technotes

Chemical Resistance of VYDYNE® Polyamide 66 Resins

Table 1 – Behavior of VYDYNE® Resins Toward Organic Solvents at Room Temperature

Reagent	Visual Change	Ratings
ALCOHOLS		
Benzyl Alcohol	Coarse surface after 2 days	NR
Butyl Alcohol	Temporary loss of stiffness	G
Ethyl Alcohol	Temporary loss of stiffness	G
Ethylene Glycol	Temporary loss of stiffness	G
Isopropyl Alcohol	Temporary loss of stiffness	G
Methyl Alcohol	Temporary loss of stiffness	G
ALDEHYDE		
Benzaldeyhyde	Unchanged	E
AROMATIC HYDROCARBONS		
Benzene	Unchanged	E
Toluene	Unchanged	E
Xylene	Unchanged	E
CHLORINATED HYDROCARBONS		
Carbon Tetrachloride	Unchanged	E
Chloroform	Temporary loss of stiffness	G
Dichloroethylene	Temporary loss of stiffness	G
Dichlormethane	Temporary loss of stiffness	G
Monochlorbenzene	Unchanged	E
Perchlorethylene	Unchanged	E
CYCLIC AMINE		
Pyridine	Unchanged	E
ESTERS		
Amyl Acetate	Unchanged	E
Butyl Acetate	Unchanged	E
Ethyl Acetate	Unchanged	E
Methyl Acetate	Unchanged	E
ETHERS		
Ether (Diethyl)	Unchanged	E
Tetrahydrofuran	Unchanged	E
KETONE		
Acetone	Unchanged	E
Cyclohexanone	Unchanged	E
MIXTURE OF HYDROCARBONS		
Decalin	Unchanged	E
Gasoline	Unchanged	E
Kerosene	Unchanged	E
Mineral Oil	Unchanged	E
Petroleum	Unchanged	E
Resorcinol	Dissolves	S, NR
Tetralin	Unchanged	E
Turpentine	Unchanged	E
SULFUR COMPOUND		
Carbon Disulfide	Unchanged	E

Table 2 – Behavior of VYDYNE Resins Toward Acids, Bases, Halogens, etc.

Reagent	Temp °F (°C)	Visual Change	Ratings
AMIDE			
Dimethylformamide	75 (24)	Strong attack	NR
BASES			
Potassium Hydroxide (5%)	73 (23)	Minimal effect	E
Potassium Hydroxide (5%)	158 (70)	Minimal effect	E
Potassium Hydroxide (10%)	73 (23)	Minimal effect	E
Potassium Hydroxide (10%)	158 (70)	Some “crazing” after 30 days	P, NR
Sodium Hydroxide (1%)	73 (23)	Unchanged	E
Sodium Hydroxide (5%)	73 (23)	Minimal effect	E
Sodium Hydroxide (5%)	158 (70)	Minimal effect	E
Sodium Hydroxide (10%)	73 (23)	Minimal effect	E
Sodium Hydroxide (10%)	158 (70)	Some “crazing” after 30 days	P, NR
HALOGENS			
Bromine		Strong attack	NR
Chlorine		Strong attack	NR
INORGANIC ACIDS			
Hydrochloric Acid (20% -40%)	73 (23)	Etched after 1 sec.	P, NR
Hydrochloric Acid (Conc)	75 (24)	Dissolves	S, NR
Hydrochloric Acid (Dilute)	75 (24)	Partially dissolves	P, NR
Nitric Acid (Conc)	75 (24)	Dissolves	S, NR
Phosphoric Acid (Conc)	75 (24)	Dissolves	S, NR
Sulfuric Acid (Conc)	75 (24)	Dissolves	S, NR
Sulfuric Acid (Dilute)	75 (24)	Partially dissolves	P, NR
KETONE			
Gamma-Butyrolactone	75 (24)	Strong attack	NR
ORGANIC ACIDS			
Acetic Acid (Conc)	75 (24)	Partially dissolves	P, NR
Acetic Acid (Conc)	200 (93)	Dissolves	S, NR
Acetic Acid (Dilute)	75 (24)	Etched	F, NR
Formic Acid (Conc)	75 (24)	Dissolves	S, NR
Formic Acid (Dilute)	75 (24)	Partially dissolves	P, NR
PHENOL COMPOUNDS			
0-Chlorophenol	75 (24)	Dissolves	S, NR
m-Chlorophenol	75 (24)	Dissolves	S, NR
p-Chlorophenol	75 (24)	Dissolves	S, NR
Cresol	75 (24)	Dissolves	S, NR
Phenol	75 (24)	Dissolves	S, NR
Xylenols	75 (24)	Dissolves	S, NR

The following abbreviations are used for the ratings: **E = Excellent G = Good F = Fair P = Poor NR = Not Recommended S = Solvent**

Table 3—Behavior of VYDYNE Resins in Aqueous Solutions of Hydrogen Peroxide and Inorganic Salts at Room Temperature

Salt Solution	Visual Change	Ratings
HYDROGEN PEROXIDE		
0.5% Hydrogen Peroxide	Unchanged	G
1% Hydrogen Peroxide	Brittle after 54 days	NR
3% Hydrogen Peroxide	Brittle after 54 days	NR
10% Hydrogen Peroxide	Degrades	NR
30% Hydrogen Peroxide	Degrades	NR
INORGANIC SALTS		
10% Aluminum Chloride	Unchanged	F
10% Calcium Chloride	Unchanged	F
10% Chrome Alum	Unchanged	G
10% Copper Sulfate	Unchanged	G
10% Ferric Chloride	Unchanged yellowing	P, NR
10% Magnesium Chloride	Unchanged	G
10% Manganese Sulfate	Unchanged	G
5% Mercuric Chloride	Swelled	P
5% Potassium Dichromate	Unchanged yellowing	P, NR
10% Potassium Nitrate	Unchanged	G
1% Potassium Permanganate	Decomposed	NR
10% Sodium Bisulfite	Unchanged	G
10% Sodium Hypochlorite (0.1% Cl)	White coating after 18 days	G
10% Sodium Sulfate	Unchanged	G
10% Zinc Chloride	Unchanged	F

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