior use only. Protect from freezing.</p> <p>LABEL CAUTIONS CAUTION contains ALIPHATIC HYDROCARBONS. Contents are COMBUSTIBLE. Keep away from heat and open flame. VAPOR HARMFUL. Use only with adequate ventilation. To avoid overexposure, open windows and doors or use other means to ensure fresh air entry during application and drying. If you experience eye watering, headaches, or dizziness, increase fresh air, or wear respiratory protection (NIOSH approved) or leave the area. Avoid contact with eyes and skin. Wash hands after using. Keep container closed when not in use. Do not transfer contents to other containers for storage. FIRST AID: In case of eye contact, flush thoroughly with large amounts of water for 15 minutes and get medical attention. For skin contact, wash thoroughly with soap and water. In case of respiratory difficulty, provide fresh air and call physician. If swallowed, call Poison Control Center, hospital emergency room, or physician immediately. DELAYED EFFECTS FROM LONG TERM OVER-EXPOSURE. Contains solvents which can cause permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal. WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. DO NOT TAKE INTERNALLY. KEEP OUT OF THE REACH OF CHILDREN. HOTW 12/15/2004 A63W00100 05 00</p> <p>The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Sheet.</p>



**SHERWIN
WILLIAMS.**

*the ultimate
performance
coating*



DURATION HOME™ INTERIOR LATEX SATIN A97-100 SERIES

101.68

CHARACTERISTICS	SPECIFICATIONS	SURFACE PREPARATION																					
<p>Duration Home™ Interior Latex Satin provides:</p> <ul style="list-style-type: none"> • Long lasting beauty • Washability • Resistant to: <ul style="list-style-type: none"> - stains, scuffs, & burnishing • Very low VOC • Very low odor • Very easy application • Anti-Microbial* <p>Color: Most colors To optimize hide and color development, always use the recommended P-Shade primer</p> <p>Coverage: 350 - 400 sq ft/gal @ 4 mils wet; 1.5 mils dry</p> <p>Drying Time, @ 77°F, 50% RH: temperature and humidity dependent Touch: 1 hour Recoat: 4 hours</p> <p>Flash Point: N/A</p> <p>Finish: 15 - 20 units @ 85°</p> <p>Tinting with Blend-A-Color:</p> <table> <tr> <th>Base</th><th>oz/gal</th><th>Strength</th></tr> <tr> <td>Extra White</td><td>0-5</td><td>Special</td></tr> <tr> <td>Luminous White</td><td>0-5</td><td>125%</td></tr> <tr> <td>Deep Base</td><td>4-12</td><td>100%</td></tr> <tr> <td>Ultra Deep</td><td>4-12</td><td>100%</td></tr> <tr> <td>Real Red</td><td>4-12</td><td>100%</td></tr> <tr> <td>Bright Yellow</td><td>4-12</td><td>100%</td></tr> </table> <p>Vehicle Type: Styrene Acrylic</p> <p>A97W151</p> <p>VOC (less exempt solvents): 37 g/L; 0.31 lb/gal</p> <p>Volume Solids: 38 ± 2%</p> <p>Weight Solids: 49 ± 2%</p> <p>Weight per Gallon: 10.5 lb</p> <p>* Anti-microbial - This product contains agents which inhibit the growth of microbes on the surface of this paint film.</p>	Base	oz/gal	Strength	Extra White	0-5	Special	Luminous White	0-5	125%	Deep Base	4-12	100%	Ultra Deep	4-12	100%	Real Red	4-12	100%	Bright Yellow	4-12	100%	<p>Duration Home Interior Latex meets or exceeds the criteria set forth by the U. S. Green Building Council LEED-CI, Version 2.0 and LEED-NC Version 2.2. All results have been verified by our ISO 9001 Laboratory.</p> <p>Block 1 ct. Loxon Block Surfacer 2 cts. Duration Home Interior Latex Satin</p> <p>Drywall 1 ct. PrepRite Classic Latex Primer 2 cts. Duration Home Interior Latex Satin</p> <p>Plaster 1 ct. PrepRite Classic Latex Primer 2 cts. Duration Home Interior Latex Satin</p> <p>Masonry 1 ct. PrepRite Masonry Primer 2 cts. Duration Home Interior Latex Satin</p> <p>Wood, Composition Board 1 ct. PrepRite Classic Latex Primer 2 cts. Duration Home Interior Latex Satin</p> <p>For better hiding of vivid, brilliant, and deep accent colors, use the recommended Color-Prime System™ P-shade.</p>	<p>WARNING! Removal of old paint by sanding, scraping or other means may generate dust or fumes that contain lead. Exposure to lead dust or fumes may cause brain damage or other adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For more information, call the National Lead Information Center at 1-800-424-LEAD (in US) or contact your local health authority.</p> <p>Remove all surface contamination by washing with an appropriate cleaner, rinse thoroughly and allow to dry. Existing peeled or checked paint should be scraped and sanded to a sound surface. Glossy surfaces should be sanded dull. Stains from water, smoke, ink, pencil, grease, etc. should be sealed with PrepRite® ProBlock® Primer Sealer.</p> <p>Drywall Fill cracks and holes with patching paste/spackle and sand smooth. Joint compounds must be cured and sanded smooth. Remove all sanding dust.</p> <p>Masonry, Concrete, Cement, Block All new surfaces must be cured according to the supplier's recommendations—usually about 30 days. Remove all form release and curing agents. Rough surfaces can be filled to provide a smooth surface. If painting cannot wait 30 days, allow the surface to cure 7 days and prime the surface with PrepRite Masonry Primer.</p>
Base	oz/gal	Strength																					
Extra White	0-5	Special																					
Luminous White	0-5	125%																					
Deep Base	4-12	100%																					
Ultra Deep	4-12	100%																					
Real Red	4-12	100%																					
Bright Yellow	4-12	100%																					

101.68

DURATION HOME™ INTERIOR LATEX SATIN A97-100 SERIES



**SHERWIN
WILLIAMS.**

SURFACE PREPARATION	APPLICATION	CAUTIONS
<p>Plaster Bare plaster must be cured and hard. Textured, soft, porous, or powdery plaster should be treated with a solution of 1 pint household vinegar to 1 gallon of water. Repeat until the surface is hard, rinse with clear water and allow to dry.</p> <p>Wood Sand any exposed wood to a fresh surface. Patch all holes and imperfections with a wood filler or putty and sand smooth.</p> <p>Mildew Remove before painting by washing with a solution of 1 part liquid bleach and 3 parts water. Apply the solution and scrub the mildewed area. Allow the solution to remain on the surface for 10 minutes. Rinse thoroughly with water and allow the surface to dry before painting. Wear protective eyewear, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with your skin. Do not add detergents or ammonia to the bleach/water solution.</p> <p>Caulking Gaps between walls, ceilings, crown moldings, and other interior trim can be filled with the appropriate caulk after priming the surface.</p>	<p>Apply at temperatures above 50°F. No reduction needed.</p> <p>Brush Use a nylon/polyester brush.</p> <p>Roller For the best final appearance when rolling: For the Luminous, Extra, and Deep bases, use a 3/8" - 1/2" nap Soft Woven roller cover. For the Ultra Deep, Real Red, and Bright Yellow bases, use a 3/8" - 1/2" nap SherFab roller cover.</p> <p>Spray—Airless Pressure 2000 psi Tip015"-.019" For touching-up, reduce the product by one pint per gallon.</p> <p>CLEANUP INFORMATION Clean spills and spatters immediately with soap and warm water. Clean hands and tools immediately after use with soap and warm water. Flush spray equipment after cleaning with mineral spirits to prevent rusting of the equipment. Follow manufacturer's safety recommendations when using mineral spirits.</p>	<p>For interior use only. Protect from freezing. Non-photochemically reactive.</p> <p>CAUTION contains CRYSTALLINE SILICA. Use only with adequate ventilation. To avoid overexposure, open windows and doors or use other means to ensure fresh air entry during application and drying. If you experience eye watering, headaches, or dizziness, increase fresh air, or wear respiratory protection (NIOSH approved) or leave the area. Adequate ventilation required when sanding or abrading the dried film. If adequate ventilation cannot be provided wear an approved particulate respirator (NIOSH approved). Follow respirator manufacturer's directions for respirator use. Avoid contact with eyes and skin. Wash hands after using. Keep container closed when not in use. Do not transfer contents to other containers for storage. FIRST AID: In case of eye contact, flush thoroughly with large amounts of water. Get medical attention if irritation persists. If swallowed, call Poison Control Center, hospital emergency room, or physician immediately. DELAYED EFFECTS FROM LONG TERM OVEREXPOSURE. Abrading or sanding of the dry film may release crystalline silica which has been shown to cause lung damage and cancer under long term exposure. WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. DO NOT TAKE INTERNALLY. KEEP OUT OF THE REACH OF CHILDREN. HOTW 10/30/2006 A97W00151 05 00</p> <p>The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Sheet.</p>

105.20



EXTERIOR ALKYD SEMI-TRANSPARENT WOOD PRESERVATIVE STAIN A14T5

CHARACTERISTICS	SPECIFICATIONS	SURFACE PREPARATION
<p>Exterior Alkyd Semi-Transparent Wood Preservative Stain provides a long lasting, mildew resistant film with excellent penetration for protecting most exterior, above ground, wood surfaces.</p> <p>Color: All semi-transparent colors</p> <p>Coverage: Rough/porous: 100-200 sq ft/gal Smooth: 350 sq ft/gal</p> <p>Drying Time, @ 77°F, 50% RH: temperature and humidity dependent Touch: 3 hours Recoat: 24 hours</p> <p>Flash Point: 103°F, PMCC</p> <p>Finish: 0-5 units @ 85°</p> <p>Tinting with Blend-A-Color: Base oz/gal Strength Clear Base 2-4 100% Vehicle Type: Alkyd</p> <p>A14T5 VOC (less exempt solvents): 672 g/L, 5.61 lb/gal</p> <p>Volume Solids: 12 ± 2% Weight Solids: 18 ± 2% Weight per Gallon: 6.8 lb Not OTC Compliant</p> <p>Provides performance which is comparable to the products that are formulated in accordance with federal specification: TT-S-708A</p>	<p>Wood, Plywood 1 ct. Exterior Alkyd Semi-Transparent Wood Preservative Stain optional 2 cts. Exterior Alkyd Semi-Transparent Wood Preservative Stain</p> <p>APPLICATION Apply at temperatures above 50°F. No reduction necessary.</p> <p>Brush Use a natural bristle brush.</p> <p>Roller Use a 3/8" - 3/4" nap synthetic or lamb-swool roller cover.</p> <p>Spray—Airless Pressure 2000 psi Tip015"-.017"</p> <p>Important: All stains tend to lap (dark lines where two freshly coated areas overlap). To minimize lapping: • Do not stain in direct sun or on a hot surface. • Always stain into a wet edge. • Stain up and down vertical siding and across horizontal siding. • Use two coats on badly weathered or unfinished wood. • Apply a second coat when lap marks appear on the first coat.</p>	<p>WARNING! Removal of old paint by sanding, scraping or other means may generate dust or fumes that contain lead. Exposure to lead dust or fumes may cause brain damage or other adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For more information, call the National Lead Information Center at 1-800-424-LEAD (in US) or contact your local health authority.</p> <p>Remove all existing paint and replace any deteriorated substrate. Although this can be applied over earlier semi-transparent stains, some of the old color may be visible through this semi-transparent film.</p> <p>Remove all surface contamination by washing with ProClean Professional® Prep Wash Concentrated Cleaner or other appropriate cleaner to remove all dirt, air pollution, chalk, etc., especially in areas not exposed to direct weathering such as under eaves and porch ceilings. Rinse and allow the surface to dry. If after cleaning, the surface still appears dirty, suspect mildew.</p> <p>Remove before painting by washing with ProClean Professional Mildew Eliminator or a solution of 1 pint liquid bleach and 1 gallon water. Apply the solution and scrub the mildewed area. Allow the solution to remain on the surface for 10 minutes. Rinse thoroughly with water and allow the surface to dry before painting. Wear protective eyewear, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with your skin. Do not add detergents or ammonia to the bleach/water solution.</p>

105.20



EXTERIOR ALKYD SEMI-TRANSPARENT WOOD PRESERVATIVE STAIN A14T5

SURFACE PREPARATION	CLEANUP INFORMATION	CAUTIONS
<p>Apply appropriate Sherwin-Williams patching material to cracks, nail holes, or other surface imperfections. Filled areas will take the stain differently than bare wood.</p> <p>Caulk around windows, doors, and other openings with Sherwin-Williams exterior caulk after spot priming any bare surfaces in these areas. Do not get caulk or primer on areas to receive stain, the stain will appear different over primer and caulk</p> <p>Smooth or Rough Wood Siding and Plywood. Sand any exposed, deteriorated wood to a fresh surface.</p> <p>Mill Glaze is a glossy finish on new, smooth sawn wood or on the peaks of some textured wood. This must be removed by sanding to allow the stain to penetrate.</p> <p>Pressure Treated Wood Test the absorbency of the wood by sprinkling water on the surface. If the water penetrates into the wood quickly, the wood is ready to finish. If the water beads up or does not penetrate, allow the wood to weather 1 to 2 weeks and test for absorbency again. Prepare the surface like any other wood surface. Due to the green tone of many brands of pressure treated lumber, the color of the stain may look different from the color selected. Check the color on a test area prior to staining the entire project.</p>	<p>Clean spills and spatters immediately with mineral spirits. Clean tools immediately after use with mineral spirits. Follow manufacturer's safety recommendations when using mineral spirits.</p>	<p>IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABEL.</p> <p>For exterior use only. Do not use on composition board. Do not use on roofs. Must be tinted before using. Use DeckScapes Waterborne Semi-Transparent Deck Stain for exterior wood deck floors.</p> <p>LABEL CAUTIONS CAUTION contains ALIPHATIC HYDROCARBONS. Contents are COMBUSTIBLE. Keep away from heat and open flame. VAPOR HARMFUL. Use only with adequate ventilation. To avoid overexposure, open windows and doors or use other means to ensure fresh air entry during application and drying. If you experience eye watering, headaches, or dizziness, increase fresh air, or wear respiratory protection (NIOSH approved) or leave the area. Avoid contact with eyes and skin. Wash hands after using. Keep container closed when not in use. Do not transfer contents to other containers for storage. FIRST AID: In case of eye contact, flush thoroughly with large amounts of water for 15 minutes and get medical attention. For skin contact, wash thoroughly with soap and water. In case of respiratory difficulty, provide fresh air and call physician. If swallowed do not induce vomiting. Call Poison Control Center, hospital emergency room, or physician immediately. DELAYED EFFECTS FROM LONG TERM OVEREXPOSURE. Contains solvents which can cause permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal. WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. DO NOT TAKE INTERNALLY. KEEP OUT OF THE REACH OF CHILDREN. HOTW 12/6/2004 A14T00005 18 00</p> <p>The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Sheet.</p>

Division 11 00 00 – EQUIPMENT

Residential Appliances



**Built-In Model 611
Over-and-Under**

Model 611 is our smallest combination refrigerator/freezer. The 30" width enables this model to be installed in the smallest galley kitchen. The Sub-Zero dual refrigeration system assures superior food preservation and no odor transfer. Model 611 is available in the framed, overlay and stainless steel design applications and in three stainless steel finishes.



Framed Overlay Classic Stainless Steel

- Features**
- Framed, overlay and stainless steel design applications
 - Stainless steel design available in classic, platinum and carbon finishes
 - Energy Star qualified
 - Dual refrigeration system
 - Electronic digital controls
 - Bright interior lighting
 - Adjustable, spill-proof glass shelves and adjustable door shelves
 - High-humidity crisper drawer with removable divider
 - Door alarm
 - Automatic ice maker
 - Front venting allows unit to be completely built in and serviced from the front

With the installation of a harness kit, this appliance is certified by Star-K to meet strict religious regulations in conjunction with specific instructions found on www.star-k.org.



Model Options	611/F	611/O	611/S	611/P	611/B
Design/Finish	Framed	Overlay	Classic	Platinum	Carbon
Louvered Grille	■				
Panel Grille – Accepts Decorative Inserts		■			
Heavy-Duty Stainless Steel Grille			■	■	■

Interior Features

■ **Refrigerator**

- 3 Adjustable Glass Shelves
- 1 Stationary Glass Shelf
- High Humidity Compartment with Divider
- Adjustable Roll-Out Deli Basket
- 2 Adjustable Door Shelves
- Adjustable Dairy Compartment
- Egg Container

■ **Freezer**

- Full-Extension Roll-Out Freezer Drawer
- Two-Tier Wire Storage Baskets
- Automatic Ice Maker



Accessories

- Louvered, panel and stainless steel (classic, platinum and carbon) grilles in 1" height increments from 10" to 15"
- 11" Heavy-duty classic stainless steel grille (standard on classic stainless steel units)
- Front and grille panels for framed design (white and classic stainless steel)
- Side panels in white and classic stainless steel
- Extended full-length framed handles
- Stainless steel (classic, platinum and carbon) tubular handles for overlay design
- Polished chrome handles for overlay design
- Gallon door shelf
- Dozen egg container with lid

Accessories are available through your Sub-Zero dealer. To obtain local dealer information, visit the Locator section of our website, subzero.com.



**Built-In Model 611
Over-and-Under**

Specifications

Overall Width	30"
Overall Height (with standard 11" grille)	84"
Overall Depth	24"
Door Swing Clearance	30 1/8"
Refrigerator Capacity	12.7 cu ft
Freezer Capacity	3.9 cu ft
Opening Width	29 1/2"
Opening Height	83 3/4"
Minimum Height Required	83"
Opening Depth	24"
Electrical Requirements	115 V AC, 60 Hz 15 amp dedicated circuit
Plumbing Requirements	1/4" OD copper line 20–100 psi
Annual Energy Usage	\$42**
Shipping Weight	Framed – 430 lbs Overlay – 430 lbs Stainless Steel – 462 lbs

*Height with standard 11" grille.

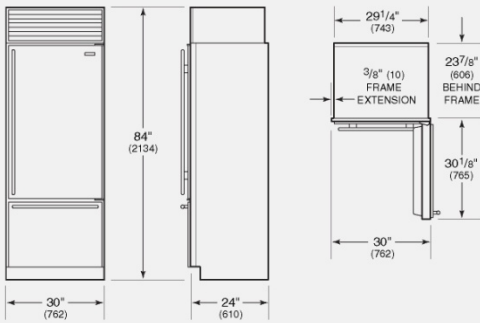
**Based on 9.06 cents per kilowatt hour.

Installation Notes

For framed and overlay models, you will be adding door panels for a custom look. Overlay models also allow you to match surrounding cabinetry hardware and the panel grille accepts custom panel inserts.

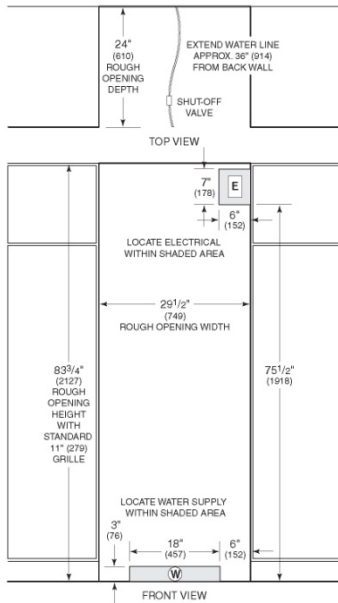
Complete installation specifications, including panel sizes, can be found on our website, subzero.com.

Overall Dimensions



Unit dimensions may vary by ± 1/8".

Installation Specifications



Dimensions in parentheses are in millimeters unless otherwise specified.

GE Profile Advantium® Wall Oven SCB-2001kss



Speedcook Technology

° Delivers oven-quality food up to eight times faster than a conventional oven

Multiple Cooking Modes

° Bakes, broils, browns, roasts, microwaves and grills fast, with no preheating

Over 100 Pre-Programmed Menu Items, Manual Cook, Help and Demo Modes

Sensor Cooking Controls

° Automatically adjust the time and power for exceptional cooking results

Auto and Time Defrost

° Automatically defrosts for a specified amount of time

Halogen Interior Light

° Helps you monitor food as it cooks

Two-Line Bilingual Scrolling Display

° Helpful cooking tips and oven-use instructions in easy-to-read English or Spanish

Stainless Steel Interior

° Durable surface that cleans quickly with a simple wipe of the towel

CAPACITY

Total Capacity (cubic feet)	1.20 cu ft
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FEATURES

Cooking Modes	Speedcook; Microwave
Cooking Technology	Advantium
Style	Built-In
Program Cooking	Over 100 Programmed Menu Items
Sensor	Yes
Advantium® Oven Controls - Clock	Yes
Advantium® Oven Controls - Demo Mode	Yes
Advantium® Oven Controls - Electronic Scrolling Digital Display	Yes
Advantium® Oven Controls - Help Pad	Yes
Advantium® Oven Controls - Repeat Last	Yes
Advantium® Oven Controls - Time Preference	Yes
Advantium® Oven Controls - Variable Scroll Speed	Yes
Ceramic Pan	Yes
Child Lock	Yes
Cooking Complete Reminder	Yes
Grill Pan	Yes
Reminder (24 hr)	Yes
Sound Volume Control	Yes
Interior Oven Light	Yes
Defrost Type	Auto & Time
Delay Start	Yes
Display On/Off	Yes
Time Cook	Yes

WEIGHTS & DIMENSIONS

Approximate Shipping Weight	115.00 lb
Cabinet Width	30 in
Cavity (W x H x D)	18-29/32 x 8-13/32 x 13-21/32
Overall Depth	15 27/32 in
Overall Height	21 7/8 in
Overall Width	29 25/32 in
Height (Front) (ins.)	21-7/8
Net Weight (lbs.)	98.00 lb

POWER / RATINGS

Electrical Input - 240V Amperage	30
Electrical Input - 240V Watts	6500
Input Volts/Hertz	240/208V/60Hz
Microwave Wattage	950

DDP-3 (Available Spring 2006)
24" Induction Cooktop with 3 cooking zones.

Total Cooktop Power: 7.6 kW

Maximum power per zone:

Left Rear (5 1/2"):	1.2 kW
Left Front (9"):	3.0 kW
Right (9 1/2"):	4.0 kW

One integrated touch control with 9 power levels and 3 presets (medium, high & maximum) and built-in safety features

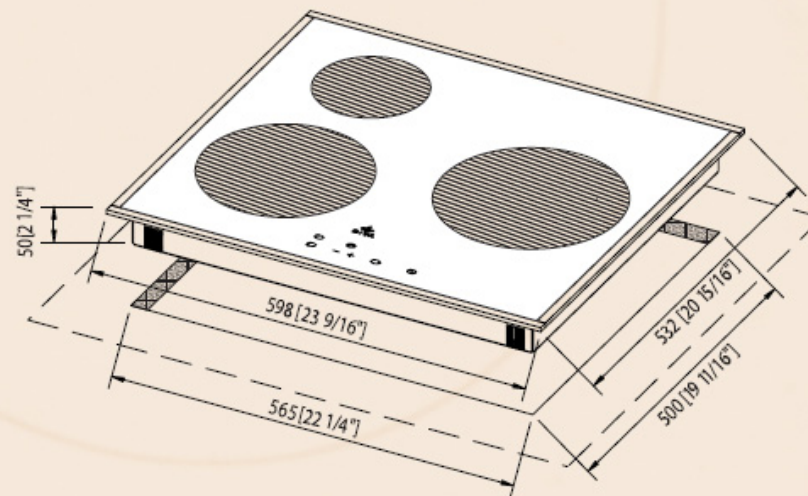
Installation:

Power:	Electric/7.6 kW
Voltage/Amps:	220V/40A
Phase:	2 Pole

Dimensions:

Overall:	23 9/16" x 20 15/16" x 2 1/4"
Cut-out:	22 1/4" x 19 11/16" x 4"
Weight:	31 Lbs/ 34 Lbs (net/gross)

To ensure maximum power from each coil, the DDP-3 induction cooktop measures the amount of voltage available and compensates for lower voltage by increasing the amperage used (from 208V to 240V).



ROVENCE



Model DD30 30" Downdraft Ventilation System

The cooktop downdraft unit rises from the countertop to whisk away odors and smoke into the easy-to-clean, five-layer mesh filter. For ease in matching your cooktop, the remote-mounted control module and top cover are available in classic, platinum or carbon stainless steel finish. (I) models include an internal blower. In-line and remote blower options are available for (R) models.



Model DD30 shown in classic stainless steel trim finish. Also shown is Model IM15/S multi-function cooktop and Model CT15G/S gas cooktop.

Specifications

Overall Width	30"
Overall Height (above countertop)	9 ¹ / ₁₆ "
Overall Depth	2 ³ / ₈ "
Duct Size	(I) Models 3 ¹ / ₄ " x 10" (R) Models 3 ¹ / ₄ " x 14"
Discharge	Adjustable
Electrical Requirements	110/120 V AC 60 Hz, 15 amp dedicated circuit
Power Cord	2 ¹ / ₂ ' cord with grounded plug

Product Notes

The downdraft control kit includes control module, top cover, mounting brackets, DIN connector and necessary hardware. The control kit is sold as a sales accessory in your choice of classic, platinum or carbon stainless steel finish.

IMPORTANT NOTE: Wolf downdraft ventilation systems are recommended for use with Wolf electric and gas cooktops and integrated modules, excluding the unframed electric cooktops and electric grill, steamer and fryer modules. Model DD30 cannot be used with Wolf dual fuel ranges, gas ranges, sealed burner rangetops (except Model SRT304) or gas rangetops.



Control Module

Model Options

	DD30I	DD30R
Includes 500 CFM Internal Blower	■	
Requires In-Line or Remote Blower		■
Control Module and Top Cover Finish		
Classic Stainless Steel	■	■
Platinum Stainless Steel	■	■
Carbon Stainless Steel	■	■
Shipping Weight (lbs)	75	75

Features

- Remote mounted control module with LED indicators
- Three-speed blower control
- Filter clean timer
- Delay-off feature automatically turns unit off, chimney remains up
- Stainless steel filter cover with dishwasher safe aluminum mesh filter

Blower Options – (R) Models

- 1100 CFM In-Line Blower
- 900, 1200 or 1500 CFM Remote Blower

(I) models include a 500 CFM internal blower. (R) models require an in-line or remote blower. For additional information on blowers, visit our website, wolfappliance.com.

