Elvacite® 4072

Acrylic Resin

Elvacite® 4072 is a medium molecular weight methacrylate copolymer. It is unique in its broad compatibility and solubility. Elvacite® 4072 is designed for flexographic inks, general-purpose lacquers, and metal coatings.

Performance Features and Key Benefits

- Excellent flexibility
- Toughness allows for formulation as protective topcoat
- Solvent free
- Polymer composition promotes better adhesion to metal substrates

Typical Properties[a] of Elvacite® 4072	
Appearance	Solid bead
Specific Gravity, 25° C	1.11
Glass Transition Temp, onset	43°C
Molecular Weight (Mw)	105,000
Acid Number	5

a) Typical physical properties listed are approximate values and should not be considered manufacturers release specifications. Manufacturers release specifications are subject to change without notice, please contact your Lucite International Representative for the latest product specification details.

Elvacite® 4072 Manufacturers Release Specifications[b]	
Inherent Viscosity[c]	0.36 – 0.41
% Moisture (max)	0.50
% Methacrylic Acid	0.46 – 0.66

b) Manufacturers release specifications are subject to change without notice. Please contact Lucite International, Inc. for the latest information.
c) Inherent viscosity of a solution containing 0.25 g polymer in 50 ml of methylene chloride measured at 20°C using a No. 50 Cannon-Fenske viscometer

Preparing Solutions

Elvacite® resins dissolve at room temperature but require constant agitation to prevent solvent-swollen granules of polymer from forming agglomerates and sticking to the walls of the vessel. Important: The polymer beads should be sifted directly into the vortex of the stirred solvent to speed wetting-out and dispersion. Continuous low-shear agitation for periods of 1-12 hours, depending on the grade and concentration of resin, is recommended.

After the solution appears clear in the tank, a sample should be spread out on a Leneta card or glass. After the solvent evaporates and a film forms on the card or glass, there should not be any resin seeds. If there are any seeds, the tank should be agitated further to fully dissolve the resin. Tank agitation should not be stopped (except for sampling) until the film test indicates there are no resin seeds. Any cloudiness or residue may indicate that some polymer remains undissolved. The presence of water in the system can also cause cloudiness.

Solution time can be reduced by heating; most common solvents can be heated to approximately 49°C (120°F) without the need for reflux equipment. High-shear agitation also cuts dissolving time, but requires care to avoid overheating and excessive solvent loss.

Solvent Solubility

Table depicts the solubility of Elvacite® 4072 at 30% solids in various solvents.

Solubility of Elvacite® 4072		
Solvent	**Solubility**	**Rating**
Acetone	S	C
Toluene	S	C
Methyl ethyl ketone	S	C
Dimethyl carbonate	S	C
Methyl isobutyl ketone	S	C
n-Butyl acetate	S	C
Ethyl acetate	S	C
n-Propyl acetate	S	C
Methyl acetate	S	C
t-Butyl acetate	S	C

Viscosity

The table below illustrates typical viscosities of Elvacite® 4072 in varying solvents at 30% solids.

Solvent	Viscosity (cP)
Acetone	41
Toluene	102
Methyl ethyl ketone	46
Dimethyl carbonate	105
Methyl isobutyl ketone	82
n-Butyl acetate	123
Ethyl acetate	61
n-Propyl acetate	70
Methyl acetate	64
t-Butyl acetate	170

Resin Compatibility

Elvacite® 4072 is compatible with the following Elvacite® Resin Grades: 2013, 2014, 2016, 2042, 2043, 2044, 2045 and 2046. It is also compatible with the other types of resins, as illustrated in the following table (*C = Clear, H = Hazy, I = Insoluble*):

