MATERIAL DATA SHEET - DURCON EPOXY RESIN

Chemical Resistance Test Results

Chemical Resistance for Black Onyx		
Reagent Tested	**Test**	**Rating**
Amyl Acetate	A	0
Ethyl Acetate	A	1
Acetic Acid 98%	B	0
Acetone	A	1
Acid Dichromate 5%	B	0
Butyl Alcohol	A	0
Ethyl Alcohol	A	0
Methyl Alcohol	A	0
Ammonium Hydroxide, 28%	B	0
Benzene	A	1
Carbon Tetrachloride	A	0
Chloroform	A	1
Chromic Acid 60%	B	0
Cresol	A	0
Dichloro Acetic Acid	A	0
Dimethylformamide	A	0
Dioxane	A	1
Ethyl Ether	A	0
Formaldehyde 37%	A	0
Formic Acid 90%	B	1
Furfural	A	0
Gasoline	A	0
Hydrochloric Acid, 37%	B	0
Hydrofluoric Acid 48%	B	0
Hydrogen Peroxide 28%	B	0

Chemical Resistance for Black Onyx (cont)		
Regent Tested	**Test**	**Rating**
Tincture of Iodine	B	0
Methyl Ethyl Ketone	A	1
Methylene Chloride	A	1
Mono Chlorobenzene	A	1
Naphthalene	A	0
Nitric Acid, 20%	B	0
Nitric Acid, 30%	B	0
Nitric Acid, 70%	B	0
Phenol 90%	A	0
Phosphoric Acid, 85%	B	0
Silver Nitrate, Saturated	B	0
Sodium Hydroxide, 10%	B	0
Sodium Hydroxide, 20%	B	1
Sodium Hydroxide, 40%	B	1
Sodium Hydroxide, Flake	B	0
Sodium Sulfide, Saturated	B	0
Sulfuric Acid, 25%	B	0
Sulfuric Acid, 85%	B	1
Sulfuric Acid, 96%	B	3
Sulfuric Acid 85%, and Nitric Acid 70%, equal parts	B	1
Toluene	A	0
Trichloroethylene	A	1
Xylene	A	0
Zinc Chloride, Saturated	B	1

Evaluation

After 24-hours exposure, exposed areas were washed with water, then a detergent solution and finally with isopropyl alcohol. Materials were then rinsed with distilled water and dried with a cloth. Samples are numerically rated as follows:

0 No Effect

No detectable change in the material surface.

1 Excellent

Slight detectable change in color or gloss but no change in function or life of the surface.

2 Good

A clearly discernible change in color or gloss but no significant impairment of surface life or function.

3 Fair

Objectionable change in appearance due to discoloration or etch, possibly resulting in deterioration of function over an extended period of time.

SEFA Chemical Resistance Test Standard (Method A):

For volatile chemicals (organic solvents) - A cotton ball, saturated with the test chemical, was placed in a one ounce bottle (10mm x 75mm test tube or similar container). The container was inverted on the test material surface for a period of 24 hours. Temperature of test: 23° +/-2° C (73° +/-4° F).

SEFA Chemical Resistance Test Standard (Method B):

For non-volatile chemicals - Five drops (1/4cc) of the test chemical were placed on the test material surface. The chemical was covered with a watch glass (25mm) for a period of 24 hours. Temperature of test: 23° +/-2° C (73° +/-4° F). This method was used for all chemicals listed below other than the solvents.

Preventing Damage

Epoxy Resin is the material of choice for harsh environments. However, epoxy resin products are subject to thermal shock and are not warranted against damage from liquid nitrogen or dry ice. Abuse caused by the improper use of these materials could cause cracking or sink failure.

Physical Test Results

ASTM	Test	Imperial	Metric
ASTM D785-08	**Rockwell Hardness**	110 [M scale]	110 [M scale]
ASTM D696-03*	**Linear Thermal Expansion**	1.37x 10^{-5} [in/in°F]	2.46 x 10^{-5} [mm/mm°C]
ASTM D3801-00*	**Burning Characteristics Sample as Received**	30 Seconds Max. Burning Time	30 Seconds Max Burning Time
ASTM D3801-00*	**Burning Characteristics Sample Heat Aged**	41 Seconds Max. Burning Time	41 Seconds Max. Burning Time
ASTM D635-06*	**Fire Resistance**	Self Extinguishing	Self Extinguishing
ASTM D570-98*	**Water Absorption**	0.008 [% after 24 hrs]	0.008 [% after 24 hrs]
ASTM D792-00	**Density**	134.8 [lb/ft^3]	2.16 [g/cm^3]
ASTM D695-02	**Compressive Strength**	38.4 [kpsi]	265 [MPa]
ASTM D648-07	**Heat Distortion Temperature**	205 [°F]	96 [°C]
ASTM E84-06*	**Fire Resistance - Flame Spread Index**	0.29 [in]	7.4 [mm]
ASTM E84-06*	**Fire Resistance - Smoke Developed Index**	0.87 [in]	221.2 [mm]
ASTM D790-07	**Flexural Strength**	14.9 [kpsi]	103 [MPa]
In-house Lab Test	**Surface Defacing Temperature**	400 [°F]	204 [°C]

*** Lower number preferred**

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ISO 9001:2008

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