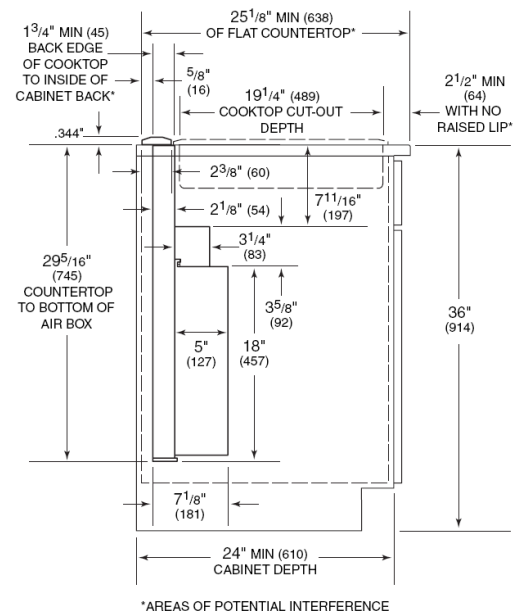


Model DD30

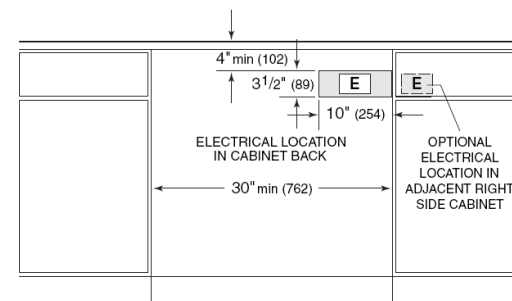
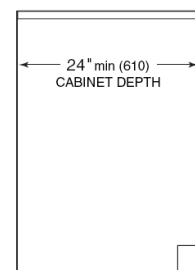
Accessories

- Control module and top cover available in classic, platinum and carbon finishes—control kit also includes mounting brackets, DIN connector and hardware
- Bracket supports for installation of two integrated modules
- Trim kit for installation with Model SRT304 sealed burner rangetop
- Transitions in various sizes

Accessories are available through your Wolf dealer. To obtain local dealer information, visit the Locator section of our website, wolfappliance.com.



LOCATION OF ELECTRICAL



DIMENSIONS

Downdraft Cut-Out Width	27" (686)
Recommended Cabinet Width	33" (838)
Downdraft Cut-Out Depth	2 ³ / ₄ " (70)
Location of Electrical	Within shaded area



Handle configuration



Shown with optional custom door panel.

D3531XLFI ASKO Dishwasher

The Touchproof™ stainless steel dishwasher that started the sleek, clean look.

The D3531XLFI (Tall Tank, Fully Integrated) is a hidden-control unit with push buttons and an LCD panel that shows the ten program names, time remaining, temperatures, and options. It also remembers the last program used. The FI model can be installed with an optional one-piece white, black or Touchproof™ stainless steel door with a curved handle. The FI model can also be installed with a customer supplied, one-piece custom door. A convenient End-of-Program signal with adjustable volume control emits a tone when the wash cycle is complete.

Feature Highlights

- Quiet System Premium insulation package
- Ten programs: Auto wash, Mixed, Heavy, Normal, Delicate, Quick, Rinse & Hold, Rinse & Dry, Upper Rack Only and Lower Rack Only
- New LCD control panel allows you to select the wash program and options and choose a specific wash temperature
- Auto Wash program uses SensiClean™ & SensiDry™ to automatically control washing and drying
- Half Load lets you wash in either the upper or lower basket
- Express option shortens the program time
- Safe & Handy™ upper cutlery basket
- Three Turbo Fan™ drying options: short, normal and extra dry
- Nine wash temperatures, up to 170° F
- Hidden controls
- Available with an optional one-piece white, black or Touchproof™ stainless steel door with a curved handle
- Can also be installed with a customer supplied, one-piece custom door

Dimensions of Tall (XL) Tank Model

Height:	34" - 37"***
Width:	23-5/8"
Depth:	22-7/8"
Depth with Door Open:	48-1/4"

* Does not include the depth of a custom door or optional door. If an ASKO optional door is used, add 2-1/2" depth.

** Does not include the height of a custom or optional door.

Control Panel



Standard ASKO Dishwasher Features

- 18:9 stainless steel tank, spray arms and filtration system won't rust, chip or absorb odors.
- One-piece, galvanized steel base pan provides superior structural integrity and reduces vibrations. Not available on any competitively made U.S. unit.
- Two pumps/two motors (versus one each on most dishwashers) save water and electricity, and last longer.
- Door springs are designed to last 20 years.
- No space-stealing central water tower or connectors.
- 12+ International place setting capacity.
- Controls are double-sealed from moisture.
- Racks are coated with Viscant™ graphite nylon. Tines are double-coated and cushioned on top.



WASHER/DRYER COMBO

WM3431HW WM3431HS

All-In-One Washer and Dryer

Performance

- NeveRust™ Stainless Steel Drum
- 2.44 Cu.Ft. Capacity (IEC)
- Direct Drive Motor is Highly Reliable, Durable and Quiet
- 1400 RPM Maximum Spin Speed
- Ventless Condensing Drying System
- 115V Power Source

Intelligent Fabric Care

- SenseClean™ System Automatically Adjusts Water and Wash Time for Optimal Care
- Sensor Dry System Measures Moisture in the Drum and Automatically Adjusts Drying Time and Temperature for Optimal Care
- Flexibility of Wash to Dry, Wash Only or Dry Only
- 9 Wash Programs
- 5 Rinse Temperatures
- Sanitary Cycle
- Delay Wash up to 19 hours

Style and Design

- 24" Installation Under Counter
- Premium Finishes in Titanium and White
- Upfront Electronic Controls with Dial-A-Cycle™
- Chrome Trimmed Door with Clear Glass

Environmentally Friendly

- Energy Star Rated
- LoDecibel™ Quiet Operation



LG front load washers exceed Energy Star® classifications by a minimum of 39%.

WASHER/DRYER COMBO

	WM3431HW WM3431HS
TYPE	
Front Loader	•
Design Look	Front Panel
Intelligent Electronic Controls with Dial-A-Cycle™	•
Drying System	Ventless Condensing
CAPACITY	
Total Capacity	2.44 cu.ft. (IEC)
Maximum Dry Capacity	8.8 lbs.
ENERGY	
Energy Star	•
PROGRAMS	
9 Wash Programs	Sanitary, Cotton/Towels, Normal, Permanent Press, Delicates, Wool/Silk, Hand Wash, Speed Wash, Drain & Spin
5 Wash/Rinse Temperature Levels	Extra Hot/Cold, Hot/Cold, Warm/Warm, Warm/Cold, Cold/Cold
Spin Speeds	1400 RPM, Extra High, High, Medium, Low, No Spin
5 Dry Times	150 min, 120 min, 90 min, 60 min, 30 min
Temperature Options	Normal, Low Temperature
No. of Water Levels	Automatically adjusts to size of load
No. of Soil Levels	5
Options	Extra Rinse, Rinse & Spin, Soak, Extra Wash, Spin Only, Dry Only, Delay Wash up to 19 Hours
FABRIC CARE FEATURES	
SenseClean™	•
Sensor Dry	•
CONVENIENCE FEATURES	
3 Tray Dispenser (Main Wash, Bleach, Softener)	•
End of Cycle Beeper	•
Child Lock	•
Self Diagnosis	•
Auto-Balancing	•
Auto Suds Removal	•
Forced Drain System	•
Remaining Time Display/Status Indicator	•
Water Heater	•
Leveling Legs	4 Adjustable
LoDecibel™ Quiet Operation	•
MOTOR AND AGITATOR	
Motor Type / Motor Speed	Direct Drive / Variable
Agitator Type	Horizontal Axis
MATERIALS AND FINISHES	
NeveRust™ Stainless Steel Drum	•
Transparent Glass Window Door	•
Door Rim	Chrome
Cabinet	Painted Steel
Cabinet Top	Premium Plastic
Control Panel	Plastic
Colors	White, Titanium
POWER SOURCE	
Ratings/Requirements	UL Listed/120V, 60Hz, 10 Amps
Type	Electric
DIMENSIONS	
Product (WxHxD)	23 5/8" x 33 1/4" x 23 13/16" (25"D including door)
Weight (lbs): Net / Gross	147 / 163 57

Division 22 00 00 – PLUMBING

Domestic Water Pumping

Water Circulation
Pumps & Circulators

Submittal Data Information
Model 007 Cartridge Circulators

Submittal Data # 101-029
Supersedes: 101-029 Dated: 06/15/02
Effective: 09/11/03

Model 007 Cartridge Circulator

The Taco 007 Cartridge Circulator is the most popular hydronic circulator sold today. With its field serviceable cartridge design, the compact 007 provides quiet, efficient operation and unmatched reliability. The self-lubricating, maintenance free design and flow characteristics make it the ideal hydronic circulator for a wide range of applications.



Features

- Standard High Capacity Output-Compact Design
- Quiet, Efficient Operation
- Direct Drive-Low Power Consumption
- Unique Replaceable Cartridge Design-Field Serviceable
- Self Lubricating
- No Mechanical Seal
- Unmatched Reliability-Maintenance Free
- Universal Flange to Flange Dimensions
- Cast Iron or Bronze Construction

Materials of Construction

Casing (Volute):	Cast Iron or Bronze
Stator Housing:	Steel
Cartridge:	Stainless Steel
Impeller:	Non-Metallic
Shaft:	Ceramic
Bearings:	Carbon
O-Ring & Gaskets:	EPDM

Model Nomenclature

F - Cast Iron, Flanged
BF - Bronze, Flanged
Variations:
Z - Zoning Circulator
J - Bronze Cartridge with Cast Iron Casing

Performance Data

Flow Range: 0 – 20 GPM
Head Range: 0 – 11 Feet
Minimum Fluid Temperature: 40°F (4°C)
Maximum Fluid Temperature:
Cast Iron: 240°F (115°C)
Bronze: 230°F (110°C)
Maximum Working Pressure: 125 psi
Connection Sizes: 3/4", 1", 1-1/4", 1-1/2" Flanged

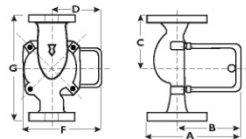


Application

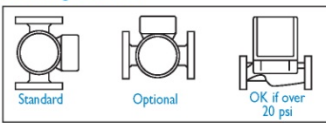
The Taco 007 is a cartridge style, maintenance free, wet-rotor, in-line, single stage circulator pump. It is designed for quiet operation in Hydronic heating, Radiant heating, Hydro-Air fan coils, Indirect water heaters, Chilled fresh water, and Domestic Water Recirculation systems. Available in Cast Iron or Bronze construction with universal flanged connections. The unique replaceable cartridge contains all of the moving parts and allows the circulator to be easily serviced instead of replacing the entire unit. Ideal for a wide range of applications.

Pump Dimensions & Weights

Model	Casing	A	B	C	D	F	G	Ship Wt.
		in.	mm	in.	mm	in.	mm	lbs. Kg
007-F5	Cast Iron	6-1/8	156	4-1/2	114	3-3/16	81	2-15/16 75
007-BF5	Bronze	6-1/8	156	4-1/2	114	3-3/16	81	2-15/16 75



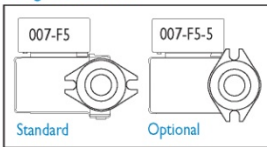
Mounting Positions



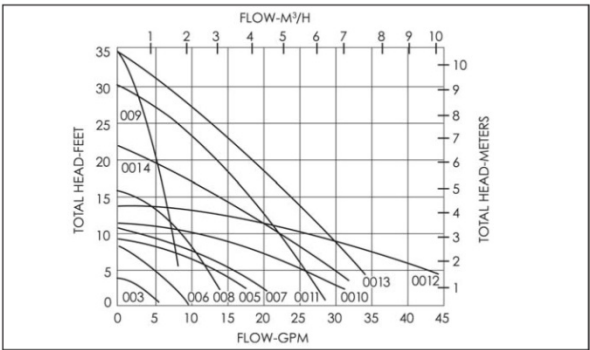
Electrical Data

Model	Volts	Hz	Ph	Amps	RPM	HP
007-F5	115	60	1	.70	3250	1/25
007-BF5	115	60	1	.76	3250	1/25
Motor Type	Permanent Split Capacitor Impedance Protected					
Motor Options	220/50/1, 220/60/1, 230/60/1, 100/110/50/60/1					

Flange Orientation



Performance Field - 60Hz



HYDRONIC COMPONENTS & SYSTEMS



Effective Date: 09/11/03

HYDRONIC COMPONENTS & SYSTEMS



Taco Inc., 1160 Cranston Street, Cranston, RI 02920 / (401) 942-8000 / Fax (401) 942-2360
Taco (Canada) Ltd., 6180 Ordan Drive, Mississauga, Ontario L5T 2B3 / (905) 564-9422 / Fax (905) 564-9436
www.taco-hvac.com

Water Circulation Pumps & Circulators

Model 0011 Cartridge Circulator

The High Velocity series Taco 0011 Cartridge circulator is designed for high head / medium flow applications in residential / light commercial hydronic heating, radiant heating, and chilled water cooling systems. The unique ACB anti-condensate baffle with ambient air flow prevents the build up of condensate on the motor windings when pumping chilled water. Its unique field-serviceable cartridge contains all moving parts. Replacing the cartridge rebuilds the circulator. With no mechanical seal, the self-lubricating, maintenance free design provides unmatched reliability. Compact and lightweight, with excellent performance characteristics, the 0011 is ideal for installations where space is a premium. Available in Cast Iron, Bronze or Stainless Steel construction.



Effective Date: 06/14/07
Printed in USA

Submittal Data Information Model 0011 Cartridge Circulator

Features

- Exclusive ACB Anti-condensate baffle with ambient air flow-Protects motor windings against condensate buildup
- High velocity performance-compact design
- Quiet, Efficient operation
- Direct drive-Low power consumption
- Unique replaceable cartridge design-field serviceable
- Self lubricating
- No mechanical seal
- Unmatched reliability-maintenance free
- Universal flange to flange dimensions
- Cast Iron, Bronze or Stainless Steel construction

Materials of Construction

Casing (Volute): Cast Iron, Bronze or 304 Stainless Steel
Stator Housing: Aluminum
Cartridge: Stainless Steel
Impeller: Non-Metallic
Shaft: Ceramic
Bearings: Carbon
O-Ring & Gaskets: EPDM

Model Nomenclature

F – Cast Iron, Flanged
BF – Bronze, Flanged
SF – 304 Stainless Steel, Flanged
Variations:
Z – Zoning Circulator
J – Bronze Cartridge with Cast Iron Casing

Performance Data

Flow Range: 0 – 31 GPM
Head Range: 0 – 31 Feet
Minimum Fluid Temperature: 40°F (4°C)
Maximum Fluid Temperature: 230°F (110°C)
Maximum Working Pressure: 125 psi
Connection Sizes: 3/4", 1", 1-1/4", 1-1/2" Flanged



FOR INDOOR USE ONLY

Submittal Data # 101-034
Supersedes: 10/01/02

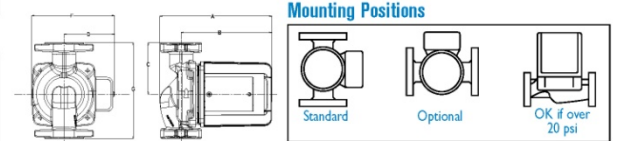
Effective: 06/14/07

Application

The Taco 0011 is specifically designed for high head / medium flow applications in large residential / light commercial closed loop hydronic heating and chilled water cooling systems. Ideal for high pressure drop boilers, fan coil units, heat exchangers, large radiant heating and heat recovery/geothermal systems. The Bronze or Stainless Steel 0011 can be used on open loop systems. The unique replaceable cartridge contains all of the moving parts and allows for easy service instead of replacing the entire circulator. Universal flange to flange dimensions and orientation allows the 0011 to easily replace other models. Compact, low power consumption design makes it ideal for high-efficiency jobs.

Pump Dimensions & Weights

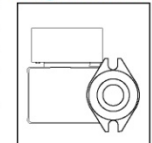
Model	Casing	A		B		C		D		F		G		Ship Wt.	
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	Kg
0011-F4	Cast Iron	7-1/2	191	6-1/8	156	3-1/2	89	3-3/8	86	5-5/8	143	6-1/2	165	12.0	5.5
0011-BF4	Bronze	7-1/2	191	6-1/8	156	3-1/2	89	3-3/8	86	5-5/8	143	6-1/2	165	12.0	5.5
0011-SF4	St. Steel	7-1/2	191	6-1/8	156	3-1/2	89	3-3/8	86	5-5/8	143	6-1/2	165	11.0	5.0



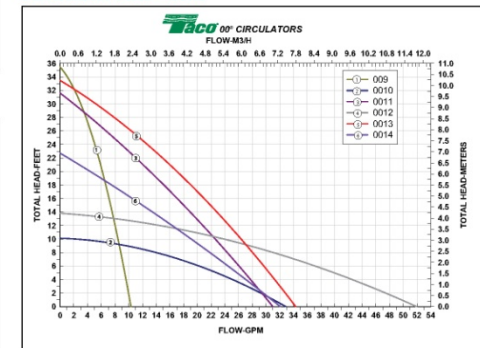
Electrical Data

Model	Volts	Hz	Ph	Amps	RPM	HP
0011-F4	115	60	1	1.76	3250	1/8
0011-BF4/SF4	115	60	1	1.76	3250	1/8
Motor Type	Permanent Split Capacitor Impedance Protected					
Motor Options	220/50/1, 220/60/1, 230/60/1, 100/110/50/60/1					

Flange Orientation



Performance Field - 60Hz



Taco Inc., 1160 Cranston Street, Cranston, RI 02920 / (401) 942-8000 / Fax (401) 942-2360
Taco (Canada) Ltd., 6180 Ordan Drive, Mississauga, Ontario L5T 2B3 / (905) 564-9422 / Fax (905) 564-9436
www.taco-hvac.com

AMTROL® Quality Expansion Tanks



EXTROL®

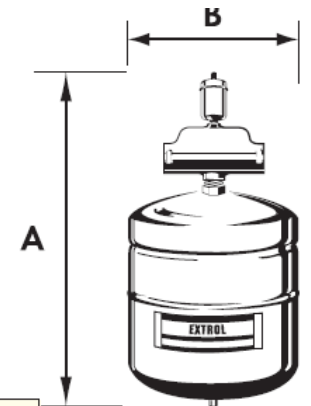
- Factory pre-charged to 12 psig
- Maximum working pressure: 100 psig
- Maximum operating temperature: 240°F

EXTROL Specifications

Model Number	Tank Volume (Gallons)	Max. Accept. Volume (Gallons)	A Height (Inches)	B Diameter (Inches)	System Conn. ¹ (Inches)	Shipping Weight (lbs.)
15	2.0	0.9	12 5/8	8	1/2	5
30	4.4	2.5	15 1/2	11	1/2	9
60	7.6	2.5	23	11	1/2	14
90	14.0	11.3	21	15 3/8	1/2	23

EXTROL Combination Packages

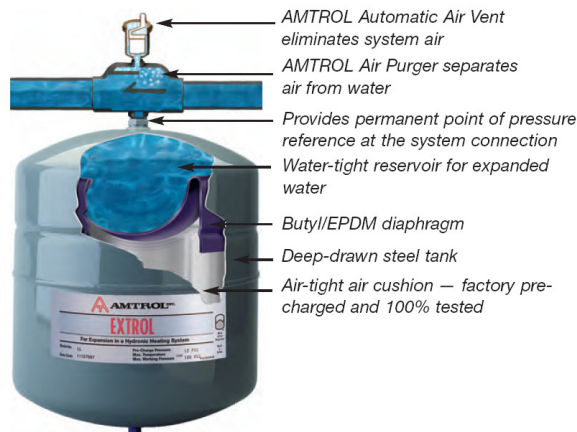
Model Number	Extrol Model	Purger Model	Vent Model	Ship. Wt. (lbs.)
1500/1 or 1 1/4	15	443 or 444	700-C	9
3000/1 or 1 1/4	30	443 or 444	700-C	14
6000/1 1/4	60	444	700-C	19
6000/1 1/2	60	445	700-C	19



EXTROL Package

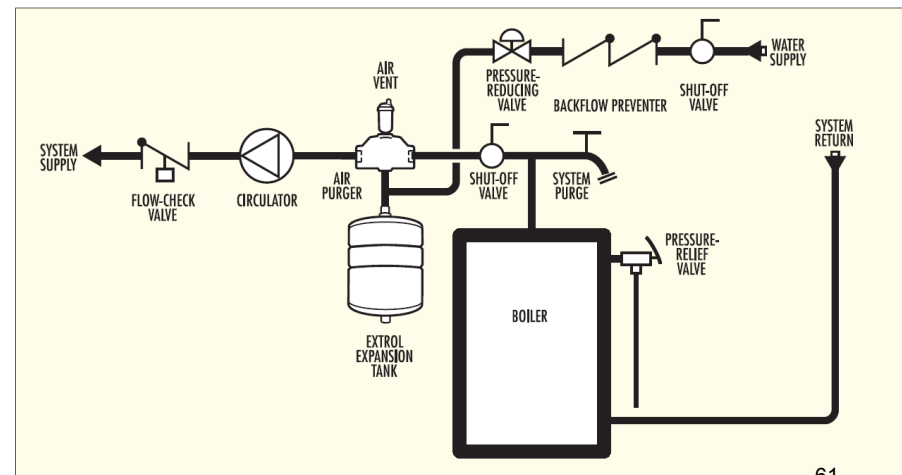
AMTROL® EXTROL® System Advantages

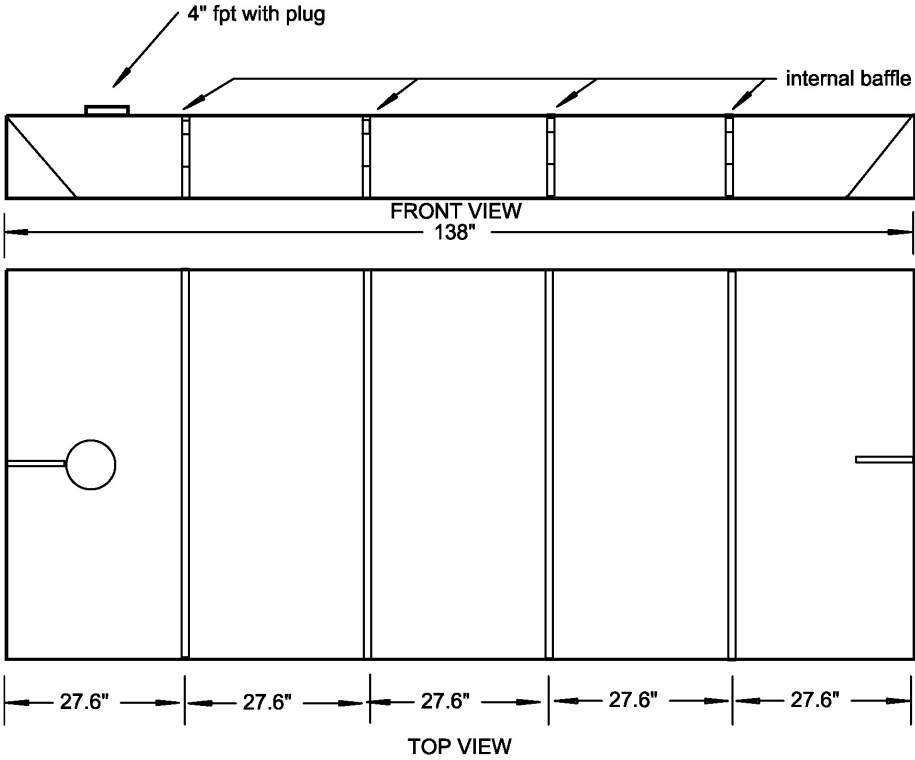
- Provides permanent separation of system water from air cushion
- Controls system pressure
- Butyl/EPDM diaphragm for superior air retention — 9 times better than natural rubber
- Maintenance-free design



Typical Installation of Residential Models

(The EXTROL is for use only in closed hydronic heating systems and chilled non-potable water systems.)





1- MATERIAL OF CONSTRUCTION TO BE 1/2" HDPE NATURAL.

NOTES

REV #	DATE	REVISIONS

P. E. P.
Specializing in Plastic Engineered Products
E-MAIL pep@pep-plastic.com
WEB SITE# http://www.pep-plastic.com

50 TANNERY ROAD, UNIT 3
BRANCHBURG, N.J. 08876
PH# 908-534-6111
FAX# 908-534-5287

PART NO.	DWG BY JLO	SCALE NS	DATE 08/08/07
HDPE WATER TANK			REV. 0

BY _____ DATE / /

APPROVED FOR FABRICATION



Apricus Solar Co., Ltd
(an Australian-Sino Joint Venture)

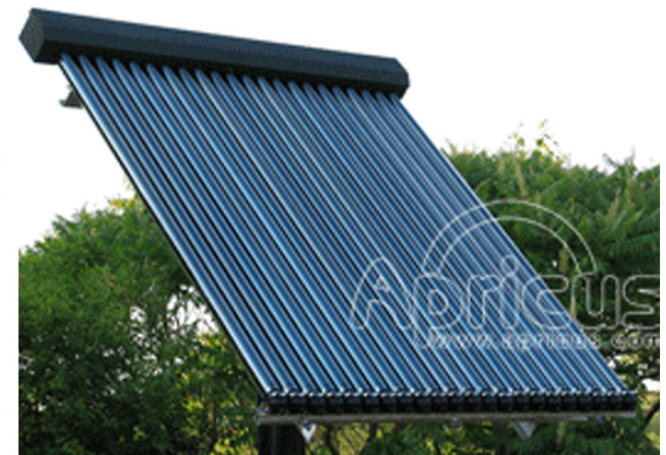
Manufacturing Plant
(under Australian management)
402, Building 8 East, Pukou New & High Tech Development Zone
Nanjing, China, 210061
Ph: +86 25 58649133 (GMT+08:00)
Fax: +1 2063384189

1. Length and width do not include the inlet and outlet which protrude from either the rear or ends of the manifold.
2. Absorber area calculated as: $D \times L \times N$ where:
..... D = diameter of the absorber tube, in this case 0.047m
..... L = exposed length of tube: For 1.8m tubes this is 1.72m
..... N = number of tubes (4, 10, 20, 22, 30)
.....Eg. $0.047 \times 1.72 \times 20 = 1.6m^2$ absorber area ($1m^2 = 10.76ft^2$)
3. Calculated simply as overall length (including frame) x overall width.
4. AP Models are named as follows:
AP(Manifold Casing Colour)(Port Location) - (Tube Number)
Manifold Casing Material: K = Black, S = Silver
Port Location: R = Rear, E = End
Tube Number: 4, 10, 20, 22, 30
Eg. APKR-20 = black rear port 20 tube manifold.