Blending Resin	Description	Form of Blended Resin Tested	Supplier	Elvacite / Blending Resin (by solids weight)		
Alkyd				75/25	50/50	25/75
Aroplaz 1271	Long linseed drying oil	30% in MEK	Reichold Chemicals Inc.	---	H	I
Aroplaz 1351	Long castor nondrying oil	30% in MEK	Reichold Chemicals Inc.	C	C	C
Chempol 13-1410	Safflower drying oil, acrylate mod	50% in Xylene	Cook Composites & Polymer	C	C	C
Paraplex RGA-2/80	Nondrying oil, sebacic	80% in n-Butyl Acetate	C P Hall Co.	H	H	H
Blagden 3105	Short coconut nondrying oil	60% in Xylene	Blagden Chemicals Ltd.	---	I	H
Cellulosic						
Cellulose acetate 39-5-5B		30% in Acetone or MEK	Hercules Inc.	I	I	I
Cellulose Acetate Butyrate, ½ - sec.		30% in MEK	Eastman Chemical	C	C	C
Ethyl Cellulose N-7		30% in MEK	Hercules Inc.	I	I	I
Nitrocellulose “RS”, ½-sec Isopropyl		MEK/alcohol soln.	Hercules Inc.	C	C	C
Epoxy						
Epon 828		100% Resin	Resolution	C	C	H
Epon 1001		30% in MEK	Resolution	H	H	I
Elastomers						
EMD-504	Polyisobutylene	30% in Toluene	Exxon Chemical	I	I	I
Hypalon 30	Clorosulfonated polyethylene	15% in Toluene	Dupont Polymers	I	I	---
Neoprene AC-Soft	Polychloroprene	15% in Toluene	Dupont Polymers	I	I	---
Rosin Derivatives						
Ester Gum 8L		30% in MEK	Eastman Belgium	C	C	C
Pentalyn 255	Pentaerythritol ester	30% in MEK	Eastman Belgium	C	H	H
Pentalyn 830	Pentaerythritol ester	30% in MEK	Eastman Belgium	H	H	H
Vinyl Chloride Resins						
UCAR® Sol’n Vinyl VAGH	Copolymer	30% in MEK	Union Carbide	C	C	C
UCAR® Sol’n Vinyl VMCH	Copolymer	30% in MEK	Union Carbide	C	C	C

UCAR® Sol'n Vinyl VYHH	Copolymer	30% in MEK	Union Carbide	C	C	C
UCAR® Sol'n Vinyl VYNS-3	Copolymer	15% in MEK	Union Carbide	C	C	C
Exon 450	Copolymer	15% in MEK	Firestone Plastics	C	C	C
Exon 9290	Homopolymer	15% in THF	Firestone Plastics	C	C	---
Geon 103 EP	Homopolymer	15% in THF	B.F. Goodrich	C	C	---
Other Types						
Arochem 650	Maleic-modified hard resin	30% in MEK	Reichold Chemical Inc.	C	C	C
Aroset 4110	Acrylic resin	30% in MEK	Spencer Kellogg	C	C	H
Dammar		30% in Toluene		I	I	I
DC-840	Silicone resin	60% in Toluene	Dow Corning Corp.	C	C	C
Parlon S 10	Chlorinated rubber	30% in MEK	Hercules Inc.	C	C	C
Piccoumaron	Coumarone-indene resin	30% in MEK	Hercules Inc.	C	C	C
Santolite MHP	Sulfonamide-formaldehyde	30% in MEK	Monsanto Co.	C	H	H
Shellac		30% in Methanol		I	I	I
Super-Bechacite 2000	Permanently fusible phenolic	30% in MEK	Reichold Chemicals	C	C	C
Uformite MX-61	Triazine-formaldehyde resin	30% in MEK	Rohm & Haas Co.	C	C	C

Plasticizer Compatibility

Elvacite® 4072 is compatible at a 50/50 resin/plasticizer ratio with the following plasticizers:

Abalyn (methyl abietate)
Dibutyl phthalate
Dibutyl sebacate
Di-(2-ethylhexyl) azelate
Hercoflex 600 (pentaerythritol ester)
Hercoflex 707 (polyol ester)
Santicizer 8 (N-ethyl toluene sulfonamides)
Santicizer 97 (dialkyl adipate)
Santicizer 160 (butyl benzyl phthalate)
Santicizer 261 (isooctyl benzyl phthalate)
Santicizer 278 (benzyl phthalate)
Santicizer B-16 (butyl phthalyl butyl glycolate)
Tricresyl phosphate.

It is compatible at a 90/10 resin/plasticizer ratio with Resoflex R-296 (alkyd).

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