

Elvacite[®] 2009

Acrylic Resin

Elvacite[®] 2009 is a medium molecular weight methyl methacrylate. It provides good solubility and flexibility. It is used in lacquers as a barrier topcoating for vinyls.

Performance Features and Key Benefits

- Vinyl Topcoats to provide excellent barrier properties.
- Provides excellent solubility and “softness” in the methyl methacrylate resin line.

Typical Properties^a

Appearance	Solid bead
Specific Gravity, 25° C	1.14
Glass Transition Temp, onset (calculated)	81°C
Molecular Weight (Mw)	75,000
Acid Number (mg KOH/g Resin)	2.1

a) Typical physical properties listed are approximate values and should not be considered manufacturer's release specifications. Manufacturer's release specifications are subject to change without notice, please contact your Elvacite[®] representative for the latest product specification details.

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 I depicts the solubility of Elvacite® 2009 at 20% solids in various solvents.

Table I: Solubility of Elvacite® 2009
(C = Clear, H = Hazy solution, I = Insoluble)

Alcohols

Methyl Alcohol	I	Ethyl Alcohol	I	n-Propyl Alcohol	I
Isopropyl Alcohol	I	Isoamyl Alcohol	I	Cyclohexanol	I
Ethylene Glycol	I	Glycerol	I		

Chlorohydrocarbons

Methylene Chloride	C	Ethylene Dichloride	C	Perchloroethylene	H
1,1,1 – Trichloroethane	I				

Esters

Methyl Formate	C	Ethyl Acetate	C	Isopropyl Acetate	C
n-Butyl Acetate	C	n-Amyl Acetate	H	Butyl Lactate	C
Propylene Glycol Monoethyl Ether Acetate	C	Methyl Amyl Acetate	I		

Ethers

Diethyl Ether	I	Di-Isopropyl Ether	I	Tetrahydrofuran (THF)	C
“Cellosolve” Solvent	C				

Hydrocarbons

Toluene	C	Xylene	C	n-Hexane	I
Cyclohexane	I	VM & P Naphtha	I	Mineral Spirits	I
Turpentine	I				

Ketones

Acetone	C	Methyl Ethyl Ketone	C	Methyl Isobutyl Ketone	H
Di-Isobutyl Ketone	I	Cyclohexanone	C	Isophorone	I
Diacetone Alcohol	C	Methyl Amyl Ketone	C		

Nitrile

Acetonitrile	C				
Nitroparaffins					
Nitromethane	C	Nitroethane	C		

Resin Compatibility

Elvacite® 2009 is compatible with the following Elvacite® Resin Grades: 2008C, 2010, 2041, and 2013. It is also compatible with the other types of resins, as illustrated in the following table:

Blending Resin	Description	Form of Blended Resin Tested	Supplier	Elvacite / Blending Resin (by solids weight)		
				75/25	50/50	25/75
Alkyd						
Aroplaz 1271	Long linseed drying oil	30% in MEK	Spencer Kellogg	I	I	H
Aroplaz 1351	Long castor nondrying oil	30% in MEK	Spencer Kellogg	C	C	H
Chempol 13-1410	Safflower drying oil, acrylate mod.	50% in Xylene	Freeman Chemical	---	I	H
Paraplex RG-2	Nondrying oil, sebacic	30% in MEK	Rohm & Haas Co.	I	I	I
Plaskon 3105	Short coconut nondrying oil	60% in Xylene	Cargill, Inc.	---	H	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	Shell Chemical Co.	C	---	C
Epon 1001		30% in MEK	Shell Chemical Co.	C	C	C
Elastomers						
EMD-504	Polyisobutylene	30% in Toluene	Exxon	I	I	I

			Chemical			
Hypalon 30	Chlorosulfonated polyethylene	15% in Toluene	Dupont Polymers	I	I	I
Neoprene AC-Soft	Polychloroprene	15% in Toluene	Dupont Polymers	I	I	I
Rosin Derivatives						
Ester Gum 8L		30% in MEK	Hercules Inc.	H	I	I
Pentalyn 255	Pentaerythritol ester	30% in MEK	Hercules Inc.	H	H	H
Pentalyn 830	Pentaerythritol ester	30% in MEK	Hercules Inc.	H	H	H
Vinyl Chloride Resins						
Bakelite VAGH	Copolymer	30% in MEK	Union Carbide	C	C	C
Bakelite VMCH	Copolymer	30% in MEK	Union Carbide	C	C	C
Bakelite VYHH	Copolymer	30% in MEK	Union Carbide	C	C	C
Bakelite VYNS	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	C
Geon 103 EP	Homopolymer	15% in THF	B.F. Goodrich	C	C	C
Other Types						
Arochem 650	Maleic-modified hard resin	30% in MEK	Spencer Kellogg	C	C	C
Aroset 4110	Acrylic resin	30% in MEK	Spencer Kellogg	C	H	H
Dammar		30% in Toluene		H	I	H
DC-840	Silicone resin	60% in Toluene	Dow Corning Corp.	C	C	C
Parlon S 10	Chlorinated rubber	30% in MEK	Hercules Inc.	I	I	I
Piccoumaron	Coumarone-indene resin	30% in MEK	Hercules Inc.	C	I	I
Santolite MHP	Sulfonamide-	30% in MEK	Monsanto Co.	C	C	C

	formaldehyde					
Shellac		30% in Methanol		H	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.	I	I	I
(C = Clear solution, H = Hazy solution, I = Insoluble)						

Viscosity and Gloss

Elvacite® 2009 is a medium molecular weight methyl methacrylate polymer. Table II illustrates typical viscosities of Elvacite® 2009 by varying both solvent and resin concentration.

Solvent	Concentration (% Solids)		
	20%	30%	40%
Methyl Ethyl Ketone	27	225	2300
Toluene	12	150	1500
Isopropyl Acetate	50	800	1000
Cellosolve Solvent	430	18000	>25000

Typical Formulation

The following formulation is given as a starting point only. The final formulation will be determined by the coating properties desired.

Plastic Coatings Based on Elvacite® 2009 (#C1-11)

Ingredients	% by Wt
Elvacite® 2009	17.70
Carbon Black	0.40
Talc	17.00
BYK – 163	0.20
BYK – 306	0.05
Bentone 34/38	2.50
Xylene	62.15
	<hr/>
	100.00
Viscosity, #4 Ford Cup	100 sec
Pencil Hardness	2H
Alcohol Resistance (99.9% Ethanol on ABS, PS)	Excellent

Application: Dilute with Toluene to spray viscosity (about 25 sec, Ford Cup #4). Spray and dry for 60 min at 50°C.

Pasadena, Texas, USA

Issue date: January 2022

Mitsubishi Chemical America, Inc., Specialty Resins Division hereby certifies that the country chemical inventory status of Elvacite® 2009 is as follows.

US	CA	AU	CN	KR	NZ	PH	TW	JP	Russian Federation	TH	Vietnam
TSCA	DSL	AIIC	IECSC	KECI	NZIoC	PICCS	TCSI	ENCS	Unified list of chemicals	DIW	NCI
Listed as Active	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Y: Listed

N: Not Listed

For further information or samples, please contact your local distributor, or:

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