Note: Depending on region certain colour/port options may not be available.

Apricus Solar Collector General Specifications	
Manifold Casing Material	Aluminium (grade 3A21)
Frame Material	1.5mm 304 Stainless Steel
Header Pipe Material	99.93% pure Copper & lead free 45% silver brazing
Insulation	Compressed Glass Wool - $K = 0.043W/mK$
Rubber Seals and Rings	HTV grade silicone rubber
Optimal installation angle	20-70° Vertical, -5° to +5° Horizontal
Maximum Operating Pressure	8bar - 116psi
Optimal flow rate	0.1L/min/tube - 0.026G/min/tube
Performance Data (SPF)	Conversion Factor: $h_o = 0.717$ Loss Coefficients: $a_1 = 1.52$, $a_2 = 0.0085$

Model Specifications					
Model	AP-Demo	AP-10	AP-20	AP-22	AP-30
Overall Length (mm / inch) 1	660 / 25.9"	1980 / 77.9"			
Overall Width (mm / inch)	376 / 14.8"	796 / 31.3"	1496 / 58.8"	1636 / 64.4"	2196 / 86.4"
Overall Height (mm / inch)	156 / 6.1" (including flush roof mounting frame)				
Absorber Area (m^2 / ft^2) 2	0.08 / 0.86	0.8 / 8.6	1.6 / 17.2	1.76 / 18.9	2.4 / 25.8
Fluid Capacity (ml / ounces)	190 / 6.4	290 / 9.8	510 / 17.2	550 / 18.6	833 / 28.2
Gross Area (m^2 / ft^2) 3	0.25 / 2.67	1.57 / 16.95	2.96 / 31.8	3.24 / 34.8	4.35 / 46.8
Dry Weight (kg / pounds)	8 / 18	35 / 77	64 / 140	71 / 157	95 / 209





Features

- **Attractive Quality Silver finish**
Durable plastic jacket for rustproof finish even in moist environments.
- **Constructed of type 316L stainless steel**
with tolerances for high temperatures of operation. Superior corrosion resistance.
- **New Extra Large High Output Cupronickel Heat Exchanger**
for 20% increased performance. Maximum heat transfer efficiency with more surface area, delivering larger amounts of hot water. Supplies 3-5 times more recovery compared to conventional heaters.
- **Environmentally Safe, CFC-free water-blown foam insulation**
2 inches thick; allows less than 1/2 degree F per hour heat loss; the best in the industry.
- **Lifetime Warranty Protection Plan**
 - **Easy to install and maintain**
 - **Immersion type control**
provides fast response.
 - **Installation versatility**
with either zone valve or circulated pump.
 - **Full line of 7 different models and sizes**
to meet all your hot water demands.
 - **Very efficient**
Reduces fuel cost when operated with high efficiency boiler.
 - **New outlet extractor tube**
delivers 5-7% more hot water



How the Super Stor Ultra Works:

The SuperStor Ultra is true advancement in hot water generation. By tying the Ultra into your existing or new boiler as a separate zone with a circulator or zone valve, it will start the boiler only when the Ultra requires hot water and transfers heated energy through the high output exchanger to produce larger amounts of hot water.

Energy Efficient operation

The Super Stor Ultra's 2" to 3" thick insulation quality, connected to a modern boiler system will reduce your operating cost to produce hot water. With today's increasing fuel costs the Ultra will provide the homeowner fast pay back over conventional methods of heating hot water!

Limited Lifetime Protection Plan

Super Stor Ultra's Limited Lifetime Protection Plan will give homeowners the peace of mind that their water heater is covered by the industry's strongest warranty.

Maintenance-Free Operation

Super Stor Ultra does not need expensive maintenance check-ups. Its simple design requires virtually no maintenance, saving money on costly service calls.

Ultra High Output Heat Exchanger

Our Engineering Department has developed the Ultra High Output Heat Exchanger adaptable to new or older boiler systems. The heat exchanger's increased internal size and external surface area gives the Ultra greater recovery performance. This way the Super Stor Ultra has two or more times the recovery rate of gas fired water heaters, and supplies as much as five times the amount of hot water as a comparably sized electric water heater.

Attractive Design

The Super Stor Ultra's attractive appearance will assure each customer that they have installed a superior water heater. The Ultra's silver color will match any old or new boiler color adding to the system's overall appearance.

ULTRA Residential Series Specifications and Performance Ratings

Model	Dimensions		Inlet/Outlet	Capacity	Heat Exch. Surface	180°F Boiler Water First Hour Ratings*		200°F Boiler Water First Hour Ratings*	
	Ht.	Dia.				140°F	115°F	140°F	115°F
SSU-20	27"	19 1/4"	3/4"	20	15 sq ft	121 gal	168 gal	136 gal	185 gal
SSU-30	39 1/2"	19 1/4"	3/4"	30	15 sq ft	154 gal	212 gal	172 gal	234 gal
SSU-30LB	28 1/2"	23 1/4"	3/4"	30	15 sq ft	169 gal	234gal	189 gal	257 gal
SSU-45	52 1/2"	19 1/4"	3/4"	45	20 sq ft	212 gal	292 gal	237 gal	322 gal
SSU-60	52 1/2"	23 1/4"	1"	60	20 sq ft	266 gal	370 gal	298 gal	405 gal
SSU-80	72"	23 1/4"	1 1/2"	80	34 sq ft	330 gal	440 gal	370 gal	503 gal
SSU-119	73 1/2"	27"	1 1/2"	119	34 sq ft	423 gal	564 gal	474 gal	645 gal

*DOE test method based on 90°F. Temperature rise, 50°/140° w/boiler water at 180°/200°F

Tank Size	Floor to Boiler Supply	Floor to Boiler Return	Floor to Domestic Out	Domestic Connections	Boiler Connections	Test Pressure	Working Pressure	Shipping Weight	180°F Boiler BTU/Size	200°F Boiler BTU/Size
SSU-20	9"	4 1/2"	21 3/4"	3/4 NPT male	1" NPT	300 psi	150 psi	57 lbs	84,000	87,000
SSU-30	9"	4 1/2"	33 3/4"	3/4 NPT male	1" NPT	300 psi	150 psi	71 lbs	102,000	117,000
SSU-30LB	9"	4 1/2"	21 3/4"	3/4 NPT male	1" NPT	300 psi	150 psi	76 lbs	114,000	131,000
SSU-45	9"	4 1/2"	45 3/4"	3/4 NPT male	1" NPT	300 psi	150 psi	84 lbs	141,000	161,000
SSU-60	9"	4 1/2"	45 3/4"	1" NPT male	1" NPT	300 psi	150 psi	106 lbs	174,000	198,000
SSU-80	29"	6"	64 3/4"	1 1/2" NPT male	1" NPT	300 psi	150 psi	141 lbs	212,000	241,000
SSU-119	30 1/4"	7 1/4"	66"	1 1/2" NPT male	1" NPT	300 psi	150 psi	210 lbs	269,000	301,000



Features

- 12" (30.5 cm) rough-in
- Vitreous china
- Elongated bowl
- Comfort Height™
- Power Lite® operating system (see electrical service requirements)
- Includes seat and cover
- Less supply
- One-piece
- Includes Twin Touch™ dual flush selector to select either 1 gal (3.8 L) flush or 1.4 gal (5.3 L) flush
- 12" (30.5 cm) x 10" (25.4 cm) water area
- 30" (76.2 cm) x 19-1/2" (49.5 cm) x 21-1/2" (54.6 cm)

Codes/Standards Applicable

Specified model meets or exceeds the following:

- ADA
- ASME A112.19.2
- IAPMO/UPC
- CSA B45
- Underwriter's Laboratories (UL)
- Energy Policy Act of 1992 (EPACT)

KOHLER Co.
M/S 019
444 Highland Drive
Kohler, WI 53044

Phone: 1-800-4-KOHLER (456-4537)
Hours: 7:00 AM - 6:00 PM (Central Time) Monday to Friday

Colors/Finishes

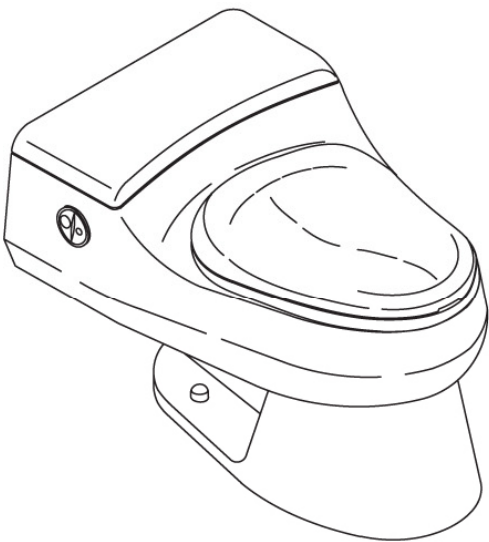
- 0: White
- Other: Refer to Price Book for additional colors/finishes

Accessories:

- CP: Polished Chrome
- BN: Brushed Nickel
- Other: Refer to Price Book for additional colors/finishes

COMFORT HEIGHT™ POWER LITE®
TOILET
K-3393

ADA



Specified Model

Model	Description	Colors/Finishes	
K-3393	Elongated bowl toilet	<input type="checkbox"/> 0	<input type="checkbox"/> Other_____
Recommended Accessory			
K-7637	3/8" NPT angle supply with stop	<input type="checkbox"/> CP	<input type="checkbox"/> Other_____
Optional Accessory			
K-9433	Twin Touch™ dual flush selector (non-CP)	<input type="checkbox"/> BN	<input type="checkbox"/> Other_____

Product Specification:

The Comfort Height™ one-piece toilet shall be 30" (76.2 cm) in length, 19-1/2" (49.5 cm) in width, and 21-1/2" (54.6 cm) in height. Toilet shall have a 12" (30.5 cm) rough-in. Toilet shall have a 12" (30.5 cm) x 10" (25.4 cm) water area. Toilet shall feature the Power Lite® operating system and Twin Touch™ dual flush selector to select either 1 gal (3.8 L) flush or 1.4 gal (5.3 L) flush. Toilet shall be made of vitreous china. Toilet shall include seat and cover. Toilet shall be less supply. Toilet shall be Kohler Model K-3393-_____.



Features

- Fireclay
- Without overflow
- Countertop or wall-mount installation
- Without faucet holes
- Complements the Purist Suite
- 24" (61 cm) x 23-1/2" (59.7 cm)

Codes/Standards Applicable

Specified model meets or exceeds the following:

- ASME A112.19.9M
- IAPMO/UPC
- ADA

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Colors/Finishes

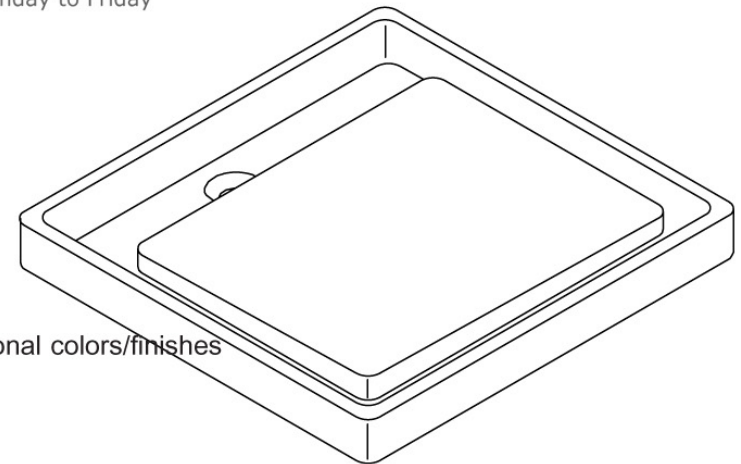
- 0: White
- Other: Refer to Price Book for additional colors/finishes

Accessories:

- CP: Polished Chrome
- NA: None applicable

WADING POOL™ WET SURFACE LAVATORY K-2313

ADA



Specified Model

Model	Description	Colors/Finishes	
K-2313	Wading Pool wet surface lavatory - without faucet holes	<input type="checkbox"/> 0	<input type="checkbox"/> Other_____
Recommended Accessories			
K-9583	Bracket kit - includes right and left-facing brackets for wall-mount installation	<input type="checkbox"/> NA	
K-7605-P	Lavatory supplies	<input type="checkbox"/> CP	<input type="checkbox"/> Other_____
K-9018	P-Trap	<input type="checkbox"/> CP	<input type="checkbox"/> Other_____
K-7715	Grid drain	<input type="checkbox"/> CP	<input type="checkbox"/> Other_____
Refer to the Price Book for countertop and hand basin options.			

Product Specification

The fireclay lavatory shall be 24" (61 cm) in length and 23-1/2" (59.7 cm) in width. Product shall be without overflow and without faucet holes. Product shall be suitable for countertop or wall-mount installation. Product shall complement the Purist Suite. Product shall be Kohler Model K-2313-_____.

Features

- Dual control wall-mounted
- Brass construction
- Lower flow aerator options are available (refer to the Kohler Price Book)
- Cross or lever handles
- 2.2 gpm (8.3 lpm) flow rate

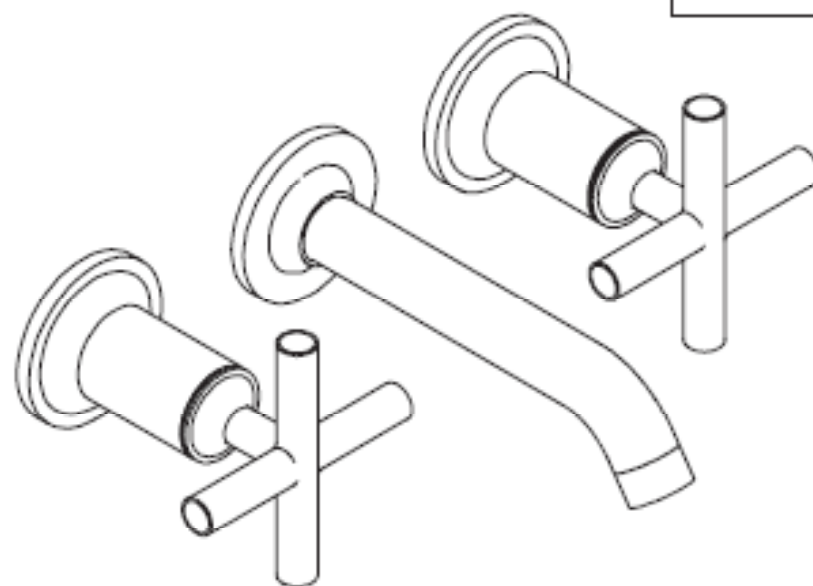
Codes/Standards Applicable

Specified model meets or exceeds the following:

- ASME A112.18.1/CSA B125.1
- IAPMO/UPC
- NSF 61
- Energy Policy Act of 1992 (EPACT)
- ADA

WALL-MOUNT FAUCET **K-T14413** ALSO K-T14415, K-T14417

ADA



Colors/Finishes

- CP: Polished Chrome
- Other: Refer to Price Book for additional colors/finishes



PURIST®

Features

- *Brass construction*
- *Available with cross or lever handles*
- *Front seal plate assembly*
- *Handle assembly*
- *Complements Purist® Suite*

Codes/Standards Applicable

Specified model meets or exceeds the following:

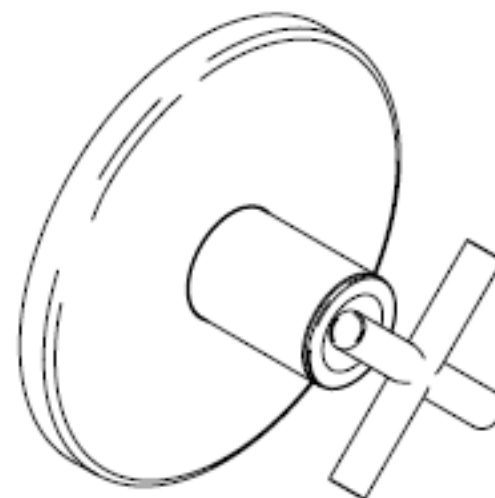
- *ASME A112.18.1*
- *CSA B125*
- *IAPMO/UPC*
- *ADA*

THERMOSTATIC FAUCET TRIM

K-T14488

ALSO K-T14489, K-T14490, K-T14491

ADA





INTEGRATING COMPONENTS
K-8506

Features

- *Invigorating, relaxing, or family (both invigorating and relaxing) spray options*
- *2.5 gallons (9 L) per minute (ultra-low flow bodyspray is 1.5 gallons (6 L) per minute)*
- *Eco showerheads are 2.0 gallons (7.5 L) per minute*

Codes/Standards Applicable

Specified model meets or exceeds the following:

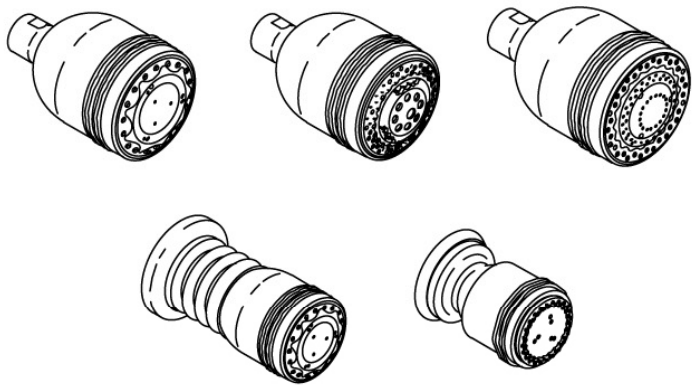
- ASME A112.18.1
- IAPMO/UPC

Colors/Finishes

- CP: Polished Chrome
- PB: Polished Brass
- Other: Refer to Price Book for additional colors/finishes

Specified Model

Model	Description	Colors/Finishes		
K-8506	Invigorating showerhead	<input type="checkbox"/> CP	<input type="checkbox"/> PB	<input type="checkbox"/> Other _____
K-8507	Relaxing showerhead	<input type="checkbox"/> CP	<input type="checkbox"/> PB	<input type="checkbox"/> Other _____
K-8508	Family showerhead	<input type="checkbox"/> CP	<input type="checkbox"/> PB	<input type="checkbox"/> Other _____
K-8509	Three-way bodyspray	<input type="checkbox"/> CP	<input type="checkbox"/> PB	<input type="checkbox"/> Other _____
K-8510	Two-way ultra-low flow bodyspray	<input type="checkbox"/> CP	<input type="checkbox"/> PB	<input type="checkbox"/> Other _____
K-8544	Relaxing Eco showerhead	<input type="checkbox"/> CP	<input type="checkbox"/> PB	<input type="checkbox"/> Other _____
K-9511	Shower arm with diverter	<input type="checkbox"/> CP	<input type="checkbox"/> PB	<input type="checkbox"/> Other _____
K-9512	Shower arm less diverter	<input type="checkbox"/> CP	<input type="checkbox"/> PB	<input type="checkbox"/> Other _____



Product Specification

Product shall have either invigorating, relaxing, or family spray options. Product shall have a flow rate 2.5 gallons (9 L) per minute, is rated at 1.5 gallons (6 L) per minute for ultra-low flow bodyspray, and 2.0 gallons (7.5 L) per minute for Eco showerheads. Product shall be Kohler Model K-_____.

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Features

- Brass valve body
- High-temperature limit stop for added safety
- Mixing valve cycles from “cold” to “hot”
- Rite-Temp pressure-balancing diaphragm design valve
- One-piece diaphragm cartridge design for ease of maintenance
- Available with or without screwdriver stops
- Available with female connections for CPVC adapters
- Available with PEX connections

Codes/Standards Applicable

Specified model meets or exceeds the following:

- ASME A112.18.1
- ASSE 1016
- CSA International
- IAPMO/UPC

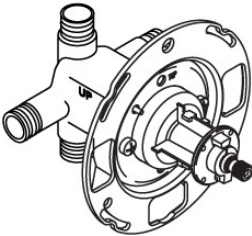
Colors/Finishes

- NA: None applicable

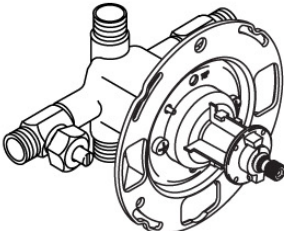
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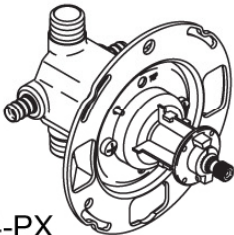
PRESSURE-BALANCING VALVE
K-304-K



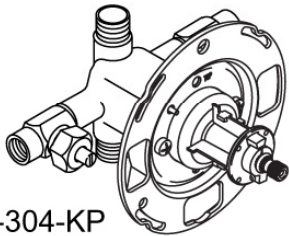
K-304-K



K-304-KS



K-304-PX



K-304-KP

Specified Model

Model	Description	Colors/Finishes
K-304-K	Without screwdriver stops	<input type="checkbox"/> NA
K-304-KS	With screwdriver stops	<input type="checkbox"/> NA
K-304-KP	With screwdrivers stops, female connections for CPVC adapters	<input type="checkbox"/> NA
K-304-PX	Without screwdriver stops, PEX connections	<input type="checkbox"/> NA

Product Specification

Rite-Temp pressure-balancing valve shall have a brass valve body. Product shall include a Rite-Temp pressure-balancing diaphragm design valve with a one-piece diaphragm cartridge design for ease of maintenance. Product shall have mixing valve cycles from “cold” to “hot” and a high-temperature limit stop for added safety. Product shall be available without (-K) or with screwdriver stops (-KS), or with screwdrivers stops with female connections for CPVC adapters (-KP), or without screwdriver stops with PEX connections (-PX). Valve shall be Kohler Model K-304-____-NA.



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PIVOT SHOWER DOORS K-702010

Features

- *Frameless design maximizes glass area*
- *3" (7.6 cm) of door width adjustment*
- *1/4" (6 mm) thick tempered safety glass door*
- *3/8" (1 cm) thick tempered safety glass stationary panel for stability*
- *Installs on fiberglass, acrylic, or custom tiled applications*
- *Right or left door swing*
- *Solid brass door handle*
- *72-3/8" (183.8 cm) height*

Codes/Standards Applicable

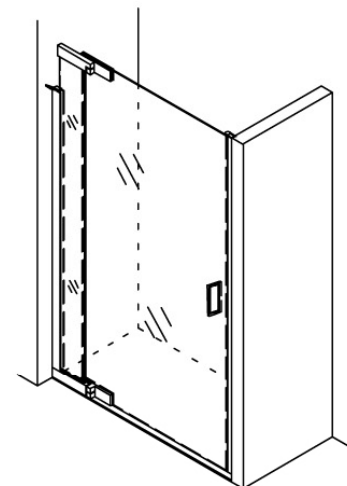
Specified model meets or exceeds the following:

- *ANSI Z97.1 (tempered glass)*

Codes/Standards Applicable

Specified model meets or exceeds the following:

- *ANSI Z97.1 (tempered glass)*



Specified Model

Model	Application	Glass Options		Colors/ Finishes	
* K-702010	Shower	D3	L	SH	BN
K-702011	Shower	D3	L	SH	BN
K-702012	Shower	D3	L	SH	BN
* K-702013	Shower	D3	L	SH	BN
* Stock doors					








Product Specification

The pivot shower door shall be 72-3/8" (183.8 cm) height with 3" (7.6 cm) of door width adjustment. Door shall feature a frameless design to maximize the glass area with 1/4" (6 mm) thick tempered safety glass door, and 3/8" (1 cm) tempered safety glass stationary panel for stability. Door shall install on fiberglass, acrylic, or custom tiled applications with a right or left door swing. Door shall feature a solid brass door handle. Door shall be Kohler Model K-_____.

Features

- Complements Purist® Suite

ACCESSORIES K-14435

Model	Description		Colors/Finishes	
K-14435	18" (45.7 cm) towel bar		<input type="checkbox"/> CP	<input type="checkbox"/> Other _____
K-14436	24" (61 cm) towel bar		<input type="checkbox"/> CP	<input type="checkbox"/> Other _____
K-14437	30" (76.2 cm) towel bar		<input type="checkbox"/> CP	<input type="checkbox"/> Other _____
K-14440	Glass shelf		<input type="checkbox"/> CP	<input type="checkbox"/> Other _____
K-14441	Towel ring		<input type="checkbox"/> CP	<input type="checkbox"/> Other _____
K-14443	Robe hook		<input type="checkbox"/> CP	<input type="checkbox"/> Other _____
K-14444	Toilet tissue holder		<input type="checkbox"/> CP	<input type="checkbox"/> Other _____
K-14445	Soap dish		<input type="checkbox"/> CP	<input type="checkbox"/> Other _____
K-14447	Tumbler and holder		<input type="checkbox"/> CP	<input type="checkbox"/> Other _____

CONTEMPO SERIES

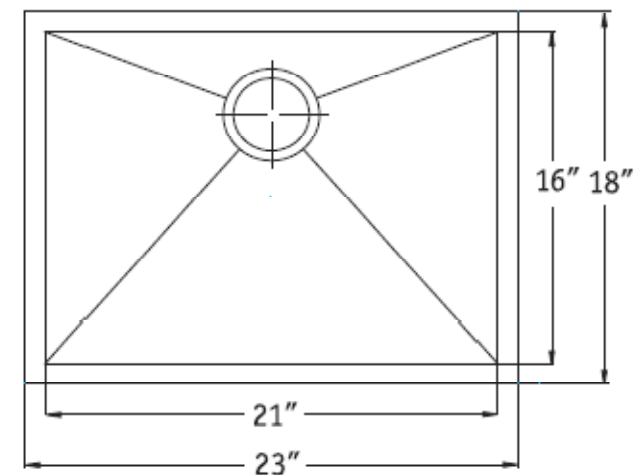
Zero Radius Undermount Single Bowl Model CTS-2300



CTS-2300

FEATURES

- Premium grade T-304 stainless steel
- 10" depth • 18 gauge
- MegaShield™ insulation sound absorbing pad
- True zero radius ledge and bottom
- Brushed satin, rear-set drain • 3-1/2" drain opening
- Fits 24" sink base
- Supplied with cutout template, fasteners and instructions
- Complies with ASME A112.19.3-2000, UPC®
- Lifetime Limited Warranty



ELKAY[®]

SPECIFICATIONS

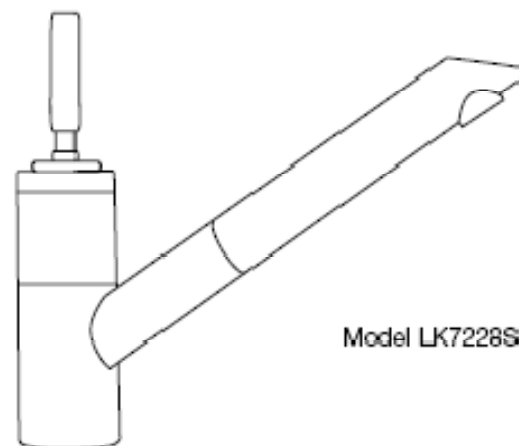
Arezzo™ Single Handle Kitchen Faucet Model LK7228SS

GENERAL FEATURES

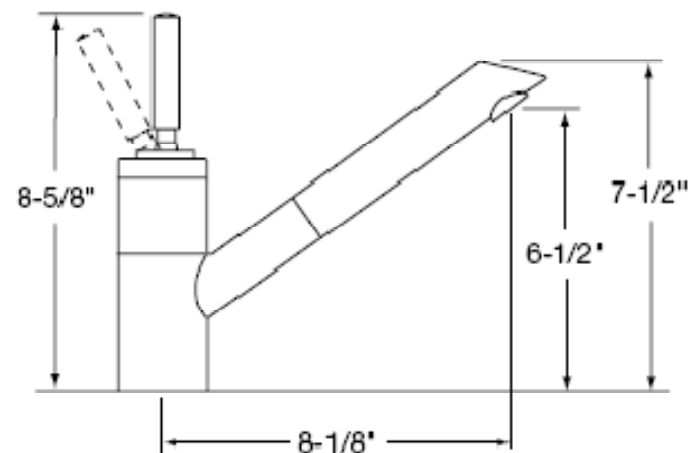
- Single stream pull-out spray
 - 1-1/2" diameter faucet hole required
 - Maximum countertop thickness 1-1/4"
- Single hole top mount installation
- Single-lever faucet
- Ceramic disc cartridge
- Spout height is 6-1/2" from deck to aerator
- Spout reach is 8-1/8"
- 360° swing spout
- Brass construction
- Stainless steel body, spray head and handle
- Flexible supply tubes with 1/2" male IPS adapters
- Limited Lifetime Warranty
- Available in the following finish
 - Stainless steel **LK7228SS**
- Maximum flow rate
 - 2.5 GPM/9.5 L/min at 80 P.S.I.G.
 - 2.2 GPM/8.3 L/min at 60 P.S.I.G.
- Ship weight is 6 lbs.
- Due to the weight of this faucet, Elkay recommends that it be installed to an 18 gauge stainless steel sink (or heavier) or to a solid surface countertop

CODES/STANDARDS

- ASME/ANSI A112.18.1
- ANSI/NSF 61
- IAPMO/UPC
- ADA compliant



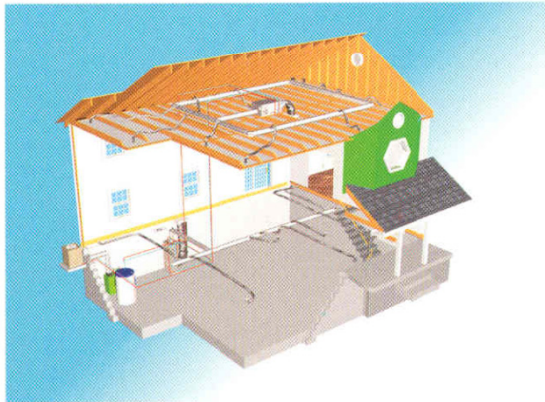
Model LK7228SS



The Unico System®

LITTLE OR NO REMODELING NEEDED

The Unico System fits where conventional cooling and heating systems can't — with little or no remodeling required! The modular air handlers and coils can be installed easily into attics, ceilings, crawlspaces and closets. The flexible mini-ducts can be routed through existing ceiling, floor and wall cavities, eliminating the need for unsightly and noisy metal ductwork.



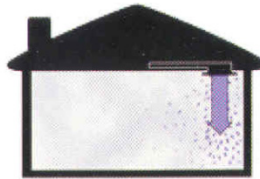
Typical ductwork layouts showing 2 Unico Systems — one located in the attic and one located in the basement.



Sound-dampening, flexible supply tubes deliver draft-free heating and cooling.

The Unico System®

DRAFT-FREE, EVEN TEMPERATURES THROUGHOUT ANY ROOM

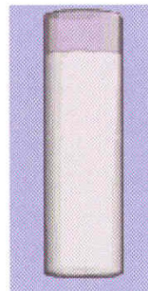


Conventional systems simply dump conditioned air into a room, causing uncomfortable drafts and hot and cold spots.

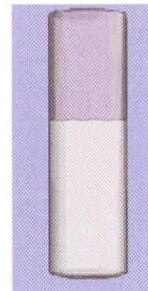


The Unico System gently circulates air throughout each room, eliminating drafts and providing even temperatures from ceiling to floor.

REMOVES 30% MORE MOISTURE



Conventional Systems



The Unico System

The Unico System removes 30% more moisture from your home than conventional systems, actually lowering the humidity while keeping you more comfortable at higher thermostat settings.

MATCHES ANY DÉCOR

Outlets in the Unico System are small, subtle and blend into any décor. For the look that best suits your needs, a variety of styles and finishes are available. Choose from white or black plastic, chrome, brass and several wood species — or simply paint or stain the outlets to perfectly match your room.



ORIGINAL
5" Outer Diameter Plastic Outlet for Ceiling Applications (Available in white, black, brass or chrome finishes)



WOODEN
5" Outer Diameter Wood Outlet for Hardwood Floor Applications (Available in a variety of wood species)



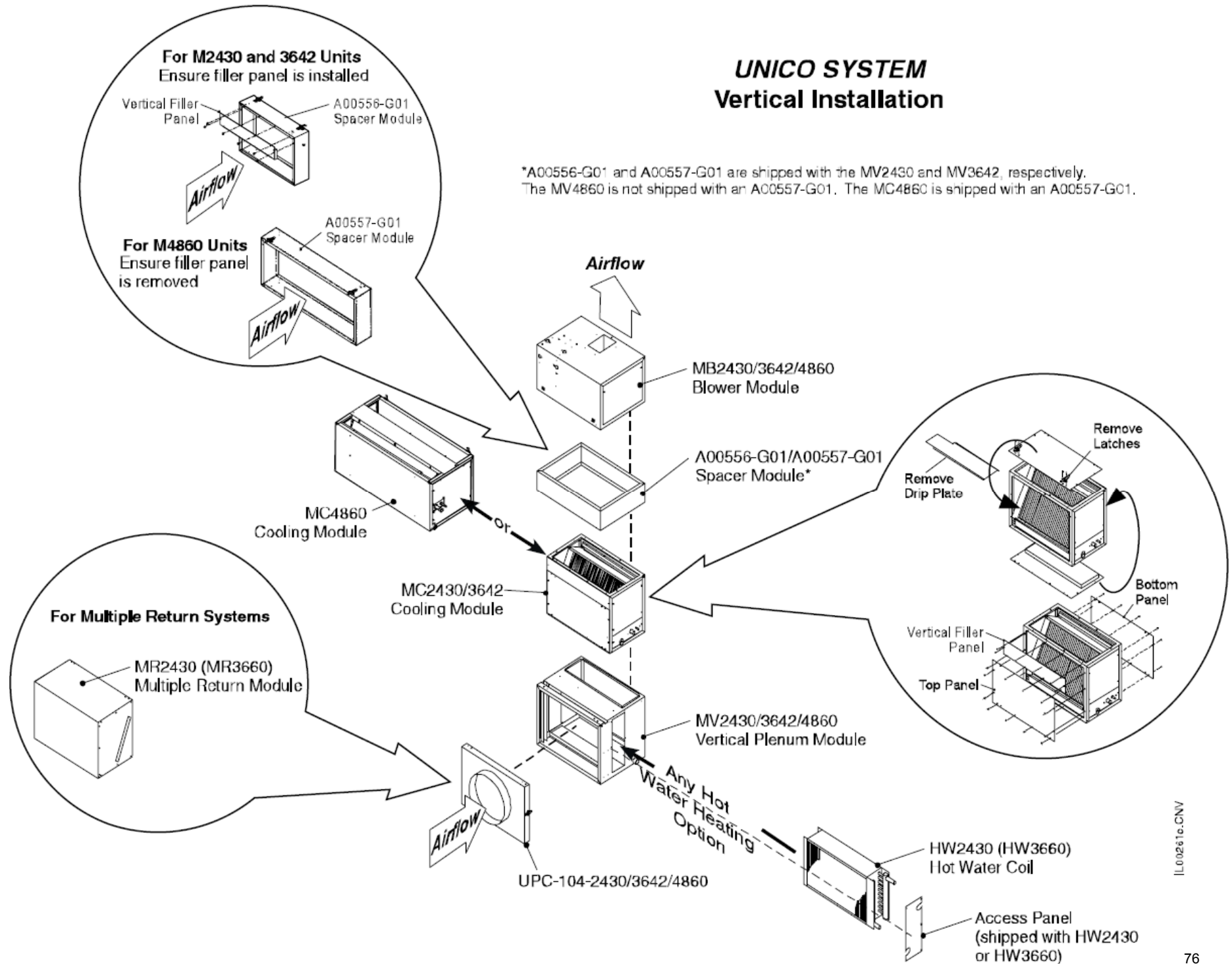
SLOPED
15° and 25° Angled Outlets for Sloped Ceilings and Walls



SLOTTED
1/2" x 8" Slotted Outlet for Sidewall Applications (Available in a variety of finishes and wood species)

UNICO SYSTEM Vertical Installation

*A00556-G01 and A00557-G01 are shipped with the MV2430 and MV3642, respectively. The MV4860 is not shipped with an A00557-G01. The MC4860 is shipped with an A00557-G01.



IL002616.CNV

*RenewAire ERV units mount in any orientation.
Which means less labor and a clean-looking installation.*

*May be installed
in unconditioned
locations like attics,
crawl spaces and
garages.*



Take Control

Our simple, attractive controls allow you to dictate your levels of fresh air ventilation. A single touch of the button allows 10% runtime additions. The matching point-of-use control allows for 20/40/60 minute manual operation.



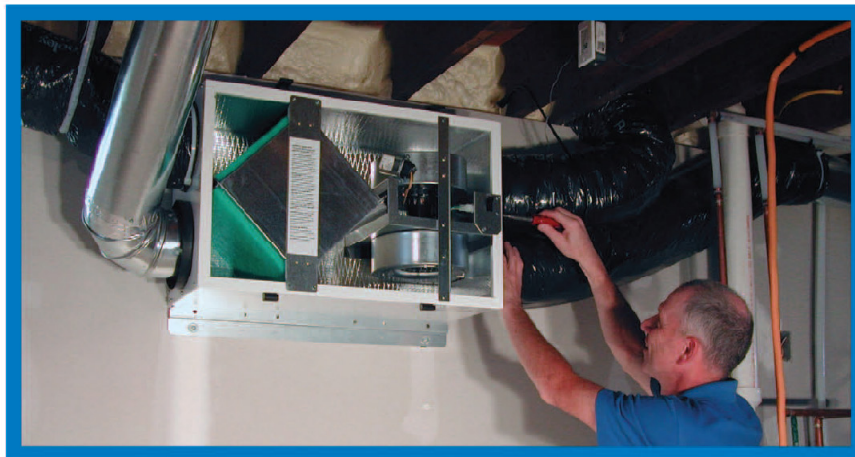
P: 800-627-4499

F: 608-221-2824

www.renewaire.com

4510 Helgesen Drive

Madison, Wisconsin 53718



Leaders in the Industry.

For over 20 years, RenewAire has been a pioneer in the use of heat and humidity transferring plate exchangers for ventilation air in extreme climates. From cold to hot and in between, RenewAire provides a simple, effective solution. Our company and our product line directives of energy efficiency and a safe indoor air environment were founded well before fuel costs and the "green" movement were national concerns. And, by the time the others catch up to where we are today, we'll be the next step ahead.

Choose the ERV Unit that's best for your site.

MODEL	EV130	EV200	EV300
Sizing Guide	up to 2700 sq. ft.	up to 4000 sq. ft.	up to 6000 sq. ft.
Airflow: 0.2" wg	141 CFM	192 CFM	—
Airflow: 0.4" wg	113 CFM	176 CFM	315 CFM
Airflow: 0.6" wg	69 CFM	149 CFM	279 CFM
Apparent Sensible Effectiveness (32°F)	80% @ 124 CFM	85% @ 181 CFM	78% @ 295 CFM
Sensible Recovery Efficiency (32°F)	72% @ 124 CFM	78% @ 181 CFM	70% @ 295 CFM
Latent Recovery (32°F)	55% @ 124 CFM	62% @ 181 CFM	51% @ 295 CFM
Total Recovery Efficiency (95°F)	46% @ 126 CFM	52% @ 180 CFM	43% @ 285 CFM
Watts	121 @ 124 CFM	157 @ 181 CFM	317 @ 295 CFM
Dimensions H x W x D (in.)	20-1/8 x 28-3/4 x 13	20-1/8 x 28-3/4 x 23-7/8	20-1/8 x 28-3/4 x 23-7/8
Duct Connections	6" & 8" double collar	6" & 8" double collar	8" round compatible
All units are 120VAC / 60 Hz / Single Phase and are controlled by opening and closing a switch across 24VAC terminals			





Single-Speed Water to Water Units 2.0 thru 6.0 & 10 Tons
Dual Compressor Water to Water Units 6.0 thru 12.0 Tons

Features:

R-410A Refrigerant

- All Stainless Steel Construction
- All Panels Removable For Easy Service
- Best Warranty In The Industry
- Bi-directional Expansion Valve
- Built In Reversing Valve For Cooling
- ETL Certified to UL & CSA Standards
- Factory Tested To ARI-ISO Standards
- Cupro-Nickel Coaxial Water Heat Exchanger
- Flow Switch Protected
- Fault Retry To Eliminate Nuisance Service Calls
- Ideal For Infloor Heating
- May Be Used With Fan Coils For Heating & Cooling
- Greatest Comfort Level
- High Efficiency Scroll Compressor
- High Heating Out-Put
- 6 to 12 Ton (Dual Refrigerant Circuit Units) Are Stagable
- Built With Pride By True Craftsmen

- Dual Refrigerant Circuits (6 to 12 Ton)
- Lowest Maintenance / Life Cycle Cost
- Lowest Operating Costs / Life Cycle Cost



Water to Water Models Single Compressor

Model No.	GPM	Btu/hr Heating	COP	Btu/hr Cooling	EER
W024	6.0	21,070	3.7	22,800	18.1
W036	9.0	31,600	3.7	34,200	18.1
W048	12.0	44,770	3.6	48,450	17.9
W060	14.0	50,030	3.5	54,150	17.2
W072	16.0	61,450	3.3	66,500	16.5
W122	30.0	105,340	3.5	114,000	17.2

Engineering Guide Specifications

General: The Geothermal Heat Pump system and the earth loop system shall be one system and include all interconnecting piping and controls to provide an efficient, harmoniously balanced package. All units shall be tested and rated in accordance with UL STD. 1995 and CSA STD. C22.2 NO.236 test laboratory safety and performance standard. Each unit shall be computer run-tested at the factory. Each unit shall be mounted on a pallet and shipped in a corrugated box. Units shall be designed to operate with entering liquid temperature between 25°F and 110°F.

Refrigerant Circuit: Compressor shall be hermetically sealed high efficient scroll, mounted on vibration isolators. The coaxial water heat exchanger shall be designed for low water pressure drop and constructed of a cupro-nickel inner tube and a steel outer tube with enhanced heat exchanger surface. An optional domestic water desuperheater coil of vented double wall copper construction for potable water with high limit control shall be employed. The thermostatic expansion device shall be a bi-directional mechanical controlled and shall provide proper superheat over the entire liquid temperature range with minimal hunting. The reversing valve shall be of copper construction with a 24 V AC solenoid valve with fail-to-heating position.

Cabinet. The cabinet shall be of heavy gauge stainless steel. It shall and be installed with high-density insulation, with smoke and flame spread of class 1 type and acoustic value of NRC .45. It shall be oriented to allow complete component service access from all sides. Electrical box shall be of heavy gauge stainless steel located on the access panel side of the cabinet.

Controls. Units shall incorporate a microprocessor based control board. Equipment shall incorporate both high and low pressure switches and freeze protection with total refrigerant circuit lockout with manual reset. The board shall provide detachable terminal block, LED status, fault indicators, fault memory and accessory output.

Piping & Connections. Loop water connections (supply/return) shall be ¾" or 1-inch FPT brass swivel connection, which provide a union for easy connection. Larger fitting shall be female copper (1¼ to 1½) connection. All water piping shall be insulated to prevent condensation at low water temperatures.

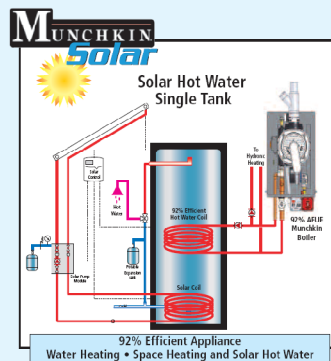
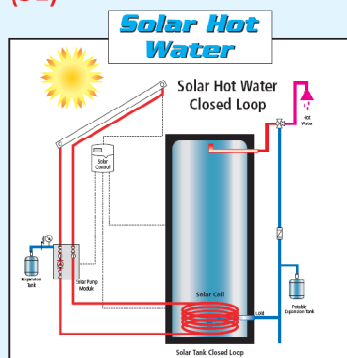
"World's Best Built Heat Pump"
Stainless Steel – All You'll Ever Need

Solar Thermal Systems

CONTENDER Solar

Flow Coated Steel Solar Heat Exchange Tanks Single Heat Exchanger Models (SB) Double Heat Exchanger Models (SE)

The Contender Solar is engineered to deliver high efficiency solar heat transfer, the highest insulation standards and maintenance free operation for many years. Our unique smooth surface coil design will resist lime build up which can reduce the performance of the heater over its service life. Our unique plastic outer jacket will maintain its appearance without rusting. The extra thick insulation is over 2" thick and will save wasted energy usually lost by conventional fiberglass insulation. Environmentally friendly water blown foam provides added value in energy savings. The Contender Solar Water Heater is backed by a 7-year manufacturer's warranty.



Solar Thermal Systems

4723 Tidewater Avenue • Oakland, CA 94601 • www.stssolar.com

Solar Thermal Systems

CONTENDER Solar

Contender Solar Single Heat Exchanger Tanks

Economical, Flow Coated steel storage tanks with one immersed smooth bore heat exchanger for high efficiency direct solar heat transfer. Electric backup included.

Applications: Closed loop solar domestic hot water systems

Single Heat Exchanger Closed Loop Glass Lined Solar Tanks

Model	Description	Capacity Gallons	HT.	Dia.
SSC-50SE	50 Gal. Single Coil	50	46-1/2"	23"
SSC-80SE	80 Gal Single Coil	80	71-1/4"	23"
SSC-119SE	119 Gal Single Coil	119	64"	28"

Model	Insul.	Solar Hxch	Dom Conn	Solar Conn
SSC-50SE	2"	10.7"	3/4"	1"
SSC-80SE	2"	15.0"	1-1/2"	1"
SSC-119SE	2"	17.2"	1-1/2"	1"



Contender Solar Dual Heat Exchanger Tanks

Economical, Flow Coated steel storage tanks with two immersed smooth bore tube heat exchangers for both high efficiency direct solar heat transfer and hydronic indirect water heating in one tank. Tank stratification and baffles provide thermal isolation between solar generated and boiler heated domestic hot water.

Applications: Integrated closed loop solar domestic hot water heating and hydronic indirect water heating in one tank.

Double Heat Exchanger Closed Loop Glass Lined Solar Tanks

Model	Description	Capacity Gallons	Net Capacity Gallons	HT	Dia.
SSC-50SB	50 Gal.Dual Coil	50	25	46-1/2"	23"
SSC-80SB	80 Gal Dual Coil	80	55	71-1/4"	23"
SSC-119SB	119 Gal Dual Coil	119	80	64"	28"

Model	Foam Insul	Solar Hxch	Indirect Hxch.	Dom Conn	Solar Conn
SSC-50SB	2"	5.3'	10.7"	3/4"	1"
SSC-80SB	2"	9.0'	15.0"	1-1/2"	1"
SSC-119SB	2"	10.7'	17.2"	1-1/2"	1"

Solar Thermal Systems

4723 Tidewater Avenue • Oakland, CA 94601 • www.stssolar.com

SUPERstor^{GL}

GLASS LINED STORAGE TANK



Available in 50-, 80-, 119-, and 175-Gallon Models

The most efficient way to store hot water for residential and commercial applications.
More hot water and increased storage capacity. Installed individually or in multiple applications, The SuperStor Coil Booster Glass Lined Storage Tank can provide 80% draw capability without an appreciable temperature decrease in single temperature applications.

Construction Features

- **Long life tank design**
Unique steel formulation with high-temperature porcelain enamel to maximize corrosion resistance resulting in a superior tank design. Heavy duty magnesium anode rod(s) are installed for longer tank life.
- **Efficient design**
Rigid polyurethane foam insulation provides superior insulating qualities that allow less than 1 degree F per hour heat loss (24 degrees F in 24 hrs.) resulting in reduced operating costs. The patented process of injecting foam into the insulating cavity adds additional durability and toughness to the tank.
- **Tank Openings**
Circulating line connections and hot outlets are 3/4" NPT on the GL-50, 2" NPT on the GL-80 and GL-119 and 2-1/2" NPT on the GL-175. Other openings are provided for relief valve and temperature control. The GL-175 is equipped with a hand-hold cleantout.

Certifications and Ratings

- **Optional ASME Construction**
ASME construction is available on storage models GL-80 ASME/GL-119 ASME/GL-175 ASME. Certified to ASME boiler and pressure vessel code standards.
- **Limited Warranty**
This product features a five-year limited warranty against tank leaks. See warranty brochure for complete details.

HEAT TRANSFER PRODUCTS, INC.

Dimensional Information

Plastic Jacketed (Non-ASME)

Model Number	Units	A	B	C	D	E	Water Connections		Tank Capacity		Maximum Working Pressure	Approximate Shipping Weight
							Hot Outlet	Front Side	Gallons	Liters		
GL-50 (non-ASME)	inches	52"	19-1/4"	14"	7"	45"	3/4" NPT-M	3/4" NPT-M	50	189	150 PSI	120 lbs.
	mm	1320	489	355	177	1143	19	19			1034 kPa	54 kgs
GL-80 (non-ASME)	inches	59"	23-1/4"	13"	7"	51-1/4"	2" NPT-M	2" NPT-M	80	303	150 PSI	165 lbs.
	mm	1498	590	330	177	1302	50	50			1034 kPa	75 kgs
GL-119 (non-ASME)	inches	64"	27"	13"	4-1/16"	55"	2" NPT-M	2" NPT-M	115	435	150 PSI	250 lbs.
	mm	1625	685	330	177	1397	51	51			1034 kPa	113 kgs

Metal Jacketed (ASME)

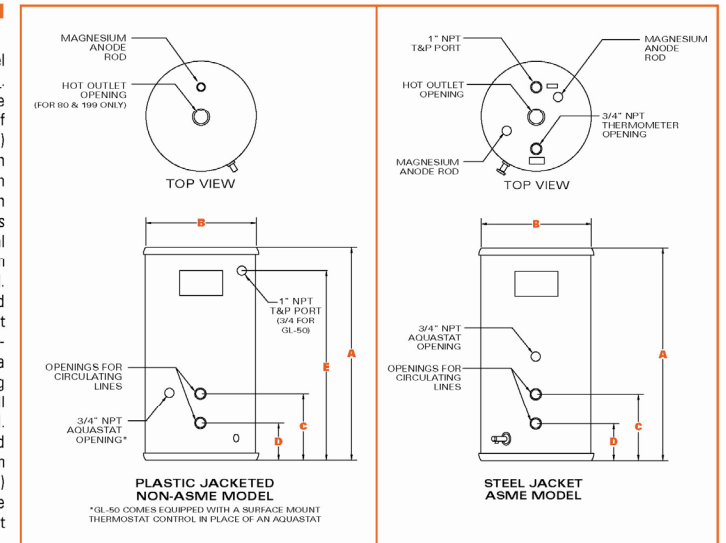
Model Number	Units	A	B	C	D		Water Connections		Tank Capacity		Maximum Working Pressure	Approximate Shipping Weight
							Hot Outlet	Front Side	Gallons	Liters		
GL-80 ASME	inches	58-5/16"	24-7/16"	13-3/16"	6-3/16"	2" NPT-M	2" NPT-M		80	303	125 PSI	260 lbs.
	mm	1481	621	335	157	51	51				862 kPa	118 kgs
GL-119 ASME	inches	59-1/4"	28-1/4"	11-1/16"	4-1/16"	2" NPT-M	2" NPT-M		115	435	160 PSI	340 lbs.
	mm	1505	718	281	103	51	51				1103 kPa	154 kgs
GL-175 ASME*	inches	67-1/4"	32-1/4"	12-9/16"	5-9/16"	2-1/2" NPT-M	2-1/2" NPT-M		175	662	150 PSI	600 lbs.
	mm	1708	819	319	141	64	64				1034 kPa	272 kgs

*Also available in non-ASME model

Recommended Specifications

Storage Tank(s) shall be model

Storage Tank(s) shall have a storage capacity of _____ gallons. Tank(s) interior shall be coated with a high temperature porcelain enamel and furnished with two magnesium anode rods rigidly supported for the metal jacketed and one magnesium anode for the plastic jacketed. Storage Tank(s) shall exceed the efficiency requirement of ASHRAE Standard 90.1b-2001. Tank(s) shall have a working pressure rating of _____ psi, and shall be completely assembled. Tank(s) shall be insulated with rigid polyurethane foam insulation. Storage Tank(s) shall be covered by a five year limited warranty against tank leaks.



ASME Constructions

Metal Jacketed Storage Tank(s) shall be constructed in accordance with the requirements of the ASME Boiler Pressure Vessel Code, Section IV Part HLW.

Division 26 00 00 – ELECTRICAL

Lighting

APPLICATION

A decorative cylinder for surface, wall or pendant mount to compliment recessed downlights of the same aperture and performance.

PRODUCT DATA

REFLECTOR: Heavy gauge spun aluminum reflector with Alzak finish and self trimming flange. Available in a wide range of finishes.

HOUSING: The cylindrical housing is heavy gauge aluminum and finished to an architectural grade. The standard exterior finish is matte white, powder coat paint. The cylinder can be surface mounted, wall mounted or suspended by pendant.

ELECTRICAL: 120 to 277 volt input 50 to 60 Hz electronic ballasts are instant start, under 10% THD. Emergency Battery pack for 90 minute single lamp operation. ETL/CETL Damp Location Listed.

SOCKET: Positive latch 4 pin thermoplastic.

LAMP	WATTS	BASE	BALLAST	LUMENS
Quad Tube 4-Pin	13	G24q-1	Elec.	900
	18	G24q-2	Elec.	1250
	26	G24q-3	Elec.	1800

Standard lamping, initial lumens.

MOUNTING: (Specify when ordering.)

Ceiling (Surface) Mount – Provided with mounting holes for securement to 4" octagon junction box.

Wall Mount – Standard bracket protrudes 4.5" from wall (specify others) mounts to 4" octagon junction box.

Pendant Mount – Swivel mount canopy allows cylinder to hang plumb up to 30° sloped ceiling stem 3/8" IPS (specify length) canopy adds 1.5" to overall length. Standard finish white powder coat. Specify Pendant Kit as follows:

EXAMPLE: PK 24 W

Swivel Pendant Kit
Stem Length in inches (add 1.5" for canopy)
White Finish (W), Black (B), or Bronze (Z)

UL Listed
For Damp Location
Manufactured and tested to UL#1598 and CSA standards.
Note: Suitable for damp location.

Catalog Number – C4SHF / 8SHF / PK12

Example: C4SHF226QE4

Fixture Series	Lamp/Wattage	Ballast/Voltage	Options
Surface C4SHF	QTY. TYPE	E4 / Electronic 120/277	Trim Trim Finish
Pendant C4PHF	2 13 Quad		
Wall C4WHF	2 18 Quad		
Wall C4WHF	2 26 Quad		

Optional Finishes

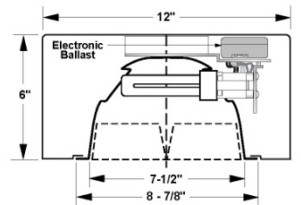
Suffix #

Black Cylinder Housing – B
Bronze Cylinder Housing – Z

Fixture Type	Job Reference/Location
Lamp Type	Approval

Coventry
Architectural Series

SERIES C4SHF Shallow Cylinder
Compact Fluorescent - 12" Diameter Cylinder



Series C4SHF - Shallow Cylinder Compact Fluorescent - 12" Diameter

Series C4SHF - Shallow Cylinder Compact Fluorescent - 12" Diameter

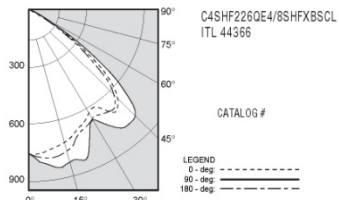
Coventry
Architectural Series

SERIES C4SHF – Shallow Cylinder Compact Fluorescent - 12" Diameter Cylinder

PHOTOMETRICS

Total Luminaire Efficiency: 53.1%
Plane Spacing Ratio: 0 - Deg 90 - Deg 180 - Deg
..... 1.2 1.6 1.3
Specular Aluminum Reflector with Flattened Peened Top and Specular Metal Cross Baffles, Open Bottom.
Aperture Diameter: 7.56"
Lamps: Two 26 Watt Double Twin Tube Compact Fluorescents, Horizontal position.
Lumens: 3600 (2 X 1800)
The 0 Degree Plane is opposite the Sockets.

CANDELA POWER DISTRIBUTION CURVE



CANDELA DISTRIBUTION

DEGREES	0.0	45.0	90.0	135.0	180.0	CANDELA
0	768	768	768	768	768	
5	758	790	816	810	783	76
15	724	812	834	855	773	231
25	669	748	754	775	696	342
35	626	706	751	741	671	455
45	645	640	787	644	614	516
55	301	293	360	269	238	268
65	12	12	28	17	8	20
75	2	2	2	1	1	2
85	0	0	0	0	0	0
90	0	0	0	0	0	0

COEFFICIENTS OF UTILIZATION

EFFECTIVE FLOOR CAVITY REFLECTANCE = 0.20												
Ceiling Reflect.	80	70	50	30	10	0						
Wall Reflect.	70	50	30	10	70	50	30	10	50	30	10	0
ROOM CAVITY RATIO	0	63	63	63	63	62	62	62	59	59	59	53
1	59	57	56	54	58	56	55	53	54	53	52	48
2	55	52	49	47	54	51	48	46	49	47	45	42
3	51	46	43	40	50	46	42	40	44	41	39	37
4	47	42	38	35	46	41	38	35	40	37	34	32
5	44	38	34	31	43	37	33	30	36	33	30	29
6	40	34	30	27	40	34	30	27	33	29	27	25
7	38	31	27	24	37	31	27	24	30	26	24	23
8	35	28	24	21	34	28	24	21	27	24	21	20
9	33	26	22	19	32	26	22	19	25	22	19	18
10	31	24	20	18	30	24	20	18	23	20	17	16

Reflector Multiplier
Champagne Gold Alzak® (C4SHF226QE4/8SHFXBSGL) x .90
(Data prepared by ITL Testing Laboratory)

OUTPUT DATA - ZONAL LUMENS SUMMARY

ZONE	LUMENS	% LAMP	% FIXT
0 - 30	650	18.0	34.0
0 - 40	1105	30.7	57.8
0 - 60	1889	52.5	98.8
0 - 90	1911	53.1	100.0
90 - 180	0	0.0	0.0
0 - 180	1911	53.1	100.0

All candela, lumens, luminance, coefficient of utilization and VCP values in this report are based on relative photometry which assumes a ballast factor of 1.000. Any calculations prepared from these data should include an appropriate ballast factor.

PATHWAY®
The Lighting Source

Pathway Lighting Products, Inc., P.O. Box 591, Old Saybrook, CT 06475-0591
voice 800.342.0592 • fax 800.207.0090 • www.pathwaylighting.com • e-mail: sales@pathwaylighting.com

SF14.0
CNM/CIM

PATHWAY®
The Lighting Source

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voice 800.342.0592 • fax 800.207.0090 • www.pathwaylighting.com • e-mail: sales@pathwaylighting.com

DESCRIPTION

Shallow remodel Microgem recessed housing with integral electronic low voltage transformer 35W max. 120V or 277V.

For remodel applications. Insulation must be kept 3" from all sides and at least 1" above the housing. Use in shallow plenums.

Catalog #	Type
Project	
Comments	Date
Prepared by	

SPECIFICATION FEATURES

A...Housing

Low voltage recessed fixture housing for remodel shallow installations. Includes integral low voltage electronic transformer. 14 ga. steel junction box.

B...Electrical

Socket is pre-wired to the j-box 18AWG SF-1 leads. Primary lead is 120V or 277V. Transformer is rated 180° Class H.

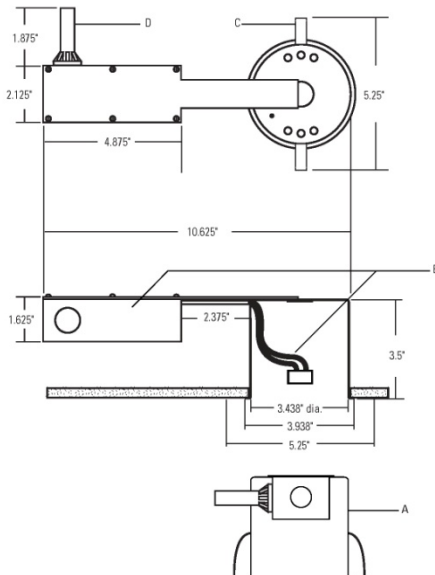
C...Mounting

Provided with two (2) adjustable spring steel mounting clips that adjust 1.5" vertically to accommodate various ceiling thicknesses.

D...System Protection

Transformers have thermal protection and operate at 11.5 volts nominal.

Ceiling Cut-Out: 3.75" dia.



**MICROGEM
SHALLOW
HOUSING**

C800
Remodel Housing
w/ Integral Low
Voltage Electronic
Transformer
FOR 12V LAMP 35W max.



ORDERING INFORMATION

C800	
------	--

Housing	Voltage
C800 - Microgem shallow remodel housing for 12V power supply.	120 - 120 volts primary 277 - 277 volts primary

DESCRIPTION

4.3" round recessed fixed reflector trim for showerlight applications. For use with 12V MR16 lamp 50W max. Suitable for wet locations.

Catalog #	Type
Project	
Comments	Date
Prepared by	

SPECIFICATION FEATURES

A Trim

Fixed position downlight trim for wet location. 4.3" o.d. round trim face. Includes internal reflector and internal silicone gasket.

B Lamp

For use with 12V MR16 lamp 50W max. Lamp not included.

C Socket

GU5.3 bi-pin socket for 12V MR16.

D Lens

Includes clear protective glass lens.

E Finish

MLV2037 Powder coated white trim with clear reflector.

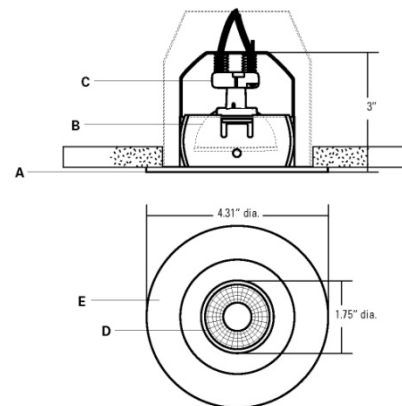
MLV2038 Powder coated white trim with black reflector.

MLV2039 Powder coated white trim with white reflector.

MLV2043 Chrome trim with clear reflector.

MLV2044 Chrome trim with black reflector.

MLV2045 Chrome trim with white reflector.



**MICROGEM
RECESSED**

MLV2037 - 2045
4.3" O.D.
Round Die Cast
Showerlight Trim
w/ Reflector for Wet
Location

FOR 12V MR16 50W max.

Compatible Housings:

C500 / C500-SH

C600 / C600-EL

C700

C800

C900

SH2A



ORDERING INFORMATION

MLV2038	
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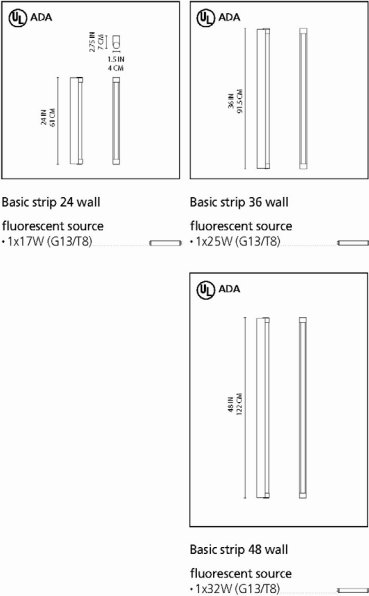
Fixture	
MLV2037	White Trim w/ Clear Reflector
MLV2038	White Trim w/ Black Reflector
MLV2039	White Trim w/ White Reflector
MLV2043	Chrome Trim w/ Clear Reflector
MLV2044	Chrome Trim w/ Black Reflector
MLV2045	Chrome Trim w/ White Reflector

Basic strip 24-36-48 wall

Ron Rezek

Wall mounted luminaire for direct linear fluorescent lighting particularly suited for bathroom mirror applications.

- linear exposed fluorescent lamp
- body in aluminum extrusion with natural anodized or matte white powder coated finish
- end caps in chrome, silver, or white finish
- mounting to standard electrical junction boxes at center of luminaire
- fixture is supplied with a white powder coated cover plate for mounting on junction boxes and fitting for optional "pigtail" conduit for mounting without a cover plate as show in image on opposite page



Recessed wall luminairesHousing:

Constructed of die cast and extruded aluminum components with integral wiring compartment. Mounting tabs provided.

Enclosure: One piece die cast aluminum faceplate. Tempered glass, .157" thick with translucent white ceramic coating, machined flush to faceplate surface. Faceplate is secured by four (4) flush, socket head, stainless steel captive screws threaded into stainless steel inserts in the housing casting. Continuous high temperature, molded silicone rubber gasket for weather tight operation.

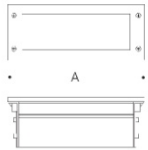
Electrical: Compact fluorescent lampholder: 2G11, 4-pin, rated 75W, 600V. Ballast: Electronic, HPF for -18°C starting, universal voltage (120V through 277V).

Through Wiring: Maximum four (4) No. 12 AWG conductors (plus ground) suitable for 75°C. Two 3/8" knockouts provided for 1/2" conduit.

Finish: These luminaires are available in five standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV); Eurocoat™ (URO). To specify, add appropriate suffix to catalog number. For complete description of BEGA finishing process, refer to technical information section at end of catalog. Custom colors supplied on special order.

U.L. listed, suitable for wet locations and for installation within 3 feet of ground. Suitable for all types of construction, including poured concrete. Type non-IC. Protection class: IP 65.

Type:
BEGA Product #:
Project:
Voltage:
Color:
Options:
Modified:



Horizontal or vertical recessed luminaires with die cast aluminum faceplate. Flush machined, tempered glass diffusers with internal white translucent ceramic coating. Electronic ballast for -18°C starting. U.L. listed, suitable for wet locations. IP 65. Color: Standard BEGA finishes.



		Lamp	Lumen	A	B	C
2027P	Recessed	ADA 1 27W CF twin-4p	1800	16 3/16	4 1/16	4

BEGA/US 1000 BEGA Way, Carpinteria, CA 93013 [P] 805-684-0533 [F] 805-684-6682
©Copyright BEGA/US 2005 updated 4/05

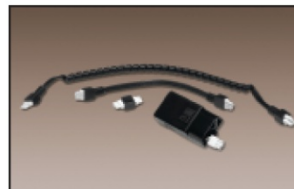
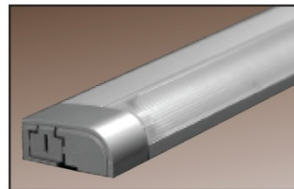
SLIQUE T2®
UNDERCABINET/DISPLAY
SUBMINIATURE FLUORESCENT



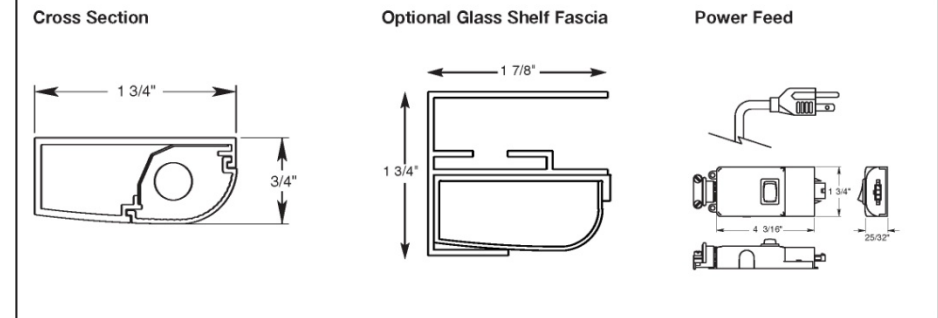
Slique T2 combines the smallest fluorescent lamp technology with an integral miniature ballast. The result is indeed the sleekest under cabinet and display fixture available. It is no longer necessary to look for hiding places for a remote ballast. The entire fixture is a tiny 3/4 inch by 1 3/4 inches.

Constructed of aluminum with matching molded rounded endcaps Slique T2 packs a huge amount of light from a tiny source. An excellent polished aluminum reflector directs the light onto the work surface and minimizes shadows. The lamp is covered by a clear linear prismatic ALKCORYLIC lens, which is very pliable and guaranteed not to discolor.

Installation is a breeze. Install the universal wiring module at the end of the luminaire and plug the wiring harness right into the end cap. If you prefer, install the wiring module behind Slique T2 and simply use an interconnect cord to plug into the end cap. When installing a longer run of luminaires, or if you need to turn corners, simply use tiny straight connectors or interconnect cords.



SLIQUE T2®
UNDERCABINET/DISPLAY
SUBMINIATURE FLUORESCENT



SPECIFICATIONS

CONSTRUCTION

Extruded aluminum housing with injection molded polycarbonate endcaps. Internal specular aluminum asymmetric reflector.

DIFFUSER

Clear Alkcorylic™ linear-prismatic.

FINISH

White polyester resin powder coat with white endcaps. Black polyester resin powder coat with black endcaps. Anodized aluminum with aluminum colored endcaps.

ELECTRICAL

Electronic integral ballast. 277V, 347V and dimming not available.

INSTALLATION FEATURES

Universal power feed may be installed at either end of the fixture run. The power feed can be mounted remotely by adding an interconnection cord between the power feed and the first fixture. Mini-connectors continue power through multiple fixtures mounted adjacent to one another

and interconnect cords can be used to turn corners, or by-pass obstructions, up to a maximum load of 6 amps.

LABELS

UL, CUL & IBEW.

LAMPS

1 or 2 FM11/H or FM13/H T2 subminiature fluorescents. Supplied with 3000K tri-phosphor lamps. Optional 4100K lamps are available. 10,000 hour rated average lamp life. CRI 80.

LIFETIME GUARANTEE

ALKCO will repair or replace any Slique T2® fluorescent fixture which fails as long as you own it.

ORDERING INFORMATION

CAT#	LAMPS	LENGTH	TOTAL LUMENS
SQ111	1-FM11/H T2	18 15/16"	680
SQ113	1-FM13/H T2	22 15/16"	860
SQ211	2-FM11/H T2	36 15/16"	1360
SQ213	2-FM13/H T2	44 15/16"	1720

Note: Add suffix WH for white, BLK for black and AL for aluminum fixture, end caps and power feed (Aluminum fixtures have black cords where applicable).

POWER FEED STYLE (required to electrically feed each run)

SQ-DW	Direct wire power feed
SQ-CS	Portable power feed with 6ft. cordset

Note: Power feeds are universal and may be mounted directly to either end of fixture run or may be mounted remotely using an interconnect cord between the power feed and either end of the fixture run

CONNECTOR ACCESSORIES (order one for each connection point)

SQC	connector for flush connections
SQICF-B	Black 12-36" coiled interconnect cord
SQICF-W	White 12-36" coiled interconnect cord
SQICS-B	Black 6" straight interconnect cord
SQICS-W	White 6" straight interconnect cord

OPTIONAL 4100K LAMP

/41K	4100K lamp substituted for 3000K lamp
------	---------------------------------------

OPTIONAL GLASS SHELF FASCIA EXTRUSION

SGGSF-4	4" fascia extrusion for mounting to 3/8" or 1/2" glass shelf.
SGGSF-8	8" fascia extrusion for mounting to 3/8" or 1/2" glass shelf.

Note: specify /PS for polished silver anodized finish or /PG for polished gold anodized finish

ELECTRICAL DATA

LAMP WATTAGE	11W	13W	(2)11W	13W
Input Watts	14	16	28	32
Max. Amps	.11	.13	.23	.27
Power Factor	> .95			
THD	<15%			

277V, 347V and dimming ballasts not available



Specification Data – Colormotion Live Panels 2x2 Indoor – LP Series

LP SERIES – LIVE PANELS 2' x 2' (INDOOR)

Live Panels create a new sense of drama combining color-in-motion with exquisite decorative illuminated panels.



Item LP22-120V
Live Panel 2'x2' Color Changing Modules
23 5/8" x 23 5/8"



Color Functions Single Color: Red, Green, Blue, Yellow, White, etc.

Color Changing: Slow Flow, Roll Chase, Roll Color, Multi-Color Chase, Bi-Color Chase, Fast Flow, speed control

Technical Parameters

LEDs	Red	Green	Blue
	96	96	96

Operating Temp: -20°C to + 45°C
Operating Humidity: 0 - 95%
Input Voltage: AC100-240V
Output Voltage: DC12V
Operating Current: 2.8A
Maximum Power: 33.6W

Control System

Controller: LC-191c1-5.1
LP-SA Signal Amplifier (One req'd for each 15-120v panels)

UL Listed

Product subject to change without notice



Specification Data – Colormotion Live Panels 2x2 Outdoor – LPO Series

LPO SERIES – LIVE PANELS 2' x 2' (OUTDOOR)

Live Panels create a new sense of drama combining color-in-motion with exquisite decorative illuminated panels. These panels apply advanced microelectronics and digital technology to produce dynamic color-changing surface mounted lighting fixtures. Wall or ceiling mounted as individual units or in combination. Live Panels produces a soft, uniform light and polychrome visual effect.



Item LPO22-12V
Live Panel 2'x2' Color Changing Modules
23 5/8" W x 23 5/8" W x 6" H



Color Functions Single Color: Red, Green, Blue, Yellow, White, etc.

Color Changing: Slow Flow, Roll Chase, Roll Color, Multi-Color Chase, Bi-Color Chase, Fast Flow, speed control

Technical Parameters

LEDs	Red	Green	Blue	Lumens
	96	96	96	145 lm

Operating Temp: -20°C to + 45°C
Operating Humidity: 0 - 95%
Input Voltage: AC120V
Output Voltage: DC12V
Operating Current: 2.8A
Maximum Power: 33.6W
Protection Rating: IP65

Control System

LC109C1-12V
Controller for LPO22-12V
(5 5/8" L x 4" W x 2 7/8" h)

LT-SA – Signal Amplifier
Designed to amplify the control signal generated from the controller when connected to the signal transmission cable. LT-SA improves the signal, which may deteriorate or become distorted during transmission. Allows a large number of LEDs to be linked in series without compromising the lighting effect. One required for every 15 panels.

UL Listed

Product subject to change without notice

Colormotion®

A Jesco Lighting Group Company

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Colormotion®

A Jesco Lighting Group Company

66-25 Traffic Avenue, Glendale, NY 11385 Tel: 718-366-3211, Fax: 718-366-3646, www.colormotion.us



HP-S4253

42" High Definition Plasma TV

Specifications

10,000:1 contrast ratio/1300 cd/m² brightness. Two of the most important factors in overall picture quality, contrast and brightness, achieve new heights in these latest generation plasma panels.

Together with the DNle proprietary circuitry, Samsung's new plasma TV's give the most stunning realistic picture quality ever from a flat panel set.

1024 horizontal x 768 vertical pixel resolution presents video and text with outstanding clarity and resolution.

60,000 hour panel life. Samsung's new 5th generation panels are made to last longer, so you can be confident that the high picture quality will endure.

16:9 Widescreen aspect ratio: Fill your screen with DVD and HDTV images which are increasingly available and presented in wide screen formats. On board aspect ratio controls allow for handling analog 4:3 sources in standard, wide screen, panorama, and zoom modes.

Built-in HDTV tuner (ATSC/NTSC)

13-bit processing (549 billion colors)

When it comes to reproducing natural images, Samsung TVs are unrivaled. Thanks to the new 13-bit processing capability of DNle™, Samsung TVs can produce over 549 billion colors. Compare that to most competitors' 10-bit processing systems that produce just one billion colors. From the faint sunlight of dawn to the extreme spotlights of a fashion show, Samsung Plasma TVs provide vivid, life-like images that rival reality.

Split screen & picture-in-picture enables convenient simultaneous viewing of TV and video or PC sources.

DNle™ The Samsung Digital Natural Image engine. This exclusive Samsung technology dramatically improves the picture by enhancing the contrast, detail, white balance and reduces noise.

175° (H/V) viewing angle

3D Y/C digital comb filter constantly analyzes the three dimensions of picture height, picture width, and picture changes over-time, to dramatically reduce edge image artifacts while improving transition detail.

Burn-in resistant panel with

- Auto pixel shift (user programmable)
- Signal pattern processing function
- White screen processing function

TrueWide design with hidden speaker

FilterBright™ anti-glare filter

Power save feature

10-watt per channel built-in audio amplifier. Powerful built-in amplifier to drive the integrated stereo speakers.

Built-in 1-way, 2-speaker system

SRS TruSurround XT™. TruSurround is a patented SRS technology that solves the problem of playing 5.1 multichannel content over two speakers. TruSurround delivers a compelling, virtual surround sound experience through the two-speaker internal playback system.

1-year parts and labor warranty.

Samsung's warranty is longer than most competitors for a reason. The product is built to last and provide years of trouble-free top quality enjoyment.

Connections

Rear A/V connections

2 HDMI – High Definition Multimedia Interface

2 component video inputs (Y,Pb,Pr)

S-Video and composite video input

PC (RGB) input

Side A/V connections

S-Video and composite video input

Headphone jack

Net dimensions and weight (WxHxD)

Monitor with speakers:
41.5" x 28.1" x 3.8"

Monitor with speakers and stand:
41.5" x 30.1" x 13.4"

Monitor weight: 88.2 lbs.

TV/Video

- New Samsung Gen-5 panel
 - 10,000:1 contrast ratio
 - 1,300 cd/m² brightness
- 60,000 hour panel life* (27 years @ 6 hours/day)
- 1024(H) x 768(V) pixel resolution
- 16:9 widescreen aspect ratio
- Built-in HDTV tuner (NTSC/ATSC)
- 13-bit processing (549 billion colors)
- Split screen & picture in picture
- Samsung DNle™ (Digital Natural Image engine)
- 175°(H/V) viewing angle
- 3D Y/C digital comb filter
- Auto pixel shift (burn in resistance)
- TrueWide design with hidden speaker
- FilterBright™ anti-glare filter
- Power save feature



Audio

- 10-watt per channel built-in audio amplifier
- Built-in 1-way, 2-speaker system
- SRS TruSurround XT™

Rear A/V connections

- 2 HDMI – High Definition Multimedia Interface
- 2 component video inputs (Y,Pb,Pr)
- S-Video and composite video input
- PC (RGB) input

Side A/V connections

- S-Video and composite video input
- Headphone jack



Inspiron E1705

- ☒ Intel® Core™ Duo T2250 (1.73GHz, 2MB L2 Cache, 533 MHz FSB) [Included in Price]
- ☐ Intel® Core™ 2 Duo T7200 (2.00GHz, 4MB L2 Cache, 667 MHz FSB) [add \$200 or \$6/month¹]
- ☐ Intel® Core™ 2 Duo T7400 (2.16GHz, 4MB L2 Cache, 667 MHz FSB) [add \$375 or \$11/month¹]
- ☐ Intel® Core™ 2 Duo T5200 (1.60GHz, 2MB L2 Cache, 533 MHz FSB) [add \$50 or \$2/month¹]

Operating System (Office software not included)

- ☒ FREE Upgrade to Genuine Windows Vista™ Home Premium with 1GB of memory [Included in Price]
- ☐ Easy Transfer Cable+FREE Upgrade Genuine Windows Vista™ Home Premium [add \$39 or \$1/month¹]
- ☐ Genuine Windows Vista™ Business [add \$99 or \$3/month¹]
- ☐ Genuine Windows Vista™ Ultimate [add \$199 or \$6/month¹]



LCD Panel

- ☐ 17 inch Wide Screen XGA+ Display [subtract \$149]
- ☒ 17 inch UltraSharp™ Wide Screen UXGA Display with TrueLife™ [Included in Price]
- ☐ 17 inch Wide Screen XGA+ TFT Display with TrueLife™(glossy) [subtract \$139]

Memory

- ☐ 1GB Shared Dual Channel DDR2 SDRAM at 533MHz [subtract \$200]
- ☐ 1GB Shared Dual Channel DDR2 SDRAM at 667MHz [subtract \$175]
- ☐ 2GB Shared Dual Channel DDR2 SDRAM at 533MHz [subtract \$50]
- ☒ 2GB Shared Dual Channel DDR2 SDRAM at 667MHz [Included in Price]

Hard Drive

- ☒ 160GB 5400 RPM SATA Hard Drive [Included in Price]
- ☐ 100GB 7200RPM SATA Hard Drive [add \$80 or \$3/month¹]

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HT-Q70

Five DVD 5.1 Channel Home Theater Audio System

- 5-disc changer
- Highest power offering 1000W total output power
- Improved USB host play now with MPEG video playback, MP3, DivX, WMA, JPEG support & photo files
- Dolby Digital®, Dolby Pro Logic® and DTS™ Decoders
- Progressive scan with component video outputs
- Multimedia disc playback
- 2-way speakers
- XM satellite radio-ready*
- Optional Connect-N-Play antenna to receive XM programming
- Wireless rear channel ready
- Optional module for wireless rear channel
- HDMI out with video up-scaling (up to 1080i)



Specifications

Total power output: 1000W

Frequency response:

Satellite: 145Hz~20KHz

Subwoofer: 35Hz~140Hz

Main Set: 20Hz~20 KHz

Samsung Electronics America, Inc.
105 Challenger Road
Ridgefield Park, NJ 07660-0511
Tel (201) 229-4000 • 1-800-SAMSUNG
www.samsung.com

Division 28 00 00 – ELECTRONIC SAFETY AND SECURITY

Fire Detection and Alarm



Technical Specifications

Unit Number:	PE120E
UPC:	0-25417-16512-8
Power Source:	120VAC
Sensor:	Photoelectric
Audio Alarm:	85dB at 10ft
Temperature Range:	40°F (4.4°C) to 100°F (37.8°C)
Humidity Range:	5%-95% relative humidity (RH)
Size:	5.6" in diameter x 1.55" depth
Weight:	1lb
Interconnects:	Up to 24 Kidde devices
LED:	Green, receiving ac power Red, alarm mode
Warranty:	5 year limited

Architectural and Engineering Specifications

The smoke alarm shall be Kidde Unit PE120E or approved equal. It shall be powered by a 120VAC, 60Hz, 80mA source along with a 9V battery back up. The unit shall incorporate a photoelectric sensor with nominal sensitivity of 2.06%/ft. The temperature operation range shall be between 40°F and 100°F (4°C and 38°C) and the humidity operation range shall be 5% - 95% relative humidity.

The smoke alarm can be installed on any standard single gang electrical box, up to a 4" octagon junction box. The electrical connection (to the alarm) shall be made with a plug-in connector. A maximum of 24 Kidde devices can be interconnected in a multiple station arrangement. The interconnect system must not exceed the NFPA (National Fire Protection Association) limit of 18 initiating devices, of which 12 can be smoke alarms. With 18 initiation devices (smoke, heat, CO, etc.), interconnected, it is still possible to interconnect 6 strobe lights and or relay modules. The unit shall provide optional tamper resistance that deters removal of the unit from the wall or ceiling.

The alarm shall include a test button that will electronically simulate the presence of smoke and cause the unit to go into alarm. This sequence tests the unit's electronics, battery and horn to ensure proper operation.

The unit shall include a piezoelectric horn that is rated at 85dB at 10 feet. The unit shall also include a low battery warning utilizing a brief alarm chirp every 30-40 seconds for a minimum of seven (7) days.

The unit shall incorporate one red LED to indicate the alarm's current status and mode of operation. The red LED will indicate one of two conditions:

Standby Condition: The red LED will flash every 30-40 seconds to indicate that the smoke alarm is operating properly.

Alarm Condition: When the alarm senses products of combustion and goes into alarm, the red LED will flash rapidly (one flash per second). The rapid flashing LED and pulsating alarm will continue until the air is cleared.

The unit shall incorporate one green LED to indicate the alarm's current status and mode of operation. The green LED will indicate one of two conditions:

Standby Condition: The green LED will be steady on, indication the presence of AC power.

Alarm Condition: The green LED of an alarm that senses smoke will flash to indicate the memory condition. The memory will remain activated until it is reset by pushing the test button.

The unit shall at a minimum meet the requirements of UL217, NFPA72, (chapter 11 2002 edition), The State of California Fire Marshall, NFPA 101 (One and two family dwellings) Federal Housing Authority (FHA), Housing and Urban Development (HUD). It shall also include a 5-year manufacturer's limited warranty.

Description

The Kidde PE120E is a 120VAC powered photoelectric smoke alarm with 9V battery back up. This advanced smoke alarm has the ability to function as a stand-alone unit or in an interconnected system. The Kidde PE120E includes a test button, quick-connect power harness and offers a 5-year limited warranty.

Consumer Benefits

The Kidde PE120E 120VAC, photoelectric smoke alarm provides the best protection against slow smoldering fires and other types of fires providing an early warning signal to you and your family in the event of a smoke or fire incident. The PE120E includes a 9V battery back up, providing continuous protection even during a power failure. This alarm includes a quick connect power harness making installation simple and easy.

Photoelectric Sensor

Advanced photoelectric sensor is especially effective in detecting smoldering fires

9V Battery Backup

Provides continuous protection even during power outages

Test Button

Tests unit's electronic circuitry, horn and battery function

Green LED

Indicates the presence of AC power

Red LED

Indicates that the smoke alarm is operating properly and alarm condition



Features and Benefits

- **Photoelectric Sensor** – Advanced photoelectric sensor is especially effective in detecting smoldering fires.
- **Battery Backup (9V Battery Included)** – Provides continuous protection even during power outages.
- **Test Button** – Tests unit's electronic circuitry, horn and battery function.
- **Quick Connect Power Harness** – Makes installation fast and easy.
- **Dust Cover** – Protects sensor during construction.
- **Battery Pull Tab** – Eliminates battery installation time and keeps battery fresh.
- **Red LED** – Indicates that the smoke alarm is operating properly and alarm condition.
- **Green LED** – Indicates the presence of AC power.

1394 South Third Street, Mebane NC 27302
1-800-880-6788 • www.kiddeus.com



Technical Specifications

Part Number:	900-0121
Unit Number:	KN-COP-IC
UPC:	0-47871-00121-7
Power Source:	120VAC, 60Hz, 9V battery back-up
Sensor:	Electrochemical
Audio Alarm:	85dB at 10ft
Temperature Range:	40°F (4°C) to 100°F (38°C)
Humidity Range:	5%-95% relative humidity (RH)
Size:	5.75" diameter x 1.8" depth
Weight:	1lb
Interconnects:	Up to 24 Kidde devices
Warranty:	5 year limited

Architectural and Engineering Specifications

The carbon monoxide alarm shall be Kidde Unit Number KN-COP-IC (part number 900-0121) or approved equal. It shall be powered by 120VAC, 60Hz source with a 9V battery backup. The temperature operating range shall be between 40°F and 100°F (4°C and 38°C) and the humidity operating range shall be 5% - 95% relative humidity.

The unit's CO sensor shall be of a fuel cell design and shall meet the sensitivity requirements of Underwriters Laboratories UL2034 Single and Multiple Station Carbon Monoxide Alarms. The unit shall provide accuracy of $\pm 20\% \pm 15$ parts per million (ppm) when reading CO concentration levels.

The alarm can be installed on the surface of any wall or ceiling following the UL/NFPA Manufacturer's recommended placement guidelines. The alarm can be installed on any standard single gang electrical box, up to a 4" octagon junction box. The electrical connection to the alarm shall be made with a plug-in connector. The unit shall provide optional tamper resistance that deters removal of the unit from the wall or ceiling. No additional pieces shall be required to activate this feature.

A maximum of 24 Kidde devices can be interconnected in a multiple station arrangement. The interconnect system must not exceed the NFPA (National Fire Protection Association) limit of 18 initiating devices, of which 12 can be smoke alarms. With 18 initiating devices (smoke, heat, CO, etc.), interconnected, it is still possible to interconnect 6 strobe lights and/or relay modules.

The unit shall incorporate a digital display that meets the sensitivity requirements of UL 2034. The display will identify the levels of CO in parts per million (ppm) once that level reaches 30ppm (i.e., "abnormal" levels). The display will have a red dot in the lower right corner that will blink to indicate the normal operation.

The alarm shall include a test button that will electronically simulate the presence of CO and cause the unit to alarm. This sequence tests the unit's electronics and horn to ensure proper operation.

The alarm shall include a test button that will electronically simulate the presence of CO and cause the unit to alarm. This sequence tests the unit's electronics and horn to ensure proper operation.

In accordance with UL 2034, the CO sensor will not alarm to levels of CO below 30 ppm and will alarm in the following time range when exposed to the corresponding levels of CO.

70 ppm CO Concentration	60 - 240 minutes
150 ppm CO Concentration	10 - 50 minutes
400 ppm CO Concentration	4 - 15 minutes

The alarm shall utilize a piezoelectric horn that is rated at 85 decibels at 10 feet.

When the unit detects carbon monoxide, the alarm pattern will be four (4) short beeps - followed by five (5) seconds of silence - followed by four (4) short beeps. The unit shall incorporate an "Intelligent Interconnect" feature that allows it to respond to a smoke incident when interconnected with smoke alarms. During a smoke incident, the horn will sound in the required, repetitive manner for a smoke alarm - three (3) beeps, a pause, three (3) beeps, a pause. The digital display will also scroll the word "Fire" across the display.

The unit shall incorporate 3 LEDs. A green LED will be steady on when AC power is present and will flash every 7 seconds when in the battery only mode. A red LED will flash in unison with the sounder pattern for both a smoke or CO incident, or an error condition. The amber LED will illuminate if that unit is the originating alarm in a CO incident.

The unit shall include a peak level memory feature that will store the peak CO level sensed since the unit was last reset. The peak CO level stored in the unit's memory shall be displayed (in ppm) on the digital display by pressing the appropriate button on the unit. The memory shall also be capable of being reset.

The unit shall also indicate a low battery warning by issuing a brief alarm chirp and the red LED will flash approximately every 15 seconds. Also, the digital display shall flash "Lb".

The unit shall be listed to UL 2034. It shall also include a 5-year manufacturer's limited warranty.

Test/Reset

Tests CO alarm circuit operation and allows you to immediately silence the alarm

Amber, Initiation Alarm LED

Red Alarm LED

Green Power LED

Digital Display

Displays the level of carbon monoxide the unit is sensing. The unit updates this reading every 15 seconds

Adjustable Mounting Bracket

Allows for fast installation and perfect alignment

NEW FEATURE: Alerts user to replace CO alarm after 7 years of operation



Description

The Kidde 900-0121 is an AC wire-in carbon monoxide alarm that protects you and your family from the dangers of carbon monoxide. The digital display allows for continuing monitoring of carbon monoxide levels. Its multiple contractor friendly features ensure easy installation and minimal troubleshooting. This alarm interconnects with up to 24 Kidde devices including smoke alarms, CO alarms and heat alarms on one wiring network. The 900-0121 includes a 9V battery back up for continuous protection in case of power failure along with a 5 year limited warranty.

Consumer Benefits

The Kidde 900-0121 is an essential device designed to protect you and your family from the dangers of carbon monoxide in your home. The digital display feature allows constant monitoring of carbon monoxide levels and updates every 15 seconds to let you know if levels change. The peak level memory feature displays the highest CO level measured since the last reset. The 9V battery back up provides continuous monitoring of carbon monoxide levels even during a power failure. The 900-0121 includes a smart interconnect system. This system enables the unit to alarm in a carbon monoxide pattern and sound a different pattern when interconnected to a Kidde smoke alarm that is in alarm mode.

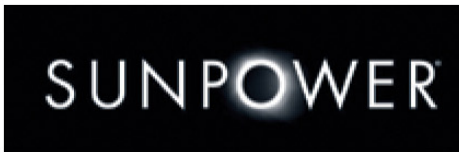
Contractor-Friendly Features

- **Battery Pull Tab** – Eliminates battery installation time and keeps battery fresh.
- **Adjustable Mounting Bracket** – Allows for fast installation and perfect alignment.
- **Quick Connect** – Installs quickly with snap-on electrical harness.
- **Sealed Cover** – Reduces nuisance alarms. Sealed to protect sensor from contaminants prior to installation.
- **Tamper Resist Locking Feature** – To deter battery and alarm theft.
- **Alkaline Battery Backup** – for continuous protection in case of power failure.

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Division 48 00 00 – ELECTRICAL POWER GENERATION

Solar Energy Electrical Power Generation



The SunPower SPR-215-BLK is designed specifically for on-grid residential systems where a combination of high module efficiency and outstanding appearance is desirable. Utilizing 72 series-connected A-300 solar cells, the SPR-215-BLK delivers industry-leading power density in a unique all-black module package with exceptionally uniform appearance.

SPR-215-BLK RESIDENTIAL PV MODULE

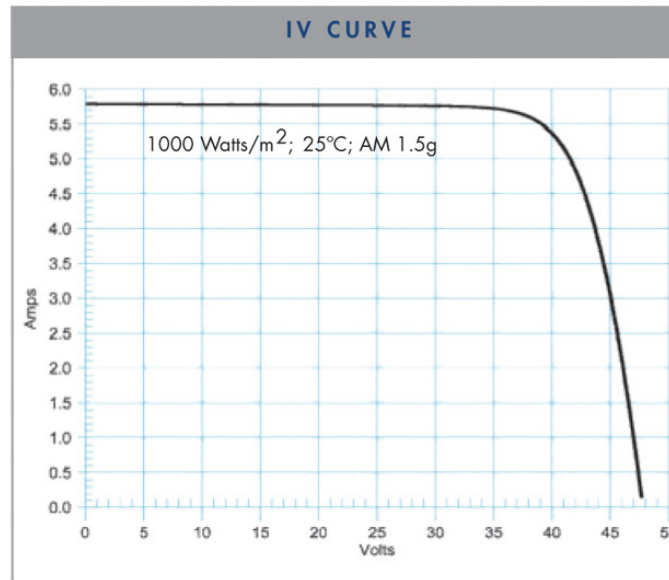
ELECTRICAL CHARACTERISTICS AT STANDARD TEST CONDITIONS (STC)

STC is defined as: irradiance of 1000W/m², spectrum AM 1.5g and cell temperature of 25°C

Peak Power ^{1,2}	P _{max}	215W
Rated Voltage	V _{mp}	40.0V
Rated Current	I _{mp}	5.4A
Open Circuit Voltage	V _{oc}	47.7V
Short Circuit Current	I _{sc}	5.9A
Series Fuse Rating		15A
Maximum System Voltage		600V (UL)
		1000V (IEC)
Temperature Co-efficients	Power	-0.38%/°C
	Voltage	-136.8mV/°C
	Current	2.3mA/°C
Module Efficiency		17.3%
PTC Rating		197.6W

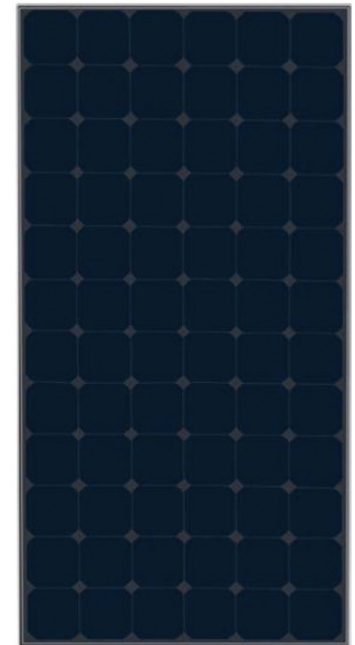
MECHANICAL SPECIFICATIONS

Length (mm) x Width (mm)	1559 x 798
Thickness, including junction box (mm)	46
Weight (kg)	15



¹ Peak Power Tolerance: +/- 5%

² Power guaranteed for 25 years. See SunPower Limited Warranty for details.



SunPower Corporation®
1.877.786.0123 Email: sales@sunpowercorp.com www.sunpowercorp.com
Engineered in California

EPV-42 Module Product Specification

The EPV-42 is a thin-film photovoltaic ("PV") module with amorphous silicon monolithically-integrated devices and a stabilized power rating of 42 watts at maximum power point under standard test conditions ("STC"). This module is rated for use in applications with a maximum system voltage of DC 600 V with U.S. style wiring and DC 1000 V for European style wiring.



Physical Characteristics

The module is a frameless glass laminate consisting of two 0.125 in. (0.3 cm) annealed float glass lites, laminated with EVA (ethylene vinyl acetate) to provide an environmental seal. The module dimensions are 25 in. x 49 in. (63.5 cm x 124.5 cm), and the weight is approximately 27 lbs. (12.3 kg). Electrical connections are made via two 18" (45.7 cm) leads emanating from a sealed boot. For modules to be used in the U.S., leads are one red and one black, 14-gauge, XLP 600 V (USE-2) rated per the U.S. National Electrical Code (NEC) article 690). For modules used outside the U.S., see "Options and Specialty Modules".

Electrical Characteristics

The rated electrical parameters of the module under Standard Test Conditions ("STC") and under PVUSA Test Conditions ("PTC") are:

	STC ⁽¹⁾	PTC ⁽²⁾
Open-Circuit Voltage (V_{oc})	60.0 V	57.0 V
Short-Circuit Current (I_{sc})	1.18 A	1.20 A
Operating Voltage (V_{mp})	45.0 V	43.0 V
Operating Current (I_{mp})	0.94 A	0.95 A
Nominal power (P_{mp})	42.0 W	40.5 W
Temperature coefficients:	V_{oc} , V_{mp}	-0.28%/°C
	I_{sc} , I_{mp}	+0.09%/°C
	P_{mp}	-0.19%/°C

¹ STC is defined as 1,000 W/m² irradiance, AM1.5 solar spectral distribution, 25°C cell temperature.

² PTC is defined as 1,000 W/m², AM1.5, 20°C ambient temperature, 1m/s wind speed.

The rating of the EPV-42 module takes into account the attenuation that occurs during the first several months of module deployment. A label on the rear of the module provides both the rated and measured electrical parameters.

Initial Performance

When an EPV-42 module is first deployed, its output characteristics at STC are higher than the rated values at STC. Power may be between 12% and 20% higher than the rated value, operating voltage may be up to 6% higher, operating current may be up to 14% higher, and short-circuit current may be up to 5% higher. These higher values and other applicable documents (i.e. NEC 690 and Underwriters Laboratories (UL) 1703) should be considered when designing the PV system.



Certifications

The EPV-42 is certified pursuant to the International Electrotechnical Commission (IEC) 61646 tests as performed by the Photovoltaic Testing Laboratory of Arizona State University and is UL listed. Through Verband der Elektrotechnik (VDE), the EPV-42 has received approval for Safety Class II for DC 1000 V through applied standards IEC 61430-1 and IEC 61730-2.

Limited Warranty

The EPV-42 comes with a limited warranty covering defects in workmanship or materials for 2 years, and performance for a period of 25 years. Please refer to the EPV Amorphous Silicon Photovoltaic Module Limited Warranty for details. Care must be taken when handling and installing the module to avoid edge damage to the glass or undue glass stress. Modules are shipped with plastic corner protectors that should be removed after the module is installed.

Options and Specialty Modules

Options such as longer or shorter lead lengths, different wire for use in countries other than the U.S., electrical connectors, alternative mounting methods, or different module voltage and current ratings are available to meet specific customer requirements. Specialty modules, including partially-transparent (with custom logos or artwork, if desired) or building integrated photovoltaic (BIPV) modules, may also be available.





Concorde AGM

Specifications for Concorde SunExtender Batteries

Part Number Type	Volts	Capacity in Amp-Hours at 75 degrees F					Shipping Weight
		2 Hour	8 Hour	24 Hour	48 Hour	100 Hour	
PVX-340T	12	27	30	34	36	38	25
PVX-420T	12	33	36	42	43	45	30
PVX-490T	12	39	43	49	50	55	36
PVX-560T	12	45	54	58	66	70	40
PVX-690T	12	53	60	69	73	76	51
PVX-840T	12	66	74	85	95	102	57
PVX-890T	12	70	83	95	108	115	70
PVX-1040T	12	82	90	105	120	130	66
PVX-1080T	12	86	97	108	118	122	69
PVX-2120L	12	172	194	212	235	244	138
PVX-2580L	12	209	230	255	280	300	165
PVX-2240T	6	143	184	220	247	278	67 93



Model	SPR-4000x
Maximum AC Power Output	4000 W
AC Output Voltage (nominal)	240 VAC
AC Voltage Range	211-264 VAC
AC Frequency (nominal)	60 Hz
AC Frequency Range	59.3-60.5 Hz
Maximum Continuous Output Current	16.7 A
Current THD	< 3%
Power Factor	> 0.9
DC Input Voltage Range	195-600 VDC
Max DC current	22.1 Adc
Peak Power Tracking Voltage Range	195-550 VDC
Peak Inverter Efficiency	95.7%
CEC Efficiency	95.0%
Night Time Power Consumption	< 1W
Output Overcurrent Protection	25 A
Grounding	

MECHANICAL SPECIFICATIONS	
Operating Temperature Range	-13F to 149F (-25°C to +65°C)
Enclosure Type	NEMA3R (outdoor rated)
Unit Weight	49.0 to 51 lbs
Shipping Weight	57 to 59 lbs
Shipping Dimensions (HxWxD)	34.1 x 20.4 x 10.3" (86.6 x 51.8 x 26.2 cm)
Inverter Dimensions (HxWxD)	28.5 x 15.9 x 5.7" (72.4 x 40.3 x 14.6 cm)
Mounting	Wall Mount (mounting bracket included)

SPRx HIGH EFFICIENCY INVERTERS



FEATURES	
PV/Utility Disconnect	Eliminates need for external PV (DC) disconnect. Complies with UL and NEC requirements
Cooling	Convection cooled, no fan required
Display	Backlit, 2-line, 16-character Liquid Crystal Display provides instantaneous power, daily and lifetime energy production, PV array voltage and frequency, time online "selling" today and fault messages
Communications	RS 232 and Two Canbus RJ45 ports
Wiring Box	PV, utility, ground, and communications connections. Inverter can be separated from the wiring box
Warranty	10 years

SunPower Corporation®

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xantrex

XW Hybrid Inverter/Charger:

- ▶ Certified to UL1741 and CSA for utility-interactive applications (no need to purchase a different model/component depending on application)
- ▶ 120/240 V split-phase, sine-wave output (no need for auto-transformer or stacking of inverters)
- ▶ Unsurpassed surge capacity (innovative full digital control regulates voltage from dropping during surge). Full 200% rated output power is delivered to load
- ▶ Efficient, power-factor-corrected, high-current multi-stage battery charging (minimizes recharge time, electricity/fuel costs and prolongs battery life)
- ▶ Easier and less expensive to install - mounting bracket is included (no need to purchase a backplate) and the Power Distribution Panel includes all AC/DC disconnects and wiring (no need to individually purchase separate components)
- ▶ Xanbus network enabled

XW Power Distribution Panel:

- ▶ Factory wired and labelled to support one inverter in a code-compliant manner, with wiring space and conduit and breaker knockouts to add up to three inverters, and/or four charge controllers
- ▶ Includes wall-mounting bracket, conduit box/raceway with barriers to ensure separation between low-voltage communication cables and AC and DC wires; field-reversible door with magnetic catch

XW Connection Kit for 2nd Inverter

- ▶ Includes conduit box and all AC/DC breakers and wires needed to connect a second inverter into the XW Power Distribution Panel.
- ▶ All wires are pre-cut and labelled to facilitate easy installation

XW Conduit Box:

- ▶ Bare conduit box (no wires) for systems with more than two inverters or to retrofit XW inverters into existing systems that may already have AC/DC disconnects

XW Solar Charge Controller:

- ▶ 60 amp solar charge controller with integrated PV ground fault protection
- ▶ Accepts PV arrays with open circuit voltage up to 150 volts DC
- ▶ Employs dynamic maximum power point tracking (no mini or full sweeps)
- ▶ Convection cooled - no fan
- ▶ 5 year standard warranty
- ▶ Xanbus network enabled

XW System Control Panel:

- ▶ Plugs into Xanbus network and provides a central user interface to configure and monitor all components in the system.

XW Automatic Generator Start:

- ▶ Automatically activating generator to recharge depleted battery bank or assist with heavy loads to provide intelligent power management

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XW Series Hybrid Inverter/Charger

Product Specifications	
Model	XW6048-120/240-60
Continuous output power	6.0 kW
5 second surge	12.0 kW
Waveform	True sine
Low load efficiency	95%
Full load efficiency	91%
Idle consumption - invert mode, no load	28 W
Idle consumption - search mode	< 8 W
AC inputs	AC1 (Grid), AC2 (Generator)
AC voltage	120/240 Vac split-phase
AC input breaker	60 A double-pole
AC output voltage	L-N: 120 Vac +/-3% L-L: 240 Vac +/-3%
AC output frequency	60.0 Hz +/-0.1 Hz
AC output breaker	60 A double-pole
DC current at rated power	127 A
Continuous charge rate at L-L voltage	100 A
Automatic transfer relay	60 A
Utility-interactive	Yes
CEC weighted efficiency	93%
CEC power rating	6 kW
DC input voltage (nominal)	48 Vdc
DC input voltage range	44 to 64 Vdc
Power factor corrected charging	0.99
Emissions	FCC Class B
Display panel	Status-at-a-glance LED's indicate AC-in status power or charge current. On/off and equalize
Multiple unit configurations	Up to three parallel units in 120/240 split-phase
Auxiliary relay output	Configurable 0 to 12 Vdc output, maximum 2
Non volatile memory	Yes
System network	Plug-n-play Xanbus network, no need for hub
Standard Warranty	5 years
Field Serviceable	Yes, all components can be replaced while in operation
Enclosure Type	NEMA Type 1 - Indoor (sensitive electronic components)
Mounting	Wall mount, backplate included
Operational temperature range	-25 °C to 70 °C
Dimensions (W x L x D)	16 x 23 x 9"
Weight	125 lb
Battery temperature sensor	Included
Remote Display	Optional XW System Control Panel monitors
Generator Support	Optional XW Automatic Generator Start module or assist inverter with heavy loads.
Power distribution panel & conduit boxes	Optional balance-of-systems components for bus bars and multiple knockouts for conduit



Regulatory Approvals

UL 1741 1st Edition: 2005 Version CSA 107.1-01



PRODUCT NAME: AMMONIA

1. Chemical Product and Company Identification

BOC Gases,
Division of
The BOC Group, Inc.
575 Mountain Avenue
Murray Hill, NJ 07974

BOC Gases
Division of
BOC Canada Limited
5975 Falbourne Street, Unit 2
Mississauga, Ontario L5R 3W6

TELEPHONE NUMBER: (908) 464-8100

24-HOUR EMERGENCY TELEPHONE NUMBER:
CHEMTREC (800) 424-9300

TELEPHONE NUMBER: (905) 501-1700

24-HOUR EMERGENCY TELEPHONE NUMBER:
(905) 501-0802

EMERGENCY RESPONSE PLAN NO: 20101

PRODUCT NAME: AMMONIA

CHEMICAL NAME: Ammonia

COMMON NAMES/SYNONYMS: Ammonia Anhydrous; Anhydrous Ammonia

TDG (Canada) CLASSIFICATION: 2.4 (9.2)

WHMIS CLASSIFICATION: A, E

PREPARED BY: Loss Control (908)464-8100/(905)501-1700

PREPARATION DATE: 6/1/95

REVIEW DATES: 7/1/96

2. Composition, Information on Ingredients

INGREDIENT	% VOLUME	PEL-OSHA ¹	TLV-ACGIH ²	LD ₅₀ or LC ₅₀ Route/Species
Ammonia FORMULA: NH ₃ CAS: 7664-41-7 RTECS #: BO0875000	100.0	50 ppm TWA	25 ppm TWA 35 ppm STEL	LC ₅₀ 2000 ppm/4H

¹ As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

² As stated in the ACGIH 1994-95 Threshold Limit Values for Chemical Substances and Physical Agents

3. Hazards Identification

EMERGENCY OVERVIEW

Irritating or corrosive to exposed tissues. Inhalation of vapors may result in pulmonary edema and chemical pneumonitis. Slightly flammable.

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Revised: 7/1/96

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PRODUCT NAME: AMMONIA

ROUTE OF ENTRY:

Skin Contact Yes	Skin Absorption No	Eye Contact Yes	Inhalation Yes	Ingestion No
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HEALTH EFFECTS:

Exposure Limits Yes	Irritant Yes	Sensitization No
Teratogen No	Reproductive Hazard No	Mutagen Yes
Synergistic Effects None Reported		

Carcinogenicity: -- NTP: No IARC: No OSHA: No

EYE EFFECTS:

Mild concentrations of product will cause conjunctivitis. Contact with higher concentrations of product will cause swelling of the eyes and lesions with a possible loss of vision.

SKIN EFFECTS:

Mild concentrations of product will cause dermatitis or conjunctivitis. Contact with higher concentrations of product will cause caustic-like dermal burns and inflammation. Toxic level exposure may cause skin lesions resulting in early necrosis and scarring.

INGESTION EFFECTS:

Since product is a gas at room temperature, ingestion is unlikely.

INHALATION EFFECTS:

Corrosive and irritating to the upper respiratory system and all mucous type tissue. Depending on the concentration inhaled, it may cause burning sensations, coughing, wheezing, shortness of breath, headache, nausea, with eventual collapse.

Inhalation of excessive amounts affects the upper airway (larynx and bronchi) by causing caustic-like burning resulting in edema and chemical pneumonitis. If it enters the deep lung, pulmonary edema will result. Pulmonary edema and chemical pneumonitis are potentially fatal conditions.

NFPA HAZARD CODES

Health: 3
Flammability: 1
Reactivity: 0

HMIS HAZARD CODES

Health: 3
Flammability: 1
Reactivity: 0

RATINGS SYSTEM

0 = No Hazard
1 = Slight Hazard
2 = Moderate Hazard
3 = Serious Hazard
4 = Severe Hazard

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PRODUCT NAME: AMMONIA

4. First Aid Measures

EYES:

Flush contaminated eye(s) with copious quantities of water. Part eyelids to assure complete flushing. Continue for a minimum of 15 minutes. PERSONS WITH POTENTIAL EXPOSURE TO AMMONIA SHOULD NOT WEAR CONTACT LENSES.

SKIN:

Remove contaminated clothing as rapidly as possible. Flush affected area with copious quantities of water. In cases of frostbite or cryogenic "burns" flush area with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if the cryogenic "burn" has resulted in blistering of the dermal surface or deep tissue freezing.

INGESTION:

Not specified. Seek immediate medical attention.

INHALATION

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Keep victim warm and quiet. Assure that mucus or vomited material does not obstruct the airway by positional drainage.

5. Fire Fighting Measures

Conditions of Flammability: Nonflammable		
Flash point: None	Method: Not Applicable	Autoignition: Temperature: 1274 °F (690 °C)
LEL(%): 16	UEL(%): 25	
Hazardous combustion products: None		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

FIRE AND EXPLOSION HAZARDS:

The minimum ignition energy for ammonia is very high. It is approximately 500 times greater than the energy required for igniting hydrocarbons and 1000 to 10,000 times greater than that required for hydrogen.

EXTINGUISHING MEDIA:

Water fog. Use media suitable for surrounding fire.

FIRE FIGHTING INSTRUCTIONS:

If possible, stop the flow of gas. Since ammonia is soluble in water, it is the best extinguishing media--not only in extinguishing the fire, but also absorbing the escaped ammonia gas. Use water spray to cool surrounding containers.

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PRODUCT NAME: AMMONIA

6. Accidental Release Measures

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest BOC location.

7. Handling and Storage

Electrical Classification:

Class 1, Group D.

Earth-ground and bond all lines and equipment associated with the ammonia system. Electrical equipment should be non-sparking or explosion proof.

Gaseous or liquid anhydrous ammonia corrodes certain metals at ambient temperatures. The presence of oxygen enhances the corrosion of ordinary or semi-alloy steels. The addition of water inhibits this enhancement. Keep anhydrous ammonia systems scrupulously dry.

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure (<500 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve to trap in the discharge line to prevent hazardous back flow into the cylinder.

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125°F (52°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time.

For additional handling recommendations, consult Compressed Gas Association Pamphlets P-1 and G2.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

8. Exposure Controls, Personal Protection

EXPOSURE LIMITS¹:

INGREDIENT	% VOLUME	PEL-OSHA ²	TLV-ACGIH ³	LD ₅₀ or LC ₅₀ Route/Species
Ammonia FORMULA: NH ₃ CAS: 7664-41-7 RTECS #: BO0875000	100.0	50 ppm TWA	25 ppm TWA 35 ppm STEL	LC ₅₀ 2000 ppm/4H

¹ Refer to individual state or provincial regulations, as applicable, for limits which may be more stringent than those listed here.

² As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

³ As stated in the ACGIH 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents.

ENGINEERING CONTROLS:

Use local exhaust ventilation to reduce concentrations to within current exposure limits. A laboratory type hood is suitable for handling small or limited quantities.

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PRODUCT NAME: AMMONIA

EYE/FACE PROTECTION:

Gas tight chemical goggles or full-face piece respirator.

SKIN PROTECTION:

Protective gloves made of any suitable material.

RESPIRATORY PROTECTION:

Level C respiratory protection with full face piece or self-contained breathing apparatus should be available for emergency use. Air purifying respirators must be equipped with suitable cartridges. Do not exceed maximum use concentrations. Do not use air purifying respirators in an oxygen deficient/immediately dangerous to life and health (IDLH) atmosphere. Consult manufacturers instructions before use.

OTHER/GENERAL PROTECTION:

Safety shoes, safety shower, eyewash "fountain".

9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure at 70°F	: 94	psia
Vapor density at 60°F (Air = 1)	: 0.62	
Evaporation point	: Not Available	
Boiling point	: -28	°F
	: -33.3	°C
Freezing point	: 107.9	°F
	: -77.7	°C
pH	: Not Available	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H ₂ O)	: Very soluble	
Odor threshold	: Not Available	
Odor and appearance	: A colorless gas with a pungent odor.	

10. Stability and Reactivity

STABILITY:

Unstable

CONDITIONS TO AVOID (STABILITY):

None

INCOMPATIBLE MATERIALS:

Reacts vigorously with fluorine, chlorine, HCl, HBr, nitrosyl chloride, chromyl chloride, nitrogen dioxide, trioxigen difluoride, and nitrogen trichloride.

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PRODUCT NAME: AMMONIA

HAZARDOUS DECOMPOSITION PRODUCTS:

Hydrogen at very high temperatures: 1544°F (840°C).

CONDITIONS TO AVOID (POLYMERIZATION):

None

HAZARDOUS POLYMERIZATION:

Will not occur.

11. Toxicological Information

MUTAGENIC:

Genetic mutations observed in bacterial and mammalian test systems.

OTHER:

Toxic effects to the respiratory system, senses, liver, kidneys and bladder observed in mammalian species from prolonged inhalation exposures at above 100 ppm.

12. Ecological Information

OTHER ENVIRONMENTAL INFORMATION:

The reportable quantity is the minimum quantity of a material that when released, requires reporting to the appropriate Federal, State and local officials. Notification requirements are found under CERCLA Section 103(a). Initial notification may be by telephone, radio, or in person. A written follow-up notice is also required.

13. Disposal Considerations

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to BOC Gases or authorized distributor for proper disposal.

14. Transport Information

PARAMETER	United States DOT	Canada TDG
PROPER SHIPPING NAME:	Ammonia, Anhydrous, liquefied	Ammonia, Anhydrous, liquefied
HAZARD CLASS:	2.2	2.4 (9.2)
IDENTIFICATION NUMBER:	UN 1005	UN 1005
SHIPPING LABEL:	NONFLAMMABLE GAS	CORROSIVE GAS

Additional Marking Requirement: "Inhalation Hazard"

If net weight of product \geq 100 pounds, the container must be also marked with the letters "RQ".

Additional Shipping Paper Description Requirement: "Poison Inhalation Hazard, Zone A"

If net weight of product \geq 100 pounds, the shipping papers must be also marked with the letters "RQ".

15. Regulatory Information

Ammonia is listed under the accident prevention provisions of section 112(r) of the Clean Air Act (CAA) with a threshold quantity (TQ) of 10,000 pounds.

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PRODUCT NAME: AMMONIA

SARA TITLE III NOTIFICATIONS AND INFORMATION

Ammonia is listed as an extremely hazardous substance (EHS) subject to state and local reporting under Section 304 of SARA Title III (EPCRA) with a reportable quantity (RQ) of 100 pounds.

The presence of Ammonia in quantities in excess of the threshold planning quantity (TPQ) of 500 pounds requires certain emergency planning activities to be conducted.

SARA TITLE III - HAZARD CLASSES:

Acute Health Hazard

Sudden Release of Pressure Hazard

Reactivity Hazard

SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION:

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

CAS NUMBER	INGREDIENT NAME	PERCENT BY VOLUME
7664-41-7	AMMONIA	100.0

This information must be included on all MSDS that are copied and distributed for this material.

16. Other Information

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES:

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

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Procter & Gamble
Fabric and Home Care Division
Sharon Woods Technical Center
11530 Reed Hartman Highway
Cincinnati, OH 45241-2422

MATERIAL SAFETY DATA SHEET

MSDS #: FH/F/2002/KHKT-5F2MTA
Supersedes: F99004M

Issue Date: 10/02
Issue Date: 7/2001

SECTION I - CHEMICAL PRODUCT

Identity: **Dryer Sheets**

Brands: **BOUNCE (All variations)**

Hazard Rating: 1

Health: 0
Flammability: 1
Reactivity: 0

4=EXTREME
3=HIGH
2= MODERATE
1=SLIGHT

Emergency Telephone Number: 1-800-5-BOUNCE (1-800-526-8623) or call Local Poison Control Center

SECTION II - COMPOSITION AND INGREDIENTS

Ingredients/Chemical Name: Nonionic and cationic fabric conditioning agents, a perfume carrier, perfume, and non-woven cloth.

Hazardous Ingredients as defined by OSHA, 29 CFR 1910.1200.

<u>Chemical</u> <u>Name</u>	<u>Common</u> <u>Name</u>	<u>CAS No.</u>	<u>Recommended</u> <u>Limits</u>	<u>Composition Range</u>	<u>LD50/LC50</u>
None					

SECTION III - HAZARDS IDENTIFICATION

Health Hazards (Acute and Chronic):

Ingestion: Ingestion of used or unused sheet by a young child or household pet may lead to impaction of the gastrointestinal tract. A physician or veterinarian should be consulted.

Eye Contact: Eye contact possible.

Skin: Skin contact possible.

Inhalation: N/A.

Signs and Symptoms of Exposure:

Ingestion: Oral ingestion may result in mild gastrointestinal irritation with nausea, vomiting or diarrhea.

Eye Contact: Prolonged instillation into the eye may result in transient superficial effects similar to those produced by mild toilet soap.

Skin: Prolonged skin contact may result in transient superficial effects similar to those produced by mild toilet soap.

Inhalation: N/A.

BOUNCE DRYER SHEETS MSDS (Continued)

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SECTION IV - FIRST AID INFORMATION

Emergency and First Aid Procedures:

Inhalation: N/A.

Ingestion: Consult physician if ingestion of sheet is suspected to ensure the sheet passes through.

Eye Contact: Flush eyes with water.

Skin: N/A.

Other: Consumer product packages have a caution statement: "Not for use on children's sleepwear or other garments labeled as flame resistant as it may reduce flame resistance. Keep out of the reach of toddlers and pets to avoid accidental ingestion."

SECTION V - FIRE FIGHTING INFORMATION

Flash Point (Method Used): N/A

Explosive Limits: LEL: N/A UEL: N/A

Extinguishing Media: N/A

Special Fire Fighting Procedures: CO₂, water or dry chemical may be used.

Unusual Fire Hazards: N/A

Stability: Unstable:

Conditions to Avoid: Open flame

Stable: X

Incompatibility (Materials to Avoid): None known

Hazardous Decomposition/By Products: Burning can produce carbon monoxide and/or carbon dioxide.

Hazardous Polymerization: May Occur: Conditions to Avoid: Open flame

Will Not Occur: X

SECTION VI - ACCIDENTAL RELEASE MEASURES

Personal Precautions: Minimize dust levels while collecting product (see "Inhalation" health effects). Prevent exposure to dust with NIOSH approved respirators with HEPA filters. Use gloves to minimize skin contact.

Environmental Precautions: DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS. Household solutions may be disposed of in sewer. Dry product may be landfilled if permitted by local regulations. Discard empty container in trash.

Steps To Be Taken in Case Material is Released or Spilled: None required.

SECTION VII - HANDLING AND STORAGE

Precautions To Be Taken in Handling and Storing: No special precautions for casual exposure.

Other Precautions: None required.

SECTION VIII - EXPOSURE CONTROLS, PERSONAL PROTECTION

Respiratory Protection (Specify Type): No special precautions for casual exposure.

Ventilation Local Exhaust: None required.

Special: None

Mechanical (General): Acceptable

Other: None

Eye Protection: None required.

Protective Gloves: None required.

Other Protective Equipment: None required.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES	
Boiling Point °F: N/A	Specific Gravity (H₂O=1): N/A
Vapor Pressure (mm Hg): N/A	Percent Volatile by Volume (%): ca. 1
Vapor Density (Air=1): N/A	Evaporation Rate (nBuOAc=1): N/A
Odor Threshold: N/A	Freezing Point: N/A
Coefficient of Water/Oil Distribution: N/A	pH (1% solution): N/A
Scooped Density: N/A	Solubility in Water: Limited
Appearance and Odor: Opaque white sheets. Product is perfumed.	Reserve Alkalinity: N/A

SECTION X - STABILITY AND REACTIVITY
Possible Hazardous Reactions/Conditions: None known
Conditions to Avoid: Open flame
Materials to Avoid: None
Hazardous Decomposition Products: None known
Other Recommendations: None

SECTION XI - TOXICOLOGICAL INFORMATION
LD50 (rats oral): The LD50 of the material with which the sheet is coated is >10.0 gm/kg.
ED50: >1.5 gm/kg (coating mixture)

SECTION XII - ECOLOGICAL INFORMATION
No concerns at relevant environmental concentrations.

SECTION XIII - DISPOSAL CONSIDERATIONS
Waste Disposal Method: DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS. Sweep up and dispose.

SECTION XIV - TRANSPORT INFORMATION
The finished product is non-hazardous under DOT.

SECTION XV - ADDITIONAL REGULATORY INFORMATION
All components are listed on the US TSCA Inventory. No components are affected by Significant New Use Rules (SNURs) under TSCA §5.
No components of Bounce are subject to California Proposition 65.
All ingredients are CEPA approved for import to Canada by Procter & Gamble. This product has been classified with Hazard Criteria of the Canadian Control Products Regulation (CPR) and this MSDS contains all information required by the Canadian Products Regulation.

SECTION XVI - OTHER INFORMATION
*N/A. - Not Applicable
*N/K. - Not Known
The submission of this MSDS may be required by law, but this is not an assertion that the substance is hazardous when used in accordance with proper safety practices and normal handling procedures. Data supplied is for use only in connection with occupational safety and health.
The information contained herein has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. The information relates to the specific material designated herein, and does not relate to the use in combination with any other material or any other process. Procter & Gamble assumed no responsibility for injury to the recipient or third persons, for any damage to any property resulting from misuse of the controlled product.



Clorox Professional Products Company
1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

I Product: COMMERCIAL SOLUTIONS® ULTRA CLOROX® GERMICIDAL BLEACH I											
Description: CLEAR, LIGHT YELLOW LIQUID WITH CHLORINE ODOR											
Other Designations	Distributor	Emergency Telephone Nos.									
EPA Reg. No. 67619-8 Sodium Hypochlorite Solution	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies, call 1-800-446-1014 For Transportation Emergencies, call Chemtrec 1-800-424-9300									
II Health Hazard Data		III Hazardous Ingredients									
DANGER: CORROSIVE. May cause severe irritation or damage to eyes and skin. Harmful if swallowed. The following medical conditions may be aggravated by exposure to high concentrations of vapor or mist: heart conditions or chronic respiratory problems such as asthma, chronic bronchitis, or obstructive lung disease. Some clinical reports suggest a low potential for sensitization upon exaggerated exposure to sodium hypochlorite, particularly on damaged or irritated skin. Routine clinical tests conducted on intact skin with Clorox Liquid Bleach found no sensitization in the test subjects. Under normal consumer use conditions the likelihood of any adverse health effects are low.		<table><thead><tr><th>Ingredient</th><th>Concentration</th><th>Worker Exposure Limit</th></tr></thead><tbody><tr><td>Sodium hypochlorite CAS # 7681-52-9</td><td>6.0 - 7.35%</td><td>Not established.</td></tr><tr><td>Sodium hydroxide CAS # 1310-73-2</td><td>< 0.2%</td><td>2 mg/m³ TLV-STEL^a 2 mg/m³ PEL^b</td></tr></tbody></table>	Ingredient	Concentration	Worker Exposure Limit	Sodium hypochlorite CAS # 7681-52-9	6.0 - 7.35%	Not established.	Sodium hydroxide CAS # 1310-73-2	< 0.2%	2 mg/m ³ TLV-STEL ^a 2 mg/m ³ PEL ^b
Ingredient	Concentration	Worker Exposure Limit									
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Sodium hydroxide CAS # 1310-73-2	< 0.2%	2 mg/m ³ TLV-STEL ^a 2 mg/m ³ PEL ^b									
FIRST AID: EYE CONTACT: Rinse with plenty of water for at least 15 minutes. Get prompt medical attention. SKIN CONTACT: Wash skin thoroughly with soap and water. INGESTION: Drink large amounts of water. DO NOT induce vomiting. Call a physician or poison control center immediately. INHALATION: If breathing problems develop, remove to fresh air.		^a TLV-STEL = ACGIH Threshold Limit Value - Short Term Exposure Limit ^b PEL = OSHA Permissible Exposure Limit - Time Weighted Average None of the ingredients in this product are on the IARC, NTP or OSHA carcinogen list.									
IV Special Protection and Precautions		V Transportation and Regulatory Data									
Hygienic Practices: Wear safety glasses. With repeated or prolonged use, wear nitrile, neoprene, or butyl rubber gloves. Wash after contact with product. Avoid breathing vapors. Engineering Controls: Use general ventilation to minimize exposure to vapor or mist. Work Practices: Avoid eye and skin contact and inhalation of vapor or mist. KEEP OUT OF THE REACH OF CHILDREN.		DOT: Not restricted per 49CFR 172.101(c)(12)(iv). IMDG: Not restricted per IMDG Code Page 0021 Paragraph 5.3.5. IATA: Not restricted per IATA D.G.R. Special provision A3. EPA - SARA Title III CERCLA: This product is regulated under Sections 311/312. This product contains no chemicals regulated under Section 313 and contains sodium hypochlorite and sodium hydroxide which are regulated under Section 304 CERCLA. TSCA Status: All components of this product are on the TSCA Inventory.									
VI Spill Procedures/Waste Disposal		VII Reactivity Data									
Spill Procedures: Absorb and containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material. For spills of multiple products, responders should evaluate the MSDS's of the products for incompatibility with sodium hypochlorite. Breathing protection should be worn in enclosed, and/or poorly ventilated areas until hazard assessment is complete. Waste Disposal: Dispose of in accordance with all applicable federal, state, and local regulations.		Stable under normal use and storage conditions. Strong oxidizing agent. Reacts with other household chemicals such as toilet bowl cleaners, rust removers, vinegar, acids or ammonia containing products to produce hazardous gases, such as chlorine and other chlorinated species. Prolonged contact with metal may cause pitting or discoloration.									
VIII Fire and Explosion Data		IX Physical Data									
Not flammable or explosive. In a fire, cool containers to prevent rupture and release of sodium chlorate.		Boiling point 212 °F 100 °C (decomposes) Specific gravity (H ₂ O=1, 21 °C) ~1.10 Solubility in water Complete pH ~11.4									

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DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH
DATE PREPARED 4/02



Page 1 of 4
Procter & Gamble
CPG TN 6
2 Procter & Gamble Plaza
Cincinnati, OH 45202

MATERIAL SAFETY DATA SHEET

Supersedes: 2/1/00

Issue Date: 8/01
Issue Date: N/A

SECTION I - CHEMICAL PRODUCT

Identity: **Liquid Cleaner**
Brands: **COMET Cleaner with Bleach (Professional Line)**
Hazard Rating: 1 Health: 1 4=EXTREME
Flammability: 0 3=HIGH
Reactivity: 0 2= MODERATE
1=SLIGHT
Emergency Telephone Number: 1-800-332-7787 or call Local Poison Control Center

SECTION II - COMPOSITION AND INGREDIENTS

Ingredients/Chemical Name: Cleaning agents, bleach (sodium hypochlorite), surface safety agent, perfume and water.

This mixture, when tested as a whole, is considered an eye irritant within the meaning of the OSHA Communication Standard

Hazardous Ingredients as defined by OSHA, 29 CFR 1910.1200.

Chemical Name	Common Name	CAS No.	Recommended Limits	Composition Range	LD50/LC50
Sodium hypochlorite	Bleach	7681-52-9	ACGIH STEL: 2mg/m ³	0.5-1.5%	
Sodium hydroxide	Caustic soda	1310-73-2	ACGIH STEL: 2 mg/m ³ OSHA PEL: 2 mg/m ³	0.1-1%	

SECTION III - HAZARDS IDENTIFICATION

Health Hazards (Acute and Chronic):

Ingestion: May cause mild, transient gastrointestinal irritation with nausea, vomiting or diarrhea
Eye Contact: May cause mild, transient irritation with stinging and tearing similar to that caused by other detergents.
Skin: May be irritating to skin. May further irritate already irritated or extremely dry skin.
Inhalation: Mild mucous membrane irritant.

SECTION IV - FIRST AID INFORMATION

Emergency and First Aid Procedures:

Ingestion: Drink 1 or 2 large glasses of water.. If large amounts are ingested, call a physician.
Eye Contact: Flush with large amounts of water for at least 15 minutes.
Skin: Wash exposed area thoroughly area with soap and water and discontinue use. Remove contaminated clothing.
Inhalation: Leave the area

Other: Product package has a caution statement: CAUTION: KEEP OUT OF REACH OF CHILDREN. May cause eye irritation. EYE IRRITANT: Avoid contact with eyes. May be irritating to skin. For sensitive skin or prolonged use, wear gloves. Do not mix with other cleaning products as irritating fumes may be released. In case of eye contact, flush thoroughly with water. If swallowed, drink a glass of water to dilute. Call a physician immediately.

COMET Cleaner with Bleach MSDS (Continued)

Page 2 of 4

SECTION V - FIRE FIGHTING INFORMATION

Flash Point (Method Used): over 200°F (cc) Explosive Limits: LEL: N/A UEL: N/A
Extinguishing Media: CO₂, water, dry chemical or "alcohol" foam
Special Fire Fighting Procedures: Use water to keep fire exposed container cool.
Unusual Fire Hazards: None known.

SECTION VI - ACCIDENTAL RELEASE MEASURES

Personal Precautions: None
Environmental Precautions: DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS. Do not landfill. Small quantities may be disposed of via sewer.
Steps To Be Taken in Case Large Quantities of Material are Released or Spilled: Use water spray or dilute and/or wash away spills to avoid exposure and to protect persons working to stop/repair leak.

SECTION VII - HANDLING AND STORAGE

Precautions To Be Taken in Handling and Storing: Handling and storage must be well ventilated, cool, and dry. Store product away from potential sources of ignition. Fire fighting equipment must be available at all times.
Other Precautions: Keep away from heat/sparks and open flame..

SECTION VIII - EXPOSURE CONTROLS, PERSONAL PROTECTION

Respiratory Protection (Specify Type): None required with normal use.
Ventilation General
Eye Protection: None required with normal use.
Manufacturing Setting: For splash protection, use chemical goggles. Eye wash fountain is desirable.
Protective Gloves: None required with normal use.
Other Protective Equipment: None required with normal use.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point °F: N/A Specific Gravity (H₂O=1): 1.030-1.045
Vapor Pressure (mm Hg): N/A Percent Volatile by Volume (%): N/A
Vapor Density (Air=1): N/A Evaporation Rate (nBuOAc=1): N/A
Coefficient of Water/Oil Distribution: N/A Freezing Point: N/A
Appearance and Odor: Clear liquid pH (100%): 13
Product is perfumed. Solubility in Water: Completely
Reserve Alkalinity: N/A

COMET Cleaner with Bleach MSDS (Continued)

Page 3 of 4

SECTION X - STABILITY AND REACTIVITY	
Possible Hazardous Reactions/Conditions/By Products: None known	
Conditions to Avoid: None	
Materials to Avoid: Do not mix with other products, especially toilet bowl cleaners, acidic cleaners or products that contain ammonia.	
Hazardous Decomposition Products: None known	
Other Recommendations: None	
Stability:	Stable
Hazardous Polymerization:	Will not occur

SECTION XI - TOXICOLOGICAL INFORMATION
LD50 (rats oral): >6.5 g/kg Comet Cleaner with Bleach has a relatively low order of toxicity. It may be irritating, but it is not expected to be corrosive. It is expected to be emetic.

SECTION XII - ECOLOGICAL INFORMATION
No environmental concerns.

SECTION XIII - DISPOSAL CONSIDERATIONS
Waste Disposal Method: Do not landfill. Small quantities may be disposed of via sewer. DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.

SECTION XIV - TRANSPORT INFORMATION
DOT Classification: Comet Cleaner with Bleach is not DOT hazardous in packages as sold. Bulk product shipments are classified as Class 9 Hazardous Substance with a shipping name of Environmentally hazardous substance, liquid n.o.s.

SECTION XV - ADDITIONAL REGULATORY INFORMATION			
All components are listed on the US TSCA Inventory.			
No components of Comet Cleaner with Bleach are subject to California Proposition 65.			
EPA CERCLA TITLE III			
<u>Chemical Name</u>	<u>CERCLA304 RO (LBS)</u>	<u>311/312</u>	<u>313</u>
Sodium hypochlorite	100	no	no
Sodium hydroxide	1000	no	no
All ingredients are CEPA approved for import to Canada by Procter & Gamble. This product has been classified with Hazard Criteria of the Canadian Control Products Regulation (CPR) and this MSDS contains all information required by the Canadian Products Regulation.			

SECTION XVI - OTHER INFORMATION	
*N/A. - Not Applicable	*N/K. - Not Known
The submission of this MSDS may be required by law, but this is not an assertion that the substance is hazardous when used in accordance with proper safety practices and normal handling procedures. Data supplied is for use only in connection with occupational safety and health.	
The information contained herein has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. The information relates to the specific material designated herein, and does not relate to the use in combination with any other material or any other process. Procter & Gamble assumed no responsibility for injury to the recipient or third persons, for any damage to any property resulting from misuse of the controlled product.	

MATERIAL SAFETY DATA SHEET

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Texas Correctional Industry

A division of the
Texas Department of Criminal Justice

Date Prepared: January 2004
Supersedes Date: February 2000

HAZARD RATING

4- EXTREME

3- HIGH

2- MODERATE

1- SLIGHT

0- INSIGNIFICANT

NFPA CODE 704

Health Hazard



SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Product Name: DRY LAUNDRY BLEACH (D.L.B.)

General Use: Chlorine Laundry Bleach

Manufacturer Name: Texas Correctional Industry
Soap & Detergent Plant
One Circle Drive
Sugar Land, Texas 77478

Emergency Telephone Numbers

Galveston Texas Poison Control : **1-800-764-7661**
Soap & Detergent Plant: **281-490-1111**
Monday thru Friday: 6:30 a.m. - 3:30 p.m.

SECTION 2 - HAZARDOUS INGREDIENT

Chemical/Common Name	CAS No.	Percent (optional)	ACGIH		OSHA Subpart Z
			TWA	STEL	
Sodium Metasilicate	6834-92-0		N/E		
Sodium Dichloroisocyanurate	28993-18-9	11.5 - 12.5	N/E		
Sodium Tripolyphosphate	7758-29-4		5 mg/m ³		

N/A= Not Applicable

N/E= Not Established

N/D = Not Determined

SECTION 3 - PHYSICAL PROPERTIES

Vapor Pressure	: None	Vapor Density (air = 1)	: N/A
Specific Gravity (water = 1)	: N/D	Evaporation Rate (vs water)	: N/A
Solubility in Water	: Complete		
pH	: N/D		
Boiling Point	: N/A		
Appearance and Odor	: White to off white granular powder. Strong chlorine odor.		

SECTION 4 - FIRE AND HAZARD DATA

Flash Point (T.C.C.)	: None	Lower Explosive Limit (LEL)	: None
Flammable Limit	: N/A	Upper Explosive Limit (UEL)	: None
Physical Hazard	: Oxidizer		
Extinguishing Media	: Water, Foam, Dry Chemicals, or Carbon Dioxide.		
Fire Extinguishing Procedure	: Use of respiratory equipment is recommended in enclosed areas.		
Fire and Explosive Hazard	: The presence of a small amount of moisture in the presence of a high concentration of Sodium Dichloroisocyanurate can form an explosive mixture of Nitrogen Trichloride.		

S&DPMSDS/DLB.TPU

SECTION 5 - REACTIVE DATA

Hazardous Decomposition	: Oxides of Carbon and HCl gas.
Stability	: Stable
Incompatibility	: Strong Acids and Oxidizing Agents.

SECTION 6 - HEALTH HAZARD

Primary Route of Exposure	: Eyes, Skin, Oral, or Inhalation
Signs and Symptoms of Over Exposure (acute)	
Eyes	: Corrosive to Eye tissue, may cause corneal damage.
Skin	: May cause redness or rash, drying, cracking or blisters.
Ingestion	: May cause gastrointestinal irritation and burns to the alimentary canal.
Inhalation	: May be irritant to the respiratory tract.
Signs and Symptoms of Over Exposure (chronic)	: Eye, skin, and respiratory tract irritation.
Medical condition aggravated by over exposure	: Not known
Carcinogen or suspect of carcinogen ingredients	: None

SECTION 7 - EMERGENCY AND FIRST AID PROCEDURE

Eyes	: Flush with plenty of water until irritation subsides. If irritation persists, get medical attention.
Skin	: Flush with large amount of water. Remove contaminated clothing and seek medical attention if irritation persists.
Ingestion	: Rinse mouth thoroughly, drink plenty of water. Do not induce vomiting get immediate medical attention.
Inhalation	: Move patient to fresh air. Give artificial resuscitation (CPR) if patient is not breathing.

SECTION 8 - SPECIAL PROTECTION INFORMATION

Respiratory Protection	: None required with normal use.
Ventilation Requirement	: Local exhaust. Maintain adequate ventilation.
Protective Gloves	: Yes. Rubber or neoprene.
Eye Protection	: Goggles or glasses.

SECTION 9 - SPILL OR LEAK PROCEDURES

Steps to be taken if released or spilled	: Sweep all materials practical for salvage or disposal. Rinse residue with water.
Waste disposal method	: Any unsalvageable material must be disposed in compliance with local, state, and federal laws and regulations. Do not dump into sewers, on the ground, or into any bodies of water.

SECTION 10 - STORAGE AND HANDLING

STORE IN A COOL, DRY VENTILATED AREA.

S&DPMSDS/DLB.TPU

CONDITIONS TO AVOID: Elevated temperatures
HAZARDOUS DECOMPOSITION PRODUCTS:
Burning may produce carbon dioxide and carbon monoxide.
INCOMPATIBILITY (MATERIALS TO AVOID): None reasonably foreseeable.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Flush with water. Absorb with sawdust or rags.
WASTE DISPOSAL METHOD:
Conventional procedures in compliance with local, state and federal regulations. Do not incinerate sealed containers.

SECTION VIII SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION:
Use NIOSH approved respirator specified for protection against paint spray mist and sanding dust in restricted or confined areas.
VENTILATION:
Adequate to maintain working atmosphere below T.L.V. and L.E.L.
(See Sect. II for ingredient data and concentrations). Mechanical exhaust may be required in confined areas.
PROTECTIVE GLOVES: Waterproof during repeated contact.
EYE PROTECTION: Splash goggles or safety glasses with side shields.
OTHER PROTECTIVE EQUIPMENT: Clothing adequate to protect skin.
HYGIENIC PRACTICES:
Remove and wash clothing before reuse. Wash hands before eating, smoking or using the washroom.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:
Do not throw or drop containers.
OTHER PRECAUTIONS :
Avoid contact with eyes and prolonged contact with skin or breathing of spray mist or sanding dust.
Close container after each use. Keep out of reach of children. Do not take internally.

SECTION XX

HMIS (Hazardous Materials Identification System) (R) NPCA
HMIS is a recognized workplace Hazard Communications System as required by OSHA (29 CFR 1910.1200). Information on establishing a compliant hazardous communication program using HMIS is available from:

American Labelmark Co., Inc., Labelmaster Division
5724 N. Pulaski Rd., Chicago, IL 60646
1-800-621-5808

The ratings assigned by Benjamin Moore & Co. are only suggested ratings; the contractor/employer has ultimate responsibility for HMIS rating where this system is used.

PERSONAL PROTECTION: This code is left blank on Benjamin Moore & Co. MSDS's as it depends on application technique and the workplace ventilation. Please read Sections II through IX of this MSDS before deciding on appropriate protective equipment and beginning work. There are codes available for this section which can be obtained from Labelmaster. This product contains at least one toxic chemical listed in Section II

that is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372.

DISCLAIMER

The information contained herein is presented in good faith and believed to be accurate as of the effective date shown above. This information is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determination of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. Any use of this data and information must be determined by the user to be in accordance with applicable federal, state and local laws and regulations.

NOTICE: Removal of old paint by sanding, scraping or other means may generate dust or fumes which contain lead. Exposure to lead dust or fumes may cause adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For additional information, contact the USEPA/Lead Information Hotline at 1-800-LEAD-FYI.



Page 1 of 4
Procter & Gamble
Fabric and Home Care Division
Ivorydale Technical Center
5299 Spring Grove Avenue
Cincinnati, OH 45217-1087

MATERIAL SAFETY DATA SHEET

MSDS # CT# FH/H/2002/JEJW-5EWHYT Issue Date: 01/29/03
CT# FH/H/2002/JEJW-5EWFHK
CT#FH/H/2002/RBRW-59CJMH(S)
CT#FH/H/2002/PTPM-5BNMG7

SECTION I - CHEMICAL PRODUCT

Identity: **Liquid Laundry Detergent**

Brands: **TIDE** (All variations)

Hazard Rating: 1 Health: 1 4=EXTREME
Flammability: 1 3=HIGH
Reactivity: 0 2= MODERATE
1=SLIGHT

Emergency Telephone Number: 24hr P&G Operator - 1-800-879-8433 or call Local Poison Control Center

SECTION II - COMPOSITION AND INGREDIENTS

Ingredients/Chemical Name: Biodegradable surfactants (anionic and nonionic) and enzymes.

Hazardous Ingredients as defined by OSHA, 29 CFR 1910.1200.

Chemical Name	Common Name	CAS No.	Recommended Limits	Composition Range	LD50/LC50
Ethyl alcohol	Ethanol	64-17-5	ACGIH TWA: 1880 mg/m ³ OSHA PEL & TWA: 1900 mg/m ³	1-5%	NA
Sodium borate	Borax	1330-43-4	ACGIH TWA: 5mg/m ³	1 - 5%	NA
2-Aminoethanol	Ethanolamin ^e	141-43-5	ACGIH TWA: 7.5 mg/m ³ ACGIH STEL: 15 mg/m ³ OSHA PEL: 6 mg/m ³ OSHA TWA: 8 mg/m ³ OSHA STEL: 15 mg/m ³	0.5 - 1.5%	NA

SECTION III - HAZARDS IDENTIFICATION

Health Hazards (Acute and Chronic):

Ingestion: May cause transient gastrointestinal irritation.
Eye Contact: May cause mild, transient irritation.
Inhalation: Transient irritation with prolonged exposure to concentrated material.

Signs and Symptoms of Exposure:

Ingestion: May result in nausea, vomiting, and/or diarrhea.
Eye Contact: May cause stinging, tearing, itching, swelling, and/or redness.
Skin: Prolonged contact with concentrated material may be drying or transiently irritating to skin.

TIDE LIQUID LAUNDRY DETERGENT MSDS (Continued)

4

Page 2 of

SECTION IV - FIRST AID INFORMATION

Emergency and First Aid Procedures:

Ingestion: Drink a glassful of water.
Eye Contact: Flush with water for 10 to 15 minutes.
Skin: If prolonged contact occurs, rinse thoroughly with water. If spilled on clothing, change clothes.

If symptoms persist or reoccur, seek medical attention.

Other: Consumer product package has a caution statement: "CAUTION: Eye irritant. Harmful if swallowed. KEEP OUT OF REACH OF CHILDREN. If swallowed, give a glassful of water. Call a physician. In case of eye contact, flush with water."

SECTION V - FIRE FIGHTING INFORMATION

Flash Point (Method Used): —140°F PM CC Explosive Limits: LEL: N/A UEL: N/A

Extinguishing Media: CO₂, water

Special Fire Fighting Procedures: None.

Unusual Fire Hazards: None. This product has a flash point above 150°F. It is an aqueous solution containing ethyl alcohol and it does not sustain combustion.

Stability Unstable: Conditions to Avoid: None
Stable: X

Incompatibility (Materials to Avoid): None known

Hazardous Decomposition/By Products: None known

Hazardous Polymerization: May Occur: Conditions to Avoid: None
Will Not Occur: X

SECTION VI - ACCIDENTAL RELEASE MEASURES

Personal Precautions: None

Environmental Precautions: DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL REGULATIONS. Small or household quantities may be disposed of in refuse or in sewer. First check with your local water treatment plant. For larger quantities, incineration is preferred. Do not landfill.

Steps To Be Taken in Case Material is Released or Spilled: Flush small or household quantities down acceptable sewer (contains biodegradable surfactants). Prevent spills from reaching a waterway. Sorbents may be used.

SECTION VII - HANDLING AND STORAGE

Precautions To Be Taken in Handling and Storing: No unusual precautions necessary.

Other Precautions: None

SECTION VIII - EXPOSURE CONTROLS, PERSONAL PROTECTION

Respiratory Protection (Specify Type): None required with normal use.
Ventilation *Local Exhaust:* None required with normal consumer use. *Special:* None
Mechanical (General): Normal/general dilution ventilation is acceptable. *Other:* None
Eye Protection: None required with normal consumer use.
Industrial Setting: If a splash is likely, chemical goggles may be needed.
Protective Gloves: None required with normal use.
Industrial Setting: Protective gloves (rubber, neoprene) should be used for prolonged direct contact.
Other Protective Equipment: None required with normal use.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point °F: 205-207°F **Specific Gravity (H₂O=1):** 1.060 to 1.080
Vapor Pressure (mm Hg): <29.4 **Percent Volatile by Volume (%):** 60.99%-61.66%
Vapor Density (Air=1): Unknown **Evaporation Rate (nBuOAc=1):** Unknown
Odor Threshold: N/A **Freezing Point:** N/A
Coefficient of Water/Oil Distribution: N/A **pH (10% solution):** 8.1 to 8.5
Scooped Density: N/A **Solubility in Water:** Completely soluble.
Appearance and Odor: Ultra Tide High Efficiency and Ultra Tide Free are amber in color. Tide "Deep Clean" and Tide w/Bleach Alternative ColorSafe Bleaching Action are blue in color. All Liquid Tide products are perfumed, except for Ultra Tide Free **Reserve Alkalinity:** N/A

SECTION X - STABILITY AND REACTIVITY

Possible Hazardous Reactions/Conditions: None known
Conditions to Avoid: None
Materials to Avoid: None
Hazardous Decomposition Products: None known
Other Recommendations: None

SECTION XI - TOXICOLOGICAL INFORMATION**SECTION XII - ECOLOGICAL INFORMATION**

Based on ecotoxicity and fate data for the individual ingredients in this specific formulation and for related consumer household cleaning product formulations, it is expected that this product would exhibit a non-hazardous order of toxicity at relevant environmental concentrations.

SECTION XIII - DISPOSAL CONSIDERATIONS

Waste Disposal Method: Disposal is to be performed in compliance with all Federal, state and local regulations. Small or household quantities may be disposed of in refuse or in sewer. First check with your local water treatment plant. For larger quantities, incineration is preferred. Do not landfill.

SECTION XIV - TRANSPORT INFORMATION

The finished product is non-hazardous under DOT.

SECTION XV - ADDITIONAL REGULATORY INFORMATION

All components are listed on the US TSCA Inventory. No components are affected by Significant New Use Rules (SNURs) under TSCA §5.
 No components of Tide are subject to California Proposition 65.
 All ingredients are CEPA approved for import to Canada by Procter & Gamble. This product has been classified with Hazard Criteria of the Canadian Control Products Regulation (CPR) and this MSDS contains all information required by the Canadian Products Regulation.

SECTION XVI - OTHER INFORMATION

*N/A. - Not Applicable

*N/K. - Not Known

The submission of this MSDS may be required by law, but this is not an assertion that the substance is hazardous when used in accordance with proper safety practices and normal handling procedures. Data supplied is for use only in connection with occupational safety and health.

The information contained herein has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. The information relates to the specific material designated herein, and does not relate to the use in combination with any other material or any other process. Procter & Gamble assumed no responsibility for injury to the recipient or third persons, for any damage to any property resulting from misuse of the controlled product.

SECTION 1: Chemical Product and Company

Identification

Manufacturer: Cumberland Swan
One Swan Drive
Smyrna, TN 37167

Date: March 2000

Product: Isopropyl Alcohol (IPA)

50%, 70%, 91% and 99% IPA

Telephone: (615) 459-8900

24hr Emergency: (615) 459-8900 ext. 5270

SECTION 2: Composition/Information on Ingredients

Name: Isopropanol, IPA, 2-Propanol, Dimethyl Carbinol CAS#: 67-63-0

SECTION 3: Hazards Identification

Colorless, volatile liquid with the odor of rubbing alcohol. Isopropyl Alcohol is a dangerous fire risk. Prolonged exposure to elevated concentrations of vapors may result in irritation of the eyes, nose, and throat and central nervous system (CNS) depression. Prolonged dermal exposure can result in dry, cracking skin.

Potential Routes of Exposure: Ingestion, inhalation, dermal contact,
eye contact

Target Organs: Eyes, skin, respiratory system

Symptoms of Overexposure:

Inhalation: Mild irritation of eyes, nose and throat.

Ingestion: Drowsiness, headache

Dermal Contact: Dry, cracking skin

Acute Effects: Irritation of skin and/or upper respiratory tract as noted above. Acute CNS depression may be manifested as giddiness, headache, dizziness and/or nausea.

Chronic Effects: Chronic exposure can result in skin irritation and contact dermatitis. Pre-existing disorders of the skin, eyes, and respiratory tract may be exacerbated by exposure to isopropyl alcohol.

HMIS: H=1, F=3, R=0 See Section 8 for PPE information

SECTION 4: First Aid Measures

Eye: Flush eyes with copious amount of water for at least 15 minutes

Skin: Flush with water. If irritation persists, seek medical attention.

Ingestion: Do not induce vomiting if victim is unconscious or drowsy. Seek medical attention or contact the poison control center.

Inhalation: Remove victim to fresh air and provided oxygen if breathing is difficult. Seek Medical attention if breathing continues to be difficult.

SECTION 5: Fire Fighting Measures

Extinguishing Media: Use water fog, alcohol foam, dry chemical or CO2
Unusual Fire or Explosion Hazards: Containers exposed to intense heat from fires should be cooled with large amounts of water to prevent buildup of internal pressure due to vapor generation which could result in container rupture.
Recommendations: Clear area of unprotected personnel. Wear complete turnout gear. Cool containers exposed to fire with water.

SECTION 6: Accidental Release Measures

Large Spills: Eliminate all ignition sources. Equipment must be grounded to prevent sparking. Evacuate the area of unprotected personnel. Contain source of spill. Dike or otherwise confine spilled product. Uncontrolled releases to air, land, or water may be reportable to the National Response Center (1-800-424-8802).
Small Spills: Take up with absorbent material and place in non-leaking container; seal tightly. Dispose of absorbent (see section 13)

SECTION 7: Handling and Storage

Storage Requirements: Store in tightly closed containers in a cool, dry area away from heat and other possible ignition sources.
Handling precautions: Use non-sparking tools to open containers. Maintain appropriate class of fire extinguishers nearby in case of fire.

SECTION 8: Exposure Controls / Personal Protection

OSHA PEL=400ppm OSHA STEL=500ppm IDLH=12,000ppm
Recommended Engineering Controls: Use explosion-proof ventilation equipment as necessary to maintain airborne concentrations below the PEL. Ground all containers to prevent static sparks during fluid transfers.
Recommended Admin Controls: Train employees on the hazards of Isopropyl Alcohol
PPE: Goggles, gloves, NIOSH approved respiratory protection required when above PEL/TWA
Recommended Hygiene Practices: Clean PPE and work clothing contaminated prior to reuse. After working with this product, be sure to wash before eating, smoking, drinking, or applying cosmetics.

SECTION 9: Physical and Chemical Properties

Appearance: Colorless Liquid UEL: 12% LEL: 2%
Odor: Mild Rubbing Alcohol Odor Threshold: 43ppm Water solubility: Miscible

	50%IPA	70%IPA	91%IPA	99%IPA
Vapor Pressure (@ 68°F) approx.	29mm	23mm	33mm	33mm
Specific Gravity	.929	.878	.790	.790
Boiling Point	176 ° F	176 ° F	180 ° F	181 ° F
Flash Point (TAG Open Cup)	74.5 ° F	70.5 ° F	54 ° F	53 ° F
Freezing Point	-32-50 ° C	-32-50 ° C	-32-50 ° C	-127 ° F
Molecular Weight	47.5	47.5	47.5	60.1
Auto Ignition Temperature	No Data	No Data	No Data	750 ° F

SECTION 10: Stability and Reactivity

Stability: Stable
Polymerization: Will not occur
Incompatible Chem: Strong oxidizers, acetaldehyde, chlorine, ethylene oxide, acids, isocyanates
Conditions to avoid: Heat, sparks, and open flame.
Do Not store in aluminum > 120 ° F
Hazardous Products: CO and unidentified organic compounds may be formed of Decomposition

SECTION 11: Toxicological Information

LD50: 5,840 mg/kg (acute oral - rat); 13,000 mg/kg (acute dermal - rabbit)
LD50: 16,000 ppm/8hr (inhalation - rat) **Mutagenicity:** Not Indicated
LD₅₀: 5,000 mg/kg (oral - rabbit) **Reproductive Effects:** Not Indicated
Carcinogenicity: Not identified as a carcinogen by OSHO, IARC, or NTP

SECTION 12: Ecological Information

Ecotoxicity: N/A **Environmental Fate:** N/A
Soil Absorption/Mobility: Highly Mobile
Environmental Degradation: Should be removed readily from soils and water by volatilization and biodegradation.

SECTION 13: Disposal Considerations

Disposal: Contact your supplier or a licensed contractor for detailed recommendations.
Disposal regulatory Requirements: Follow applicable Federal, state, and local regulations. Consider fuels blending as an alternative to incineration.

SECTION 14: Transport Information

DOT Shipping Name: Isopropanol DOT Packing Group: II
DOT Hazard Class: 3 DOT Label: Flammable Liquid
UN ID#: UN 1219

SECTION 15: Regulatory Information

RCRA Hazardous Waste Number/ Classification:D001 CERCLA Substance: N/A
HAZARDOUS AIR POLLUTANT (CAA): No SARA 311/312 Codes: N/A
SARA Toxic Chemical: Yes, (Strong manufacturing only)
CERCLA Reportable Quantity: 10,000 lbs (Default)

SECTION 16: Other Information

Prepared by: Cumberland Swan
Sources of Information: 29 CFR1910.1000; NIOSH Pocket Guide to Chemical Hazards (1993); Occupational Health Guidelines for Chemical Hazards; NFPA Guide to Hazardous Materials - 10th Edition.
Disclaimer: While reasonable care has been taken to ensure the accuracy and completeness of the information regarding the material described herein, it is the purchaser's responsibility to ensure the suitability of such information as it applies to the purchaser's intended use of the material.