Elvacite® 2016

Acrylic Resin

Elvacite® 2016 is a low molecular weight methyl methacrylate/n-butyl methacrylate copolymer. Elvacite® 2016 is useful in clear, translucent or pigmented metal lacquers. It is a fast dissolving, low viscosity resin for coatings, adhesives, and inks.

Performance Features and Key Benefits

- Superior Transparency
- High Gloss
- Excellent Hardness
- Resistance to UV discoloration
- Eco-Friendly: low hazard

Recommended Applications

- Clear, translucent or pigmented metal coatings
- Traffic marking paints
- Heat seal lacquers
- Concrete sealers
- Marine coatings
- Adhesives
- Inks

Typical Properties[a]	
Appearance	Solid bead
Specific Gravity, 25° C	1.13
Glass Transition Temp, onset (calculated)	50°C
Molecular Weight (Mw)	55,000
Acid Number (mg KOH/g Resin)	3.7

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® 2016 at 20% solids in various solvents.

(S=Soluble, 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
Amides	
Formamide	I
Dimethyl formamide (DMF)	S
Chlorohydrocarbons	
Methylene Chloride	S
Ethylene dichloride	-
Perchloroethylene	-
1,1,1-Trichloroethane	S
Esters	
Methyl Formate	S
Ethyl acetate	S
Isopropyl acetate	S
n-Butyl acetate	S
n-Amyl acetate	S
Butyl lactate	S
Propylene glycol monoethyl ether acetate	S
Methyl amyl acetate	S
Ethers	
Diethyl Ether	S
Diisopropyl ether	-
Tetrahydrofuran (THF)	S
"Cellosolve" Solvent	S
Hydrocarbons	
Toluene	S
Xylene	S
n-Hexane	I
Cyclohexane	I
VM & P Naphtha	I
Mineral Spirits	I
Turpentine	I
Ketones	
Acetone	S
Methyl Ethyl Ketone	S
Methyl Isobutyl Ketone	S
Diisobutyl ketone	S
Cyclohexanone	S
Isophorone	-
Diacetone Alcohol	S
Methyl amyl ketone	S
Nitrile	
Acetonitrile	-
Nitroparaffins	
Nitromethane	S
Nitroethane	-
Vegetable Oils	
Castor oil	I
Linseed oil (alkali-refined)	I

Viscosity and Gloss

Table II illustrates typical viscosities of Elvacite® 2016 by varying both solvent and resin concentration.

Table II: Elvacite® 2016 Viscosity (cP)			
	Concentration (% Solids)		
Solvent	**20%**	**30%**	**40%**
Toluene	20	50	250
Methyl Ethyl Ketone	9	30	140
Isopropyl Acetate	13	60	750
Cellosolve Solvent	70	1000	>25000

Table below illustrates gloss of Elvacite® 2016 by varying solvents in 30% solids.

Solvent	Gloss (60°)
Acetone	84
Toluene	88
Parachlorobenzotrifluoride	87

Resin Compatibility

Elvacite® 2016 is compatible with the following Elvacite® Resin Grades: 2013, 2014, 2028, 2042, and 2043. 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)		
Alkyd				75/25	50/50	25/75
Aroplaz 1271	Long linseed drying oil	30% in MEK	Spencer Kellogg	C	H	H
Aroplaz 1351	Long castor nondrying oil	30% in MEK	Spencer Kellogg	C	C	C
Chempol 13-1410	Safflower drying oil, acrylate mod.	50% in Xylene	Freeman Chemical	C	C	C
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 Chemical	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	Hercules Inc.	--	H	H
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

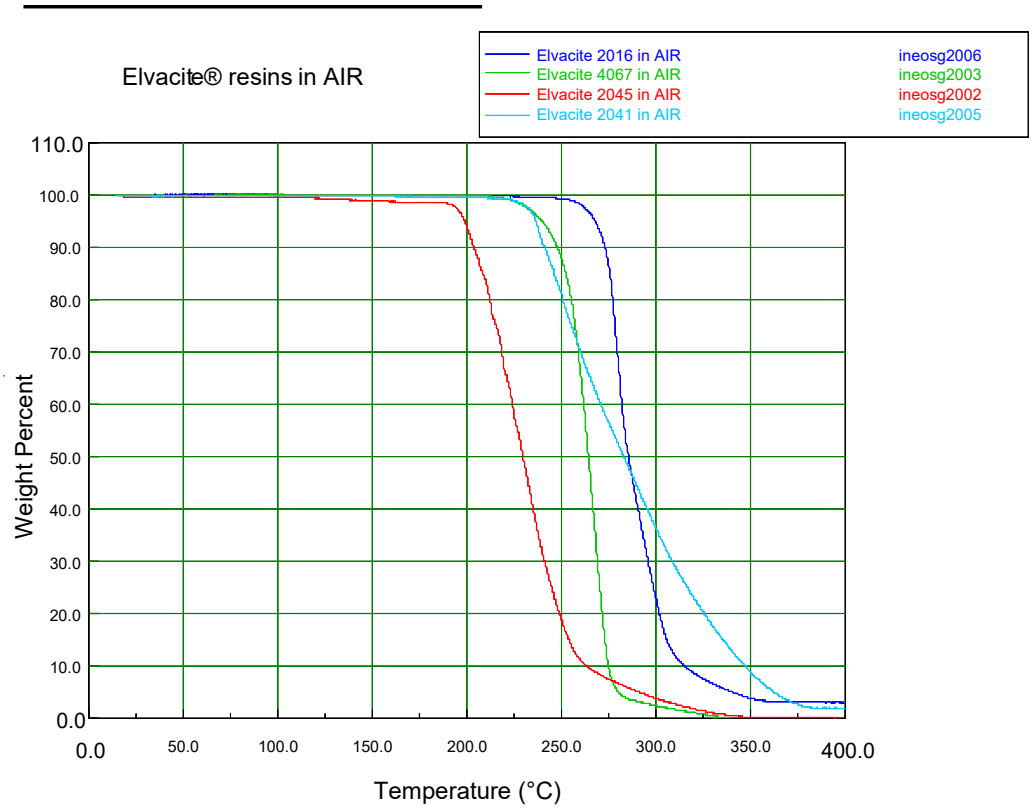
Exon 450	Copolymer	15% in MEK	Firestone Plastics	C	C	--
Exon 9290	Homopolymer	15% in THF	Firestone Plastics	C	C	C
Geon 103 EP	Homopolymer	15% in THF	B.F. Goodrich	C	C	C
Other Types						
Arochem 650	Maleic-modified hard resin	30% in MEK	Spencer Kellogg	C	C	C
Aroset 4110	Acrylic resin	30% in MEK	Spencer Kellogg	C	C	C
Dammar	Varnish resin	30% in Toluene		I	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.	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	C	C
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.	C	H	I
** 2016 was not tested, but is expected to be similar to 2013.*						
(C=Clear solution, H=Hazy solution, I=Insoluble)						

Thermal Gravimetric Analysis

Sample Mass = 10-20 mg

Heating Rate = 2°C/minute

Purge Rate = 5.4 Liters/Hour



COMPLIANCE WITH FDA REGULATIONS revised April 1, 2019

Pasadena, Texas, USA Grade: ELVACITE® 2016

Issue date: December 2019

We, MITSUBISHI CHEMICAL AMERICA, INC., Specialty Resins Division, confirm that Elvacite® 2016 complies with the compositional requirements of the following United States of America's Food and Drug Administration (FDA) regulations.

Elvacite® 2016 is cleared for use under the FDA 21 CFR 175.105 for adhesives used as components of articles intended for use in the packaging, transporting, or holding food.

Elvacite® 2016 is cleared for use under FDA 21 CFR 175.300 in resinous and polymeric coatings used as the food contact surface of articles intended for use in producing, packing, processing, preparing, treating, packaging, transporting, or holding food. The coating in its finished form in which it is to contact food is subject to a restriction on its chloroform soluble extractives.

Compliance with the limitation on extractives can only be demonstrated by tests carried out in the final article.

Elvacite® 2016 is cleared for use under FDA 21 CFR 175.320 in resinous and polymeric coatings for polyolefin films, provided it is intended for repeated food contact use as specified in FDA 21 CFR 175.300(a).

The coating in its finished form in which it is to contact food is subject to a restriction on its chloroform soluble extractives.

Compliance with the limitation on extractives can only be demonstrated by tests carried out in the final article.

Elvacite® 2016 is cleared for use under FDA CFR 176.170 as a component of the uncoated or coated food contact surface of paper and paperboard intended for use in producing, manufacturing, packing, processing, preparing, treating, packaging, transporting or holding aqueous and fatty foods.

Compliance with the limitation on extractives can only be demonstrated by tests carried out in the final article.

Elvacite® 2016 is cleared for use under FDA 21 CFR 176.180 as a component of the uncoated or coated food contact surface of paper and paperboard intended for use in producing, manufacturing, packing, processing, preparing, treating, packaging, transporting, or holding dry food.

Elvacite® 2016 is cleared under FDA 21 CFR 177.1010 as semirigid and rigid acrylic plastics articles intended for use in contact with food. The semirigid and rigid acrylic plastics in the finished form in which they are to contact food are subject to limitation on extractives

Compliance with the limitation on extractives can only be demonstrated by tests carried out on the final article.

This statement of compliance is correct at the date of issue.
As food contact regulations and product formulations are subject to change, it is the user's responsibility to ensure that they are in possession of a current statement of compliance.

Pasadena, Texas, USA

Issue date: January 2022

Mitsubishi Chemical America, Inc., Specialty Resins Division hereby certifies that the country chemical inventory status of Elvacite® 2016 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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