Elvacite® 2044

Acrylic Resin

Elvacite® 2044 is a high molecular weight n-butyl methacrylate polymer. Elvacite® 2044 is useful in adhesives for smooth plastic films and aluminum, and in silk screen inks. It will plasticize and improve adhesion of harder butyl grades (Elvacite® 2045 and 2046) and nitrocellulose. Elvacite® 2044 can also be used to improve the outdoor durability of vinyl chloride resins in pigmented lacquers.

Performance Features and Key Benefits

- Silk screen inks
- Adhesives for plastic and aluminum
- Plasticizer for hard butyl methacrylate resins
- Improve outdoor durability of vinyl chloride resins in pigmented lacquers.

Typical Properties[a]	
Appearance	Solid bead
Specific Gravity, 25° C	1.06
Glass Transition Temp, onset (calculated)	20°C
Molecular Weight (Mw)	200,000
Acid Number (mg KOH/g Resin)	0

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.

Storage & Handling

Elvacite® 2044 should be stored in a cool, dry place away from heat sources. Since it has a glass transition temperature below a typical room temperature of 25° C, Elvacite® 2044 will arrive as a fused block. Extra care should be taken to break up the block. Please consult the Material Safety Data Sheet for additional safety information.

Solvent Solubility at 20% solids

Alcohols	I	Ethyl acetate	C	**Ketones**	
Methyl Alcohol	I	Isopropyl acetate	C	Acetone	C
Ethyl Alcohol	I	n-butyl acetate	C	Methyl Ethyl Ketone	C
n-propyl Alcohol	C	n-amyl acetate	C	Methyl Isobutyl Ketone	C
Isopropyl Alcohol	C	Butyl lactate	C	Diisobutyl Ketone	C
Isoamyl Alcohol	C	Propylene glycol monoethyl ether acetate	H	Cyclohexanone	C
Cyclohexanol	C	Methyl amyl acetate	C	Isophorone	C
Ethylene glycol	I			Diacetone Alcohol	C
Glycerol	I	**Ethers**		Methyl amyl ketone	C
		Diethyl Ether	C		
Amides		Diisopropyl ether	I	**Nitrile**	
Formamide	I	Tetrahydrofuran (THF)	C	Acetonitrile	I
Dimethyl formamide (DMF)	C	"Cellosolve" Solvent	C		
Chlorohydrocarbons		**Hydrocarbons**			
Methylene Chloride	C	Toