Sheet Pile

de neef® | GRACE

DN-090

SWELLSEAL®

Waterstops for Sheet Piles

Waterproofing the WORLD

de neef®
CONSTRUCTION CHEMICALS, INC.

THE NEED TO SEAL SHEET PILES

The Problem

As the use of sheet piling in wet environments increases, so does the need to create a safe, dry work area after excavation. The high cost of dewatering and treatment, as well as increased concerns for worker safety and potential damage to the surrounding eco-system pose a challenge to both the designer and contractor.

The Solution

SWELLSEAL® WA, hydrophilic polyurethane, offers a safe clean method of sealing sheet piling without the use of hazardous chemicals. Formulated to swell upon contact with water, hydrophilic polyurethanes can expand to any shape to form a seal against water leaking through the interlocks and penetrations in sheet piles.

Swellseal® WA applied with caulking gun

SWELLSEAL® WA

SWELLSEAL® WA is a single component hydrophilic polyurethane that can be applied in wet or dry environments. Upon contact with ground water, it can swell 2 or more times its original volume. When applied to the interlocks of sheet piling, it can swell to seal a leaking interlock in the sheet

Swellseal® WA after driving sheet piles

SWELLSEAL® WA Advantages:

- Easy to install gunnable paste
- No cure time required prior to driving sheets
- Can be applied to wet or dry surface
- Can be applied at cold temperatures
- Can wet and dry cycle repeatedly
- Can be applied to rough surfaces

SWELLSEAL® WA PRODUCT PROPERTIES

UNCURED		
Solids	100%	
Viscosity	Paste	
Density	1.45	ASTM D-3574-95
Flash point	>266° F	ASTM D-93
CURED		
Elongation at break	625%	ASTM D-3574-95
Tensile Strength	Approximately 312 psi	ASTM D-412

Withstands head pressures in excess of 330 ft.

SWELLSEAL® WA Properties:

- Single component hydrophilic polyurethane
- 200% Expansion in water
- Withstands pressures in excess of 330 ft. of head pressure
- Good chemical resistance
- Tenacious bond to wet and dry surfaces
- Conforms to the shape of the interlock
- Does not hinder the removal of sheet piles

Tieback sealed with ***HYDRO ACTIVE® CUT***

REPAIR

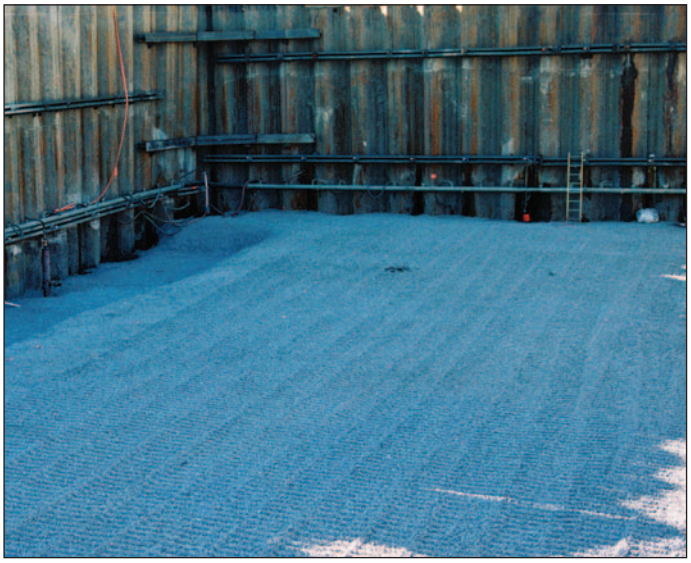
Properties and Advantages:

Leaks that appear after sealing sheets can be repaired with ***HYDRO ACTIVE® CUT***. Applied in liquid form by injection or saturation methods. ***HYDRO ACTIVE® CUT*** swells up to 20 times its original volume to cut off flowing water and seal active leaks.

Ideal Repair Applications

- Tiebacks
- Pipe penetrations
- Flowing water leaks

INSTALLATIONS



PACKAGING

SWELLSEAL® WA

- 10.5 ounce Tubes
- 20 ounce Sausage

LOCAL DISTRIBUTOR

Waterproofing the WORLD

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SWELLSEAL® WA SHEETPILE INSTALLATION

Overview

SWELLSEAL® WA may be used for stopping the ingress of water through sheet piling knuckles in two ways. Swellseal WA can be applied to the female opening of the piles, and allowed to fully cure before driving. This method is useful if the piles are to be pretreated in the contractor yard or plant prior to shipping them to the jobsite. Swellseal WA can also be applied in the field and the sheets drive before the material is cured. This "wet driving" method allows the contractor to drive the sheet immediately after installation of the Swellseal WA.

There are two methods that can be used to apply Swellseal WA to sheet piles; the wet drive method and the cure and drive method. The wet drive method is generally preferred since it assures full fill of the sheet pile joint knuckle regardless of sheet movement during driving. Using the wet method, sheets can be driven, and re-driven for up to 24 hours without concern for the sealant. After about 24 hours, the sealant fully cures and develops a strong adhesive bond with both sheets. Attempting to re-drive the sheets after the sealant has fully cured can result in cohesive

If there is a need to drive after 24 hours, you might be well served to use the cure and drive method. Using the cure and drive method allows the sealant to adhere to only one sheet, with the cured face of the sealant sliding against the other sheet during the driving process. This allows for driving and re-driving of a sheet, regardless of how long the sheet has been exposed to below ground moisture.

Preferred Wet Drive Method

1. Lay sheets out with the female side of the pile accessible.

2. Clean all foreign material and the surface layer of oxidation from the knuckle by OSHA approved chemical, flame, or abrasion.

3. Immediately before applying sealant, blow the knuckle clean with compressed air. Compressed air must be free of oil and water.

4. Apply an 3/8" bead of Swellseal WA into the female knuckle. Do not overfill knuckle.

5. Drive the sheet pile.

Cure and Drive Method

1. Lay sheets out with the female side of the pile accessible.

2. Clean all foreign material and the surface layer of oxidation from the knuckle by OSHA approved chemical, flame, or abrasion.

3. Immediately before applying sealant, solvent wipe the knuckle.

4. After the solvent flashes off, apply an 3/8" bead of Swellseal WA into the female knuckle. Do not overfill knuckle.

5. Tool the Swellseal WA in the knuckle to roughly the shape of the male interlocking member of the sheet pile.

6. Store sheet piles in such a way that they will not get standing water in the knuckle.

Swellseal WA in sausages

Swellseal WA in interlock

Swellseal WA gunned into interlock.

Sheetpiles with Swellseal WA

Swellseal WA gunned into interlock

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www.deneef.com

Technical Service 1-800-732-0166

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SWELLSEAL® WA
Gungrade Polyurethane Waterstop

Product Description

SWELLSEAL WA is a single component gungrade hydrophilic waterstop, designed for sealing smooth to very irregular construction joints and pipe penetrations. **SWELLSEAL WA** is supplied in cartridges or sausages. Material cures and swells in the presence of moisture or water. Curing time is dependent on temperature and humidity, i.e. curing time will decrease if temperature and RH are higher. **SWELLSEAL WA** will become firm in 24-36 hours.

Applications

• Sealing rough and smooth construction joints of cast in-place or precast concrete in wet and underwater applications.

•Sealing joints in pre-cast segments in wet or underwater applications (e.g. manholes, box culverts, cable ducts and pipes)

• Sealing joints between sheet piles.

• Creating good contact between DeNeef Hydrophilic Waterstop Strips and rough concrete surfaces

Product Advantages

Solvent free

Can be applied to wet surfaces or underwater when concrete is poured within 6 hours

Adheres to concrete, PVC, HDPE, steel, & fiberglass

Expands to more than 200% of original cured volume

Flexible system, adapts to irregular surfaces

Easy application with standard caulking guns

Good chemical resistance.*

* Chemical Resistance Chart available upon request

Figure 1. Swellseal WA Cartridge and Sausage.

Properties

Property	Value	Test
Solids	100%	
Uncured		
Vertical Slump	1/8”	
Skins over	6-10 hrs	
Flash Point	>266ºF	ASTM D93
Cured 7 days at 77ºF (22ºC) 3/8” thick		
Elongation at break	625%	ASTM D3574
Tensile Strength	312 psi	ASTM D412
Resistance to hydro-static pressure	>330 feet of head	DNCC
Swelling capacity in contact with water	200%	DNCC
Appearance	During application: pasty, Cured: rubbery; Color: Gray	
Coverage		
	Bead	Coverage
10.5 oz.	1/4”	25-35 ft.
	5/16”	12-15 ft.
	3/8”	approx. 10 ft.
20 oz	1/4”	50-70 ft.
	5/16”	24-30 ft.
	3/8”	approx. 20 ft

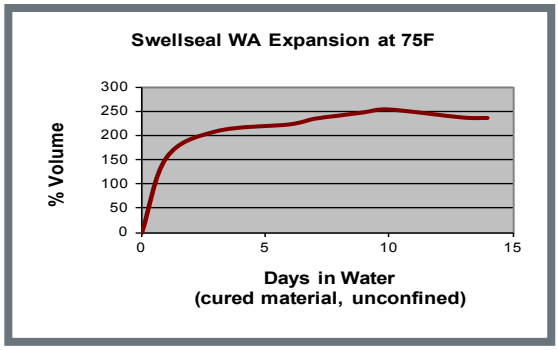

Figure 2. Expansion of Swellseal WA.

Packaging & Handling

10.5 oz. Cartridge	20 oz. Sausage
12 per case 14 lbs	12 per case 25 lbs.

Store in dry area for up to 12 months from date of production at temperatures between 40°F and 85°F for best performance. See shelf life details on the material packaging.

Installation Guidelines

SWELLSEAL WA should be applied onto a dust-free concrete surface. The surface can be rough or smooth, moist or dry.

Application Method

10.5 oz. Cartridges: Use a heavy duty single cartridge gun. Screw on the nozzle and cut diagonally at the appropriate position

20oz. Sausages: Put the sausage in the empty tube of the bulk caulking gun and cut 1/8 inch off the top of the sausage. Close the tube and install the nozzle. Nozzles are supplied with the appropriate opening.

SWELLSEAL WA must be applied in an uninterrupted band (minimum 3/8" bead), gunned in the middle of the joint or precast element. Concrete cover must be at least 3 inches on all sides, in order to avoid cracks from the pressure of material swelling.

If **SWELLSEAL WA** is to be installed under water or during heavy rain, the concrete operation should begin within 2 hours of application to provide confinement for the material or premature swelling may result lowering the effectiveness of the material.

Figure 3. Swellseal WA in precast

Health and Safety

Always use protective clothing, gloves and goggles consistent with OSHA regulations during use. Avoid eye and skin contact. Do not ingest. Refer to Safety Data Sheet (SDS) for detailed safety precautions.

In the event of an EMERGENCY call: CHEMTREC 800-424-9300.

Limitations

SWELLSEAL WA must be fully confined on all sides to perform properly. When used in precast or joints, minimum concrete cover is 3" on all sides.

If unconfined, material may expand much greater than 200% and develop an open celled structure, which may result in leaks.

SWELLSEAL WA is not suitable for surface caulking applications.

When applied at temperatures below 40ºF, the material will have a significant cure time, possibly exceeding several days.

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Chemical Resistance Guide for SWELLSEAL®

SWELLSEAL® Strips and SWELLSEAL® WA

Ratings & Conditions:

This chemical recommendation chart is to be used only as a guide line in selecting the most satisfactory configuration for resistance to solvents, acids, salts and other chemical solutions.

The specific ratings on this chart are based upon past field experience along with laboratory experiments.

Unless otherwise specified, the ratings applying to Swellseal are based on fully concentrated or saturated solutions at room temperatures (70°F).

When the operating temperatures of a given chemical exceed the temperature rating in the Recommendation Guide, reduced service life can be expected. The reduced service life can be determined only by the user evaluating Swellseal in actual service conditions.

E = Excellent Service
Long service may be expected with little reduction in properties due to the exposure, suitable for continuous service.

G = Good Service
Good service may be expected, but properties will be affected by the exposure. Usually suitable for conditions and intermittent service.

F = Fair Service
Fair service may be expected if exposure is limited and infrequent. Not recommended for continuous use but may give some service for intermittent exposure.

N = Not Recommended/Poor

Blank = Insufficient Information
The chart positions which are not rated indicate insufficient information at the time of publication to determine an accurate rating.

	Strips	WA
Acetal		
Acetaldehyde	F	N
Acetamide	G	N
Acetate Solvents	N	
Acetic Acid, 10%	F	N
Acetic Acid, 30%	G	N
Acetic Acid, 50%	F	N
Acetic Acid, Glacial	F	N
Acetic Anhydride	G	N
Acetic Ester (Ethyl Acetate)	N	
Acetic Ether (Ethyl Acetate)	N	
Acetic Oxide (Acetic Anhydride)	G	
Acetone	G	N
Acetophenone	N	N
Acetyl Acetone	N	
Acetyl Chloride	N	
Acetylene	G	
Acrylonitrile	F	
Air	E	
Alcohols, Aliphatic	E	
Alcohols, Aromatic	F	
Alk-Tri (Trichloroethylene)	N	
Allyl Alcohol	E	
Allyl Bromide	N	
Allyl Chloride	N	
Alum (Aluminum Potassium Sulfate)	E	
Aluminum Acetate	F	
Aluminum Chloride	E	F-N
Aluminum Fluoride	E	
Aluminum Hydroxide	E	
Aluminum Phosphate	E	
Aluminum Nitrate	E	
Aluminum Sulfate	E	
Ammonia, Anhydrous		
Ammonia, Liquid	E	
Ammonia in Water	G	G
Ammonia, Gas (cold)	E	
Ammonia Gas (65□C)	G	N
Ammonium Carbonate	E	
Ammonium Chloride	E	G-F
Ammonium Hydroxide	G	E
Ammonium Metaphosphate	E	
Ammonium Nitrate	E	N
Ammonium Nitrite	E	
Ammonium Persulfate		N
Ammonium Phosphate	E	
Ammonium Sulfate	E	
Ammonium Sulfide	E	
Ammonium Sulfite	E	
Ammonium Thiocyanate	E	
Ammonium Thiosulfate	E	
Amyl Acetate	N	N
Amyl Acetone	N	G

	Strips	WA
Amyl Alcohol	E	
Amylamine	F	
Amyl Borate	E	
Amyl Chloride	N	
Amyl Chloronapthalene	N	
Amyl Napthalene	N	N
Amyl Oleate	N	
Amyl Phenol	N	
Anethole	N	
Aniline	F	N
Aniline Dyes	G	N
Aniline Hydrochloride	N	
Animal Fats	G	
Animal Grease	G	
Animal Oils	N	
Ansul Ether	N	
Antifreeze (Ethylene Glycol)	E	
Antimony Chloride	F	
Antimony Pentachloride	N	
Aqua Regia	N	N
Aromatic Hydrocarbons	N	
Arquad		
Arsenic Acid	E	F
Arsenic Chloride	G	
Arsenic Trichloride	E	
Asphalt	F	G
ASTM #1 Oil	E	E
ASTM #2 Oil	G	G
ASTM #3 Oil	F	F
Aviation Gasoline	N	
Barium Carbonate	E	
Barium Chloride	E	E
Barium Hydroxide	E	E
Barium Sulfate	E	E
Barium Sulfide	E	E
Beer	E	E
Beet Sugar Liquors	E	
Benzaldehyde	N	
Benzene (Benzol)	N	N
Benzene Sulfonic Acid	E	
Benzine Solvent (Ligroln)	F	
Benzoic Acid	G	
Benzoic Aldehyde	N	
Benzotrichloride	N	
Benzoyl Chloride	N	
Benzyl Alcohol	G	
Benzyl Chloride	N	
Bichromate Chloride		
(Sodium Dichromate)	G	
Black Sulfate Liquor	E	
Blast Furnace Gas	F	
Bleach Solutions	F	
Benzyl Acetate	N	

	Strips	WA
Borax	E	
Bordeaux Mixture	E	
Boric Acid	E	E
Brandy	E	
Brine	E	
Bromine	N	
Bromine Water	G	
Bromobenzene	N	
Bunker Oil	G	
Butanol (Butyl Alcohol)	E	
Butadiene	G	
Butane	E	E
Butter	E	E
Butyl Acetate	N	N
Butyl Acrylate	N	N
Butylamine	N	
Butyl Benzene	N	
Butyl Bromide	N	
Butyl Butyrate	N	
Butyl Carbitol	G	
Butyl Cellosolve	G	
Butyl Chloride	N	
Butyl Ether	G	
Butyl Ethyl Acetaldehyde	N	
Butyl Ethyl Ether	N	
Butyl Oleate	N	
Butyl Phthalate	N	N
Butyl Stearate	N	
Butyraldehyde	F	
Butyric Acid	F	
Butyric Anhydride	N	
Calcium Acetate	G	
Calcium Bisulfate	E	
Calcium Bisulfite	E	E
Calcium Carbonate	E	
Calcium Chloride	E	E
Calcium Hydroxide	G	
Calcium Hypochlorite	F	
Calcium Nitrate	E	E
Calcium Sulfate	E	
Calcium Sulfide	E	E
Calcium Sulfite	E	
Caliche Liquor (Crude Sodium Nitrate)	E	
Cane Sugar Liquors	E	
Carbitol	E	N
Carbitol Acetate	N	
Carbolic Acid (Phenol)	F	
Carbon Bisulfide	N	
Carbon Dioxide	E	E
Carbon Disulfide	N	N
Carbonic Acid	E	
Carbon Monoxide	E	
Carbon Tetrachloride	N	F
Carbon Tetrafluoride	N	

	Strips	WA
Castor Oil	E	E
Caustic Potash (Potassium Hydroxide)	G	
Caustic Soda (Sodium Hydroxide)	G	
Cellosolve	E	E
Cellulose Acetate	F	F
Cellulube	N	
China Wood Oil (Tung Oil)	G	
Chlorine Dioxide	N	
Chlorine Gas	N	
Chlorine Water Solutions	N	N
Chloroacetic Acid	F	
Chloroacetone	G	
Chlorobenzene	N	
Chlorobutane	N	
Chlorobutadiene	N	
Chloroform	N	N
Chlorinated Hydrocarbons	N	
Chloropentane	N	
Chlorophenol	N	
Chloropropane	N	
Chlorosulfonic Acid	N	N
Chlorothene	N	N
Chlorotoluene	N	N
Chromic Acid	N	N
Citric Acid	E	E
Coal Oil	G	
Coal Tar	G	G
Coal Tar Naptha	N	
Colbalt Chloride	E	
Coconut Oil	G	E
Cod Liver Oil	G	
Coke Oven Gas	F	
Copper Arsenate	E	
Copper Chloride	E	E
Copper Cyanide	E	E
Copper Nitrate	E	
Copper Nitrite	E	
Copper Sulfate	E	E
Copper Sulfide	E	
Corn Oil	G	E
Cottonseed Oil	G	E
Creosote (Wood)	F	F
Creosote (Coal Tar)	F	G
Cresols	N	N
Cresylic Acid	N	N
Crotonaldehyde	N	
Crude Oil	G	
Cumene	N	
Cupric Carbonate	F	
Cupric Chloride		
Cupric Nitrate	F	
Cupric Nitrite	F	
Cupric Sulfate	G	
Cyclohexane	N	

	Strips	WA
Cyclohexanone	N	N
Cyclohexanol	G	
Cyclopentane	N	
P-Cymene	N	
DDT in Kerosene	F	
Decaline	N	
Decane	N	
Detergent Solutions	E	E
Developing Fluids	E	E
Diacetone Alcohol	G	
Diamylamine	E	
Dibenzyl Ether	N	
Dibenzyl Sebacate	N	
Dibromobenzene	N	
Dibutylamine	N	
Dibutylether	N	
Dibutylphthalate	N	
Dibutyl Sebacate	N	
Dicalcium Phosphate	E	
Dichloroacetic Acid	N	
P-Dichlorobenzene	N	
Dichlorobutane	N	
Dichloroisopropyl Ether	N	
Dicyclohexylamine	N	
Dichlorodifluoromethane (Freon 12)	N	
Dichlorothane	N	
Dichloroethylene	N	
Dichloroethyl Ether	N	
Dichlorohexane	N	
Dichloromethane	N	
Dichloropentane	N	
Dichloropropane	N	
Dichlorotetrafluoroethane (Freon 114)	E	
Dieldrin In Xylene	N	
Dieldrin In Xylene and Water Spray	G	
Diesel Oil	F	
Diethanolamine	G	
Diethylamine	G	
Diethyl Benzene	N	
Diethyl Ether	F	
Diethylene Dioxide	N	
Diethylene Glycol	E	
Diethylenetriamine	F	
Diethyl Oxalate	N	
Diethyl Phthalate	N	
Diethyl Sebacate	N	
Diethyl Sulfate	N	
Diethyl Triamine	G	
Dihydroxyethyl Amine	G	
Dihydroxyethyl Ether	G	
Diisobutylene	G	
Diisobutyl Ketone	N	
Diisodecyl Adipate	N	
Diisodecyl Phthalate	N	

	Strips	WA
Diisooctyl Adipate	N	
Diisooctyl Phthalate	N	
Diisopropanol Amine	G	
Diisopropyl Benzene	N	
Diisopropyl Ether	F	
Diisopropyl Ketone	N	
Dilauryl Ether	N	
Dimethylamine	G	
Dimethyl Benzene	N	
Dimethylanline	N	
Dimethylformamide (DMF)	F	N
Dimethyl Ketone (Acetone)	N	
Dimethyl Phthalate	N	
Dimethyl Sulfate	N	
Dimethyl Sulfide		
Dintrobenzene	F	
Dinitrotoluene	N	
Dioctyl Adipate (DOA)	N	
Dioctylamine	G	
Dioctyl Phthalate (DOP)	N	G
Dioctyl Sebacate (DOS)	N	G
Dioxane	N	N
Dioxolane	N	N
Dipentene (Limonene)	N	N
Diphenyl (Biphenyl)	N	N
Diphenyl Oxide (Phenyl Ether)	N	
Dipropylamine		
Dipropylene Glycol	E	
Dipropyl Kelene	N	
Disodium Phosphate	E	
Divinyl Benzene	N	
D.M.P. (Dimethyl Phenols)	N	
Dodecyl Benzene	N	
Dodecyl Toluene	N	
Dowfume W 40, 100%	F	
Dow-Per (Percglorcethylene)	N	
Dowtherm Oil, A & E	N	
Dowtherm S.R.I.	E	
Dry Cleaning Fluids	N	N
Epichlorohydrin	N	
Ethanol (Ethyl Alcohol)	E	G
Ethanolamine	G	
Ethers	N	
Ethyl Acetate	N	N
Ethyl Acetoacetate	F	
Ethyl Acrylate	N	
Ethyl Benzene	N	
Ethyl Benzoate	N	
Ethyl Butyl Alcohol	E	
Ethyl Butyl Amine	F	
Ethyl Butyl Ketone	N	
Ethyl Cellulose	G	G
Ethyl Chloride	N	F
Ethyl Dichloride	N	

	Strips	WA
Ethylene		
Ethylene Bromide	N	
Ethylene Chloride	N	
Ethylene Diamine	E	
Ethylene Dibromide	N	
Ethylene Dichloride	N	
Ethylene Glycol	E	G
Ethylene Oxide	N	
Ethylene Trichloride (Trichloroethylene)	N	
Ethyl Ether	N	
Ethyl Formate	N	
Ethyl Hexanol	E	
Ethyl Methyl Ketone	N	
Ethyl Oxalate	N	E
Ethyl Phthalate	N	
Ethyl Propyl Ether	N	
Ether Propyl Ketone	N	
Ethyl Silicate	E	
Ethyl Sulfate	N	
EX TRI (Trichloroethylene)	N	
Fatty Acids	G	E
Ferric Bromide	E	
Ferric Chloride	E	E
Ferric Nitrate	E	
Ferric Sulfate	E	
Ferrous Acetate	G	
Ferrous Ammonium Sulfate	E	
Ferrous Chloride	E	
Ferrous Hydroxide	G	
Ferrous Sulfate	E	
Fish Oil	G	
Fluoroboric Acid	E	
Fluorine	N	
Fluosilicic Acid	E	
Formaldehyde (Formalin)	G	N
Formamide	E	
Formic Acid	F	N
Freon 11	G	N
Freon 12	G	G
Freon 13	E	
Freon 21	N	N
Freon 22	E	N
Freon 31	G	
Freon 32	E	
Freon 112	G	
Freon 113	E	G
Freon 114	E	E
Freon 115	E	
Freon 142	E	
Freon 152	E	
Freon 218	E	
Freon C31	E	
Freon C318	E	

	Strips	WA
Freon 13B1	E	
Freon 114B2	E	
Freon 502	E	
Freon TF	E	
Freon T-WD602	G	
Freon TMC	G	
Freon T-P35	E	
Freon TA	E	
Freon TC	E	
Freon MF	F	
Freon BF	G	
Fuel Oil	F	G
Fuel, ASTM A	E	
Fuel, ASTM B	N	
Fuel, ASTM C	N	
Furmaric Acid	G	
Furan	N	
Furfural	F	N
Furfuryl Alcohol	F	
Gallic Acid	G	
Gasoline, reg.	F	E
Gasoline, Hi-Test	F	
Gasoline, Lead Free	F	E
Gelatin	E	
Gluconic Acid	F	
Glucose	E	
Glue	E	
Glycerine (Glycerol)	E	
Glycols	E	
Grease	G	
Green Sulfate Liquor	G	
Halowax Oil	N	
Heptachlor in Petroleum Solvents	F	
Heptachlor in Petroleum Solvents	F	
Heptanal (Heptialdehyde)	N	
Heptane	E	
Heptane Carboxylic Acid	G	
Hexaldehyde	G	
Hexane	E	G
Hexene	G	
Hexanol (Hexyl Alcohol)	G	N
Hexylamine	G	
Hexylene	G	
Hexylene Glycol	E	
Hexyl Methyl Ketone	N	
Hi-Tri (Trichloroethylene)	N	
Hydraulic Fluid (Petroleum)	G	
Hydraulic Fluid		
(Phosphate Ester Base)	N	
Hydraulic Fluid		
(Poly Alkylene Glycol Base)	E	
Hydrobromic Acid	F	
Hydrochloric Acid 37%	E	N

	Strips	WA
Hydrochloric Acid 50%	E	N
Hydrochloric Acid 100%	N	N
Hydrocyanic Acid	F	
Hydrofluoric Acid	G	N
Hydrofluosilisic Acid	G	
Hydrogen Gas	G	
Hydrogen Peroxide 3%	F	
Hydrogen Peroxide 10%	F	
Hydrogen Peroxide 30%	N	
Hydrogen Peroxide 90%	N	
Hydrogen Sulfide	E	
Hydroquinone		
Hypochlorous Acid	N	
Ink Oil (Linseed Oil Base)	G	
Insulating Oil	G	
Iodine	N	
Iron Acetate	N	
Iron Hydroxide	E	
Iron Salts	E	
Iron Sulfate	E	
Iron Sulfide	E	
Isoamyl Acetate	N	
Isoamyl Alcohol	E	
Isoamyl Bromide	N	
Isoamyl Butyrate	N	
Isoamyl Chloride	N	
Isoamyl Ether	N	
Isoamyl Phthalate	N	
Isobutane	E	
Isobutanol (Isobutyl Alcohol)	E	N
Isobutyl Acetate	N	
Isobutyl Aldehyde	N	
Isobutyl Amine	N	
Isobutyl Bromide	N	
Isobutyl Carbinol	G	
Isobutyl Chloride	N	
Isobutylene	F	
Isobutyl Ether	N	
Isocyanates	N	
Isooctane	E	G
Isopentane	E	
Isopropyl Amine	E	
Isopropyl Acetate	N	E
Isopropyl Alcohol (Isopropanol)	E	
Isopropyl Benzene	N	
Isopropyl Chloride	N	
Isopropyl Ether	N	G
Isopropyl Toluene	N	
Jet Fuels (JP1-JP6)	N	
Kerosene	G	E
Ketones	N	
Lactic Acid	G	
Lacquers	N	N

	Strips	WA
Lacquer Solvents	N	
Lard	G	E
Lauryl Alcohol	E	
Lead Acetate	G	
Lead Nitrate	E	
Lead Sulfamate	E	
Lead Sulfate	E	
Ligroin	E	
Lime Water	E	
Linseed Oil	G	E
Lindol (Tricresyl Phosphate)	E	
Liquid Soap	E	
Liquified Petroleum Gas (LPG)	G	E
Lubricating Oils	G	
Lye (Sodium Hydroxide)	G	G
Magnesium Acetate	N	
Magnesium Carbonate	E	
Magnesium Chloride	E	
Magnesium Hydrate	E	
Magnesium Hydroxide	G	E
Magnesium Nitrate	E	
Magnesium Sulfate	E	
Malathion 50 in Aromatic Solvents	N	
Malathion 50 in Aromatic Solvents	G	
Maleic Acid	N	
Maleic Anhydride		
Malic Acid	G	
Manganese Sulfate	E	
Manganese Sulfide	E	
Manganese Sulfite	E	
Mercuric Chloride	F	
Mercury	E	
Methane	G	
Methyl Acetate	G	
Methyl Acrylate	G	
Methacrylic Acid	G	
Methyl Alcohol (Methanol)	E	G
Methyl Benzene (Toluene)	N	
Methyl Bromide	N	
Methyl Butyl Ketone	N	
Methyl Cellosolve	G	
Methyl Chloride	N	
Methyl Cyclohexane		
Methylene Bromide	N	
Methylene Chloride	N	
Methyl Ethyl Ketone (MEK)	N	N
Methyl Formate	G	
Methyl Hexanol	E	
Methyl Hexyl Ketone	N	
Methyl Isobutyl Carbinol	E	
Methyl Isobutyl Ketone (MIBK)	N	
Methyl Isopropyl Ketone	N	
Methyl Propyl Ether	N	

	Strips	WA
Methyl Propyl Ketone	N	
Methyl Methacrylate	N	
Methyl Salicylate	N	
Mineral Oil	F	E
Mineral Spirits	N	N
Monochlorobenzene	N	N
Monochlorodifluoromethane	E	
Monoethanolamine	F	
Monomethylether	A	
Monovinyl Acetate	G	
Motor Oil	G	
Muriatic Acid	E	
Naptha	N	G
Napthalene	N	G
Napthenic Acid		G
Natural Gas	G	G
Neatsfoot Oil	N	
Neu-Tri (Trichloroethylene)	N	
Nickel Acetate	G	
Nickel Chloride	E	
Nickel Nitrate	E	
Nickel Plating Solution	F	
Nickel Sulfate	E	E
Niter Cake	E	
Nitric Acid 10%	G	N
Nitric Acid 20%	N	N
Nitric Acid 30%	N	N
Nitric Acid 30-70%	N	N
Nitric Acid, Red Fuming	N	N
Nitrobenzene	N	N
Nitrogen Gas	E	
Nitrogen Tetraoxide	N	
Nitromethane	F	
Nitropropane	F	
Nitrous Oxide	E	
Octadecanoic Acid		
Octane	G	
Octanol (Octyl Alcohol)	E	N
Octyl Acetate	N	
Octyl Amine		
Octyl Carbinol		
Octylene Glycol	E	
Oil, Petroleum	G	
Oil ASTM #1	E	
Oil ASTM #2	G	
Oil ASTM #3	F	
Oleic Acid	F	G
Oleum (Fuming Sulfuric Acid)	N	
Olive Oil	G	E
Othodichlorobenzene	N	
Oxalic Acid	G	
Oxygen Cold	G	E
Oxygen Hot	N	
Ozone	G	E

	Strips	WA
Paint Thinner (Duco)		
Palmitic Acid	G	E
Palm Oil	G	
Papermaker's Alum	E	
Paradichlorobenzene	N	
Paraffin	G	
Paraformaldehyde	G	
Peanut Oil	G	
Pentane	G	
Perchloroethylene	N	F
Perchloric Acid	E	
Petrolatum	E	
Petroleum, Crude	G	G
Petroleum Ether (Naptha)	N	
Petroleum Oils	E	
Phenol	F	N
Phenolsulfonic Acid		
Phenyl Chloride	N	
Phenylhydrazine	N	
Phorone	N	
Phosphate Esters	N	
Phosphoric Acid, 10%	F	E
Phosphoric Acid 10-85%	F	
Phosphorous Trichloride	N	
Pickling Solution	F	
Picric Acid, Molten	F	
Picric Acid, Water Solution	G	
Pinene	N	
Pine Oil	N	
Piperidine	N	
Pitch	G	
Plating Solutions, Chrome		
Plating Solutions, Others	E	
Polyvinyl Acetate Emulsion (PVA)	G	
Polyethylene Glycol	E	
Polypropylene Glycol	E	
Potassium Acetate	G	
Potassium Bicarbonate	E	
Potassium Bisulfate	E	
Potassium Bisulfite	E	
Potassium Carbonate	E	
Potassium Chloride	E	E
Potassium Chromate	F	
Potassium Cyanide	E	E
Potassium Dichromate	G	E
Potassium Hydrate	F	
Potassium Hydroxide	G	G
Potassium Nitrate	E	
Potassium Permanganate	F	
Potassium Silicate	E	
Potassium Sulfate	E	E
Potassium Sulfide	E	
Potassium Sulfite	E	
Producer Gas	G	

	Strips	WA
Propane Gas	G	G
Propanediol	G	
Propyl Acetate	N	
Propyl Alcohol (Propanol)	E	F
Propyl Aldehyde	N	
Propyl Chloride	N	
Propylene Diamine	G	
Propylene Dichloride	N	
Propylene Glycol	E	
Pydraul Hydraulic Fluids	N	
Pyranol	N	
Pyridine	N	
Pyroligneous Acid	G	
Pyrrole	N	
Rape Seed Oil	F	
Red Oil (Crude Oleic Acid)	G	
Richfield A Weed Killer 100%	N	
Richfield B Weed Killer 33%		F
Rosin Oil	E	
Rotenone And Water	E	
Rum	E	
Sal Ammoniac (Ammonium Chloride)	E	
Salicylic Acid	G	
Salt Water (Sea Water)	E	
Sewage	G	
Silicate of Soda (Sodium Silicate)	E	
Silicate Esters	E	
Silicone Greases	E	E
Silicone Oils	E	E
Silver Nitrate	E	E
Skelly Solvent	G	
Skydrol Hydraulic Fluids	N	
Soap Solutions	E	E
Soda Ash (Sodium Carbonate)	E	
Soda, Caustic (Sodium Hydroxide)	F	
Soda Lime		
Soda Niter (Sodium Nitrate)	E	
Sodium Acetate	G	
Sodium Aluminate	E	
Sodium Bicarbonate	E	
Sodium Bisulfate	E	
Sodium Bisulfite	E	
Sodium Borate	E	E
Sodium Carbonate	E	
Sodium Chloride	E	
Sodium Chromate	F	
Sodium Cyanide	E	
Sodium Dichromate	F	
Sodium Fluoride	E	
Sodium Hydroxide	G	G-N
Sodium Hypochlorite	N	N
Sodium Metaphosphate	G	
Sodium Nitrate	G	
Sodium Nitrite	E	

	Strips	WA
Sodium Perborate	F	
Sodium Peroxide	G	N
Sodium Phosphate	E	E
Sodium Silicate	E	
Sodium Sulfate	E	
Sodium Sulfide	E	
Sodium Sulfite	E	E
Sodium Thiosulfate	E	
Soybean Oil	G	E
Stannic Chloride	E	
Stannic Sulfide	E	
Stannous Chloride	E	
Stannous Sulfide	E	
Steam, Under 150□C	N	N
Steam, Over 150□C	N	N
Stearic Acid	G	E
Stoddards Solvent	F	
Styrene	N	N
Sugar Solutions (Sucrose)	E	
Sulfamic Acid	F	
Sulfite Liquors	G	
Sulfonic Acid	F	
Sulfur (Molten)	F	
Sulfur Chloride	F	
Sulfur Dioxide	G	
Sulfide Hexafluoride	E	
Sulfur Trioxide	N	
Sulfuric Acid 25%	G	F
Sulfuric Acid 25-50%	N	N
Sulfuric Acid 50-96%	N	N
Sulfuric Acid, Fuming	N	N
Sulfurous Acid	G	N
Tall Oil	G	
Tallow	E	
Tannic Acid	G	
Tar	F	
Tartic Acid	E	
Terpinol	N	
Tertiary Butyl Alcohol	E	
Tetrachlorobenzene	N	
Tetrachloroethane	N	G
Tetrachloroethylene	N	
Tetraethylene Glycol	E	
Tetrachloromethane	N	
Tetrachloronapthalene	N	
Tetraethyl Lead	F	
Tetrahydrofuran (THF)	N	N
Thionyl Chloride	N	
Tin Chloride	E	
Tin Tetrachloride		
Titanium Tetrachloride	F	
Toluene (Toluol)	N	N
Toluene Diisocyanate	N	
Toxaphene	G	

	Strips	WA
Transformer Oils (Petroleum Base)	G	
Transmission Fluids A	F	
Transmission Fluids B	N	
Triacetin	G	
Tributyl Amine		
Tributyl Phosphate (TBP)	N	N
Trichlorobenzene	N	
Trcihloroethane	N	
Trichloroethylene	N	
Trichloropropane	N	
Tricresyl Phosphate (TCP)	N	N
Triethanolamine (TEA)	E	N
Triethylamine	E	
Triethylene Glycol	E	
Trinitrotoluene (TNT)	G	
Triphenyl Phosphate	F	
Trisodium Phosphate	E	
Tung Oil	G	
Turbine Oil	G	
Turpentine	F	
2.4 D With 10% Fuel Oil	G	
Ucon Hydrolube Oils	G	
Undecanol	E	
Unsymmetrical Dimethyl	G	
(UDMH) Hydrazine		
Urine	G	

	Strips	WA
Urea	E	
Varnish	G	
Vegetable Oils	G	E
Versilube	E	
Vinegar	E	
Vinyl Acetate	N	
Vinyl Benzene	N	
Vinyl Chloride (Monomer)	N	
Vinyl Ether	N	
Vinyl Toluene	N	
Vinyl Trichloride	N	
V.M.& P. Naptha	G	
Water, Fresh	E	
Water, Salt	E	
Whiskey, Wines	E	
White Liquor	E	
White Oil	G	
Wood Alcohol (Methanol)	E	
Xylene	N	N
Xylidine	N	
Zoelites	E	
Zinc Acetate	F	
Zinc Carbonate	E	
Zinc Chloride	E	
Zinc Chromate	F	
Zinc Sulfate	E	

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Technical Service 1-800-732-0166

We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate and is offered for the users' consideration, investigation and verification, but we do not warrant the results to be obtained. Please read all statements, recommendations or suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation or suggestion is intended for any use which would infringe any patent or copyright. W. R. Grace & Co.–Conn., 62 Whittemore Avenue, Cambridge, MA 02140.

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GRACE

The pressure resistance of Swellseal Sealant WA

Method

A joint is simulated in a Plexiglas test rig, as shown in the next photo.

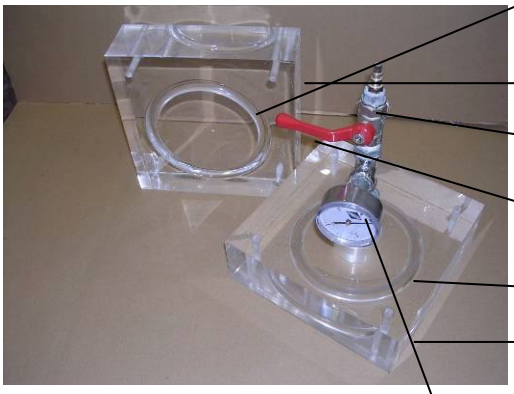


Photo 1 : the Plexiglas test rig

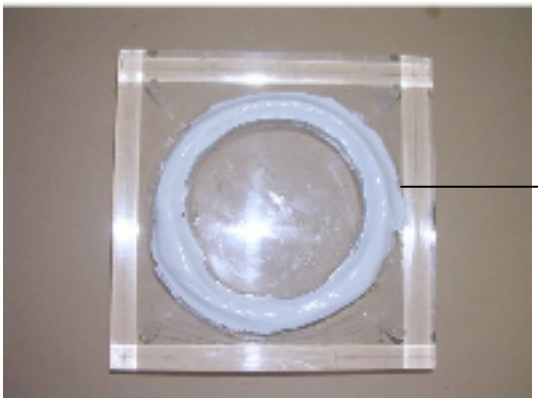


Photo 2 : Swellseal Sealant WA after application in the joint

Results

24 hours after application of Swellseal Sealant WA the bottom and top part of the test rig are assembled and water is pumped through the hose until the complete joint with Swellseal Sealant WA is in contact with water.

After another 24 hours the pressure is increased with the pump until 1 bar.

After 48 hours the pressure is increased to 2 bars
After 72 hours the pressure is increased to 3 bars.

Photo3 : the manometer indicating 3 bars.

Each 24 hours the pressure is increased by 1 bar.

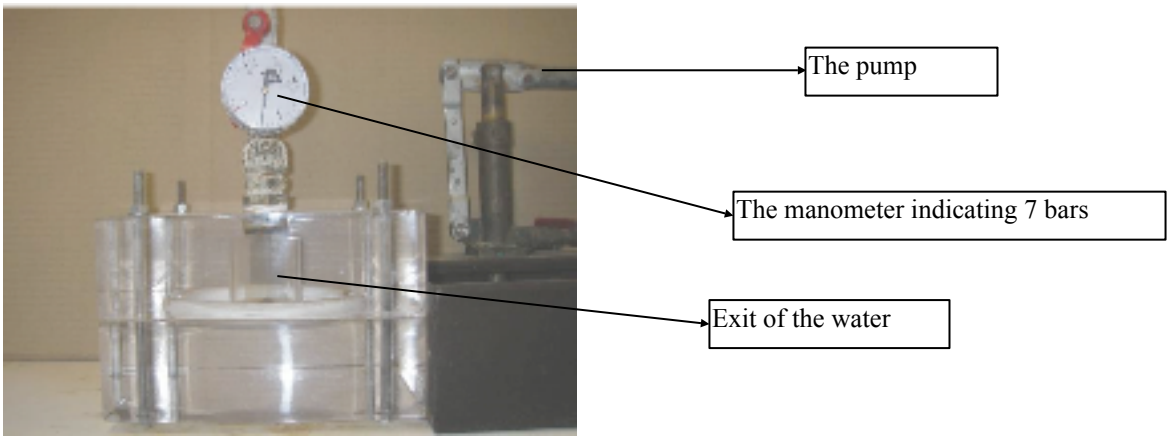


Photo 4 : after 7 days the manometer is at 7 bars

Photo 5 : manometer indicating 10 bars after 10 days. No leaks detected.

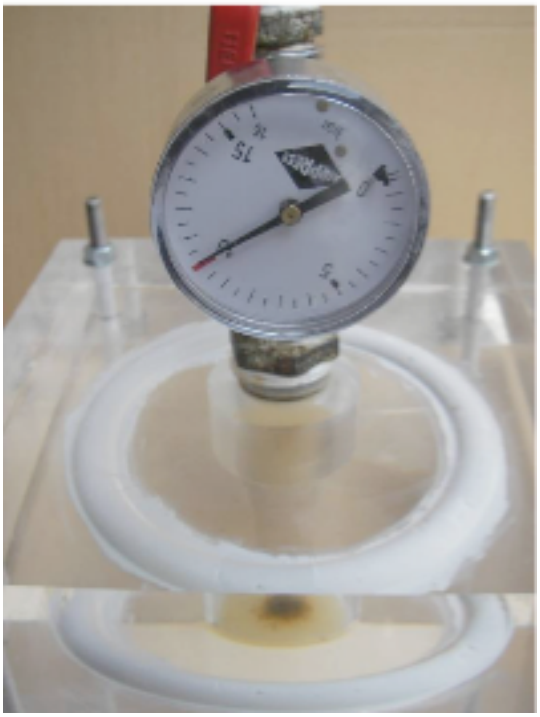


Photo 6 : close-up of the manometer at 10 bars

Discussion

Swellseal Sealant WA resists a water pressure of at least 10 bars.

Piet Kempenaers
09/05/2005
Manager R & D

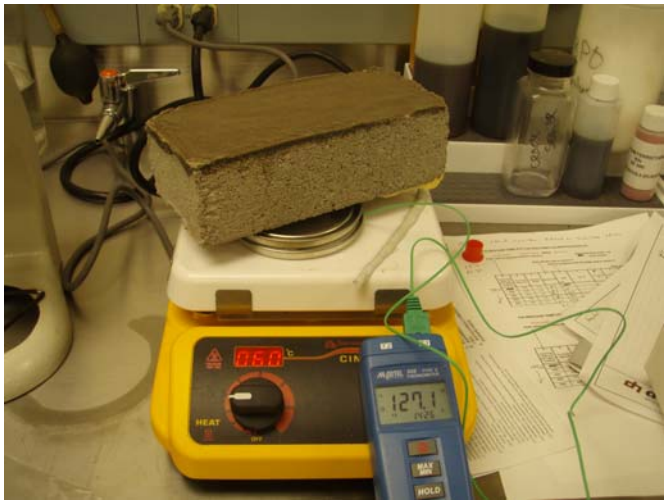
April 17, 2009

SWELLSEAL® WA at High Temperatures
Technical Bulletin 200903

Swellseal® WA was examined for changes that might occur on exposure to temperatures greater than 50 °C (120 °F). Previously cured Swellseal® WA strips were placed in the well of a 1 qt. paint can lid. The lead wire to the thermocouple was inserted into the Swellseal® WA. (1a)

1a.

Another paint can lid was fitted on top with the lip matching the well of the bottom lid. This was placed on a ceramic hotplate at 60°C, and a brick was put on top to ensure metal to metal and metal to hotplate contact. An unconfined strip of Swellseal® WA was placed directly on the hotplate. (1b)



1b.

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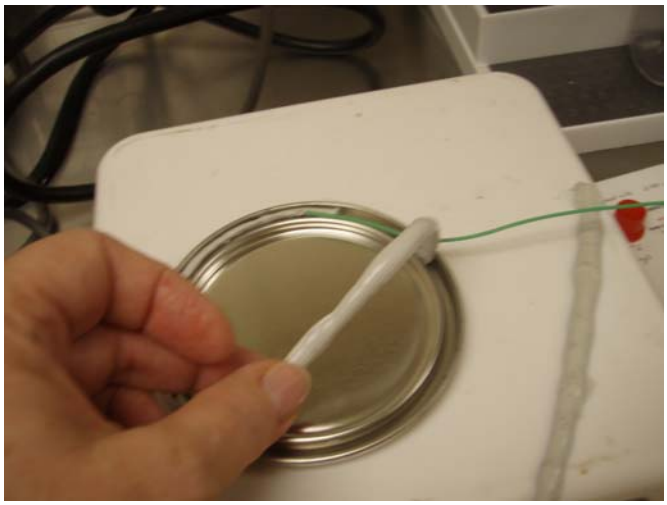
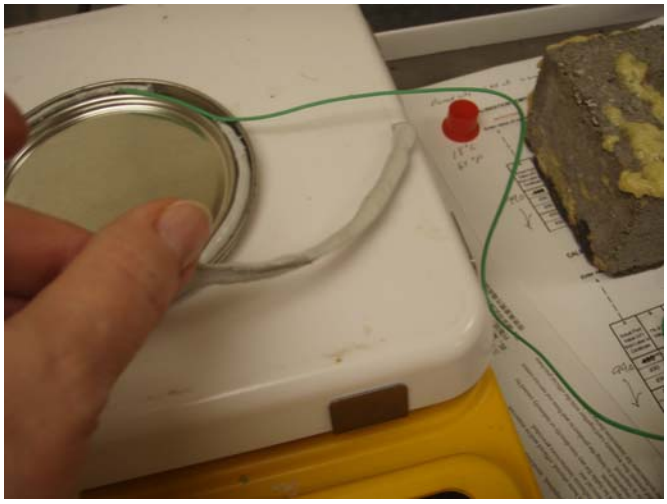
After 4 hours at 60°C, the top lid was lifted and the Swellseal® WA examined. The material was not melted, or flowable, nor was any sign of decomposition seen. (1c)



1c.

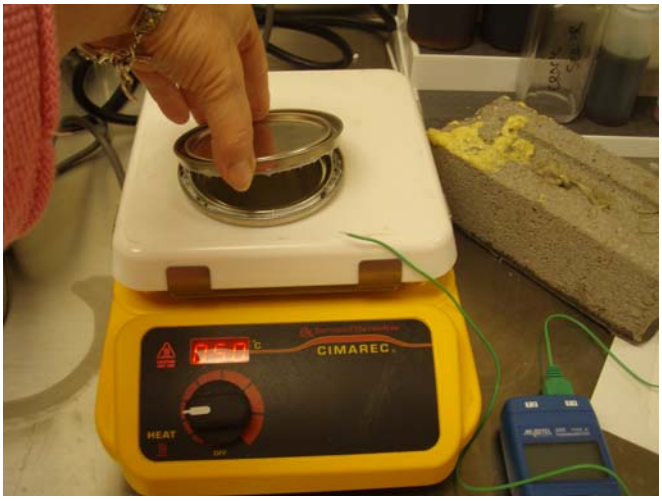
After the same 4 hours, the unconfined strip was examined. The material was not melted, flowable, or decomposed. (1d)

The temperature was then raised at a rate of 10°C per hour to 130 °C. The material was examined once before each temperature increase. No melting, flowing, or decomposition was seen. The final T of 130 °C was maintained for 1 hour.



1d.

Uncured Swellseal® WA was then tested. Swellseal® WA was gunned into the groove and mated with another lid as before. The temperature was maintained at 50 °C (120 °F) throughout the test. The Swellseal® WA was examined at 1 hour (2a) and was still uncured.



2a.

At 21 hours heating, the Swellseal® WA had developed “legs”, the beginning of cure. (2b.)

2b.

At 30 hours, much more curing has occurred and the lids were difficult to separate. (2c.) At this point, the hot plate was turned off, and the Swellseal® WA allowed to cool to room T overnight.

2c.

At 48 hours, the lids were inseparable. (2d.) No flowing, melting, or decomposition was observed at any time.

2d.

Conclusions:
This test was initiated by an inquiry as to what effect desert temperatures, i.e. 120°F, would have on steel sheet piles that had been paired using Swellseal® WA.

From this it is apparent that there is little if any effect, regardless of whether the Swellseal® WA is cured or not before the exposure to 120 °F heat.

However, Swellseal® WA is a moisture cured urethane, and as such relies on relative humidity to cure in such a situation. These tests were performed in Houston, TX, the land of high humidity. As compensation, in a very hot, dry climate, I would advise a light misting of water to each application of Swellseal® WA, after tooling and before pairing. This will ensure complete cure.

Vicki Crosby
Technical Services Manager

Technical Bulletin 2009003

de neef®

CUT PURe

Product Description

Cut PURe is a hydrophobic polyurethane designed to fill large voids in rock fissures, gravel layers, joints, and cracks in concrete structures and for the cut-off of gushing water. Depending on the temperature and amount of accelerator (Cut Cat PURe) used, the grout quickly cures to a rigid, closed cell polyurethane foam that is resistant to most organic solvents, mild acids, alkali, petroleum and micro-organisms.

Phthalate free- no phthalate-based plasticizers

Unregulated for transport- no hazmat shipping

Reformulated TDI free-all MDI based technology.

environmentally friendly-NSF/ANSI 61 approved.

TESTED AND CERTIFIED Water Quality UNDER INDUSTRY STANDARDS ®

C USA

CUT PURe when combined with CUT CAT PURe is certified by WQA to NSF/ANSI 61 for materials safety only, as verified and substantiated by test data.
Please refer to WQA website(www.wqa.org) for use ratios and limitations

Product Advantages

Free Foam Expansion up to 30 times

Contains no volatile solvents

Single Component

Will not dilute in water

Controlled reaction time

3 catalysts available: Cut Cat, Fast, XF

Applications

•Sealing larger volume leaks through concrete cracks and fissures

•Filling voids

•Stabilizing soil or gravel

Properties

Cut PURe Resin		
Solids	100%	ASTM D1010
Viscosity	200 cp at 77°F	ASTM D1638
Color	Black-brown liquid	
Density	1.10 g/cm^3	ASTM D1638
Flashpoint	293°F	CC
Corrosiveness	Non-corrosive	
Cut Cat PURe		
Viscosity	15 cp at 77°F	ASTM D2196
Color	Red Liquid	
Flashpoint	158°F	CC
Cut PURe Cured		
Density confined	1.00 g/cm^3	ASTM D3574
Density free	2 PCF	
Compressive	4351 psi	confined
Flexural	2320 psi	confined

Packaging & Handling

Cut PURe: 5 gallon metal pail
50 gallon metal drum
Cut Cat PURe: 32 oz. metal cans

Cut PURe is sealed under dry nitrogen because it is sensitive to moisture, and should be stored in original containers in a dry area. Storage temperature must be between 40°F and 90°F. Once the packaging has been opened, the useful life of the material is greatly reduced and should be used as soon as possible. Shelf life: 2 years.

Reaction Times

T	% Cat	End Reaction	Foam Factor
40°F	2	13′20″	15V
	3	11′00″	21V
	5	5′35″	22V
	10	3′05″	25V
50°F	2	11′30″	19V
	3	9′10″	21V
	5	5′00″	24V
	10	2′50″	28V
60°F	2	9′40″	20V
	3	7′45″	22V
	5	4′45″	25V
	10	2′35″	28V
68°F	2	8′00″	20V
	3	6′30″	23V
	5	4′35″	27V
	10	2′10″	29V
77°F	2	7′35″	21V
	3	6′10″	24V
	5	4′00″	28V
	10	2′05″	30V
86°F	2	7′10″	22V
	3	5′35″	25V
	5	3′35″	29V
	10	1′55″	30V
95°F	2	5′40″	22V
	3	4′45″	25V
	5	2′55″	29V
	10	1′50″	30V

Installation Guidelines

Warning: Cut PURe must be used with Cut Cat PURe. Consult the Technical Data Sheets and MSDS before using.

Installation Instructions: For detailed installation instructions refer to the DeNeef technical bulletin for your application.

Catalyst: Shake catalyst can 2-3 minutes.

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Pour the desired amount of Cut PURe into a clean dry pail. Measure the appropriate amount of Cut Cat PURe (refer to the **Reaction Times** section of this data sheet for the desired set time) and pour it into the pail. Stir until adequately mixed. Exceeding the recommended amount of catalyst may adversely affect the reaction and quality of the cured foam.

Injection: During injection the grout will follow the path of least resistance. When the material has stopped penetrating it will continue to expand against the limits of the confined space and compress within itself, forming a dense, closed cell foam.

Extreme conditions: For application procedures in extreme temperatures and specific environments or equipment recommendations call the DeNeef Technical Service Department.

Cleaning: Clean all tools and equipment which have been in contact with the resin with DeNeef Washing Agent before resin has cured. Products should be disposed of according to local, state, and federal laws.

Health and Safety

Always use protective clothing, gloves and goggles consistent with OSHA regulations. Avoid eye and skin contact. Do not ingest. Refer to MSDS. For emergencies, call CHEMTREC 1-800-424-9300.

Limitations

Cut PURe must be used with Cut Cat PURe. Low temperatures will significantly affect viscosity. If site temperatures are extremely low, heat bands or heated water baths may be used on the pails before and during installation to maintain the product's temperature. Avoid splashing water into open containers, as the material is water activated. Avoid exceeding 90°F when warming.

CAUTION: pH NOTICE. Water used to activate PURe Grouts must be in the pH range of 3-10 for optimum foam quality.

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Technical Service 1-800-732-0166

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CUT CAT FAST and EXTRA FAST PURe

Product Description

Cut Cat Fast and Extra Fast PURe are designed to be mixed with Cut PURe to allow for faster reaction times in applications involving the cut-off of gushing water with a high to very high pressure and speed. Cut Cat Fast and Extra Fast PURe are recommended for use in cold temperatures when the use of the standard Cut Cat PURe does not result in a fast enough reaction.

Cut Cat Fast and Extra Fast PURe are used at a 10% mixing ratio. Both are non-flammable, solvent free, and phthalate free. Final foam is resistant to most organic solvents, mild acids, alkaloids and microorganisms.

Cut Cat Fast and Extra Fast PURe have very fast reaction times, less than 60 seconds in salt water at 27°F.

Applications

- Sealing larger volume leaks thru concrete cracks and fissures
- Cold Weather Grouting

Psroduct Advantages

- Faster reaction times for Cut PURe.
- Enhanced cold weather reactivity.
- Phthalate free, unregulated for transport and storage.

Properties

Cut Cat Fast PURe		
Viscosity	20 cp at 77°F	ASTM D2196 A
Color	Transparent Red Liquid	
Density	0.973 g/cm^3	
Flashpoint	257°F	ASTM D93
Cut Cat Extra Fast PURe		
Viscosity	20 cp at 77°F	ASTM D2196 A
Color	Transparent Red Liquid	
Density	1.000 g/cm^3	
Flashpoint	257°F	ASTM D93

Reaction Times

10% Cut Cat Fast PURe			
T	Start	End	Foam Factor
27°F	30”	1’40”	20V
40°F	28”	1’25”	26V
50°F	26”	1’23”	26V
60°F	23”	1’20”	28V
68°F	23”	1’20”	30V
77°F	20”	1’20”	32V

10% = 64 oz per 5 gallons of Cut PURe

10% Cut Cat Extra Fast PURe			
T	Start	End	Foam Factor
27°F	25”	1’15”	24V
40°F	23”	1’10”	28V
50°F	23”	1’10”	28V
60°F	23”	1’05”	30V
68°F	20”	1’05”	30V
77°F	18”	1’05”	32V

10% = 64 oz per 5 gallons of Cut PURe

Packaging & Handling

Cut Cat Fast and Extra Fast PURe:

- 32 oz. metal cans.
- 5.0 gallon metal pail

Cut Cat Fast and Extra Fast PURe are sensitive to moisture and should be stored in the original containers in a dry area. Storage temperature must be between 40°F and 90°F. Once the packaging has been opened, the useful life of the material is greatly reduced and should be used as soon as possible. Shelf life: 2 years.

Installation Guidelines

Warning: Consult the Technical Data Sheets and MSDS before using.

Installation Instructions: For detailed installation instructions refer to the DeNeef technical data sheet for Cut PURe.

1. Shake catalyst can 2-3 minutes.

2. Do not pour catalyst directly into original grout container.

3. Pour the desired amount of Cut PURe into a clean pail.

4. Measure the appropriate amount of Cut Cat Fast or Extra Fast and pour it into the grout and stir until adequately mixed.

5. Never use more than the 10% of Cut Cat Fast or Extra Fast. Excess acceleration will cause vigorous expansion that is prone to shrinkage.

During injection the grout will follow the path of least resistance. When the material has stopped penetrating it will continue to expand against the confines of the crack/joint and compress within itself, forming a very dense, closed cell material stopping the leak.

Extreme conditions: For application procedures in extreme temperatures and specific environments or equipment recommendations call the DeNeef Technical Service Department.

Cleaning: Clean all tools and equipment which have been in contact with the resin with DeNeef Washing Agent before resin has cured. Products should be disposed of according to local, state, and federal laws.

Health and Safety

Always use protective clothing, gloves and goggles consistent with OSHA regulations. Avoid eye and skin contact. Do not ingest. Refer to MSDS. For emergencies, call CHEMTREC 1-800-424-9300.

Limitations

Please do not exceed the recommended catalyst ratio.

CAUTION: pH NOTICE. Water used to activate PURe Grouts must be in the pH range of 3-10 for optimum foam quality.

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GRACE

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HOT SHOT Cartridges

Product Description

Cut HOT SHOT Cartridge comes complete with cartridge, dasher rod and nozzle. Cut PURe is a hydrophobic polyurethane that is mixed with Cut Cat Extra Fast PURe in the cartridge. It is designed to fill large voids such as rock fissures, gravel layers, joints/ cracks in concrete structures and to cut-off gushing water with high pressure and speed. In its uncured form, Cut PURe is a blackish-brown transparent nonflammable liquid. When it comes into contact with water, the grout expands and then quickly cures to a rigid closed cell polyurethane foam that is resistant to most organic solvents, mild acids, alkali and micro-organisms.

Applications

•Sealing high pressure leaks through concrete cracks and fissures

•Filling voids

•Sealing pipe penetrations

Product Advantages

Free foam expansion up to 30 times

Contains no volatile solvents

Single component

Will not dilute in water

Extra Fast Catalyst

Convenient cartridge packaging

Properties

Cut PURe Resin		
Solids	100%	ASTM D1010
Viscosity	200 cp at 77°F	ASTM D1638
Color	Black-brown liquid	
Flashpoint	293°F	CC
Corrosiveness	Non-corrosive	
Cut Cat Extra Fast PURe		
Viscosity	20 cp at 77°F	ASTM D2196
Color	Red Liquid	
Flashpoint	257°F	CC
Cut PURe Cured		
Density confined	62 PCF	ASTM D3574
Density free	2 PCF	
Compressive	4351 psi	100% confined
Flexural	2320 psi	100% confined

Reaction Times

10% Cut Cat Extra Fast PURe			
T	Start	End	Foam Factor
27°F	25”	1’15”	24V
40°F	23”	1’10”	28V
50°F	23”	1’10”	28V
60°F	23”	1’05”	30V
68°F	20”	1’05”	30V
77°F	18”	1’05”	32V

Packaging & Handling

Each 9.57 oz HOT SHOT Cartridge contains 8.70 fluid ounces Cut PURe and 0.87 fluid ounce Cut Cat Extra Fast PURe. HOT SHOT is packaged 12 cartridges per case, 12 lbs/ per case. Storage temperature must be between 40°F and 90°F. Shelf life: 1 year.

Installation Guidelines

Warning: Consult the Technical Data Sheets and MSDS before using.

1. Wear safety glasses and gloves

2. Shake cartridge vigorously before using.

3. Remove the small red cap.

4. Insert the dasher rod to the first stop, about ½ inch.

5. Screw into threads. Do not over tighten.

6. Remove tape band from cartridge.

7. Pull dasher rod straight up. This separates the dasher from the foil barrier.

8. Squeeze the cartridge at the previously taped area to slightly deform the foil.

9. Push the dasher all the way to the bottom of the cartridge.

10. Mix for 50-75 strokes while turning the cartridge clockwise, keeping pressure on the large red cap.

11. Push the dasher rod all the way to the end and unscrew and remove.

12. Screw nozzle to threaded neck.

13. Remove large red end cap and insert in cartridge gun.

Injection: During injection the grout will follow the path of least resistance. When the material has stopped penetrating it will continue to expand against the limits of the confined space and compress within itself, forming a dense, closed cell foam.

Extreme conditions: For application procedures in extreme temperatures and specific environments or equipment recommendations call the DeNeef Technical Service Department.

Cleaning: Clean all tools and equipment which have been in contact with the resin with DeNeef Washing Agent before resin has cured. Products should be disposed of according to local, state, and federal laws.

Health and Safety

Always use protective clothing, gloves and goggles consistent with OSHA regulations. Avoid eye and skin contact. Do not ingest. Refer to MSDS. For emergencies, call CHEMTREC 1-800-424-9300.

Limitations

Low temperatures will significantly affect viscosity.

CAUTION: pH NOTICE. Water used to activate PURe Grouts must be in the pH range of 3-10 for optimum foam quality.

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Dry Oakum

Product Description

DeNeef's Dry Oakum is a 2" diameter natural jute rope comprised of 8 strands, having a twist of approximately 1-1/4 turns per foot. The loose twist is easily unraveled to allow for fitting into joints or annular spaces from 1/2" to 2". Single strands can be broken down to fit into openings smaller than 1/2". When combined with DeNeef PURe polyurethane grouts and water, the system swells to seal cracks, joints, and annular spaces around pipe penetrations. The system is ideal for pre-injection sealing of openings or to stop flowing water prior to final injection of chemical grout.

Product Advantages

Very absorbent natural jute

Easy to cut to size

No oils or tars added

Strands easy to separate

Conforms to any shape opening

Applications

- Sealing joints and cracks
- Sealing around pipe penetrations
- Stopping flowing water
- Pre-injection surface sealing

Properties

Physical Properties	
Color	Brown
Weight	0.4 lbs. / ft at 2" dia.
Diameter	Approx: 2" (8 strands twisted)
Conforms to:	Federal Specification HH-P-117

Note: The data shown above reflects typical results based on laboratory testing under controlled conditions. Reasonable variations from the data shown above may result.

Packaging & Handling

Dry Oakum is provided in a 50 lb. box
Approximate yield: 1/2" strands = 1000 ft.
2" strands = 125 ft.

Store in dry conditions.

Health and Safety

Always use protective clothing, gloves and goggles consistent with OSHA regulations. Avoid eye and skin contact. Do not ingest or inhale fibers.

Limitations

Wider cracks and joints sealed with chemical grout saturated dry oakum may require additional grout injection to achieve seal if excessive pressures or high water flow are present.

Installation Guidelines

Warning: Use proper tools and safe cutting techniques to prevent injury while cutting Dry Oakum. Work on a flat well lighted surface and make all cutting motions away from the body. Always wear gloves, goggles and protective clothing when installing chemical grout soaked Dry Oakum. Refer to the manufacturers safety instructions for the resin being used before proceeding.

Installation Instructions:

1. Clean area to be sealed prior to installing saturated oakum to facilitate a good bond to the substrate.
2. Cut Dry Oakum into workable lengths. (18”-24”) Properly saturated and installed oakum will create a seal to itself, so several short sections may be used.
3. Loosen fibers with the hands to enhance material absorption.
4. In a clean pail pour DeNeef PURe polyurethane grout and add catalyst if required.. (Refer to the DeNeef technical department for the correct choice of chemical grout for your application.)
5. In a second pail, pour clean water to be used to initiate the chemical grout reaction.
6. Prior to saturating the Dry Oakum with chemical grout, wet the substrate with water and have a method available to apply water to the surface of saturated oakum after it is installed.
7. Using a gloved hand, submerge the Dry Oakum into the pail of chemical grout.
8. Work the resin into the Dry Oakum; similar to getting a sponge to soak up liquid.
9. Remove the saturated oakum from the grout pail. With a gloved hand, form a circle with the thumb and fore finger and pull the saturated oakum through the circle. Loosely grip the saturated oakum as it passes through the hand to remove excess surface resin without removing the resin that has saturated into the strand of oakum. DO NOT WRING OUT!
10. Dip the saturated oakum strip into the pail of clean water to initiate the chemical grouts reaction.
11. Immediately place the saturated / wetted strand of Dry Oakum into the crack, joint or annular space. A tool such as a screwdriver, punch, or metal rod may be used to facilitate saturated oakum placement.
12. Mist or spray additional water onto the surface of the saturated oakum. Use caution only to wet the surface and not to wash the resin out of the oakum.
13. Allow the chemical grout to fully react.
14. Repeat with additional strips as required to fill the entire area to be sealed.
15. Excess grout that expands out of the sealed area may be removed by mechanical means after the grout is fully cured. Use caution not to dislodge the newly formed seal.

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Washing Agent
Non-Flammable Solvent

Product Description

Washing Agent is a non-flammable solvent mixture for cleaning polyurethane grout pumps and equipment. **Washing Agent** is composed of a mixture of organic solvents with high dissolving properties for liquid polyurethane products.

Product Advantages

- Non-flammable
- Anhydrous

Applications

Flushing out and cleaning pumps and lines used to inject polyurethane grouts.

Properties

Physical Properties	
Specific Density	Approx 9.6 lbs/gal
Appearance	Clear Liquid
Flashpoint	225ºF

Note: The data shown above reflects typical results based on laboratory testing under controlled conditions. Reasonable variations from the data shown above may result.

Packaging & Handling

5 Gallon metal pails, closed head with a flex spout.

Health and Safety

Avoid repeated inhalation of large quantities: If necessary, wear a mask (for organic vapors). Do not spray if sufficient ventilation is unavailable. Observe all safety rules as noted on the label. Always use protective clothing, gloves and goggles consistent with OSHA regulations during use. Avoid eye and skin contact. Do not ingest. Refer to Material Safety Data Sheet for detailed safety precautions.

In the event of an EMERGENCY call: CHEMTREC 800-424-9300.

Limitations

Limited effect on cured polyurethane resin.

Pump Start Up

For most pumps, there are two separate lines.

Main pickup line (large line)

Prime line (small line)

The main pickup line sucks the material into the pump. The prime line is the smaller tube running alongside the main line. The objective is to NOT contaminate the DeNeef Washing Agent with either water or urethane grout.

You will need two buckets:

One empty bucket that will be the trash bucket.

One bucket filled with 3/4 gallon DeNeef Washing Agent.

1. Separate the main pickup line from the prime line.

2. Place the main pickup line into the Washing Agent.

3. Place the prime line into the trash bucket.

4. Start the pump.

5. Turn the prime switch to prime.

6. Let the prime line run into the trash bucket for 5 - 10 seconds. While the Washing Agent is still running, move the prime line over into the Washing Agent bucket. Let it run for about 1 minute. A steady flow of Washing Agent should be running out of the prime line.

7. Turn prime switch off. Pump should now be ready with DeNeef Washing Agent in the injection hose.

8. Point the grease gun into the trash bucket. Pull the trigger and let it run for 5 - 10 seconds.Release the trigger and point the gun into the Washing Agent bucket. Pull the trigger and let it run for 1 minute.

Grouting

9. Pour Urethane grout from original container into an open top bucket. Add the catalyst and stir it into the grout slowly for 2 - 3 minutes.

10. Place the main pickup line into the urethane grout.

11. Place the prime line into the trash bucket.

12. Turn on the prime switch to prime. Let it run until the Washing Agent runs out and urethane grout starts running through the prime line. Turn prime switch off.

13. Place the prime line into the urethane grout.

14. Point the gun into the trash bucket and pull the trigger. Let it run until clear Washing Agent turns amber. You are now ready to grout.

Pump Shut Down

15. Repeat this process using the Washing Agent.

16. Clean the prime line for 3 - 4 minutes.

17. Switch to the main pickup line.

18. Run the remaining urethane grout into the trash bucket.

19. When it runs with Washing Agent, recirculate Washing Agent for 3 - 4 minutes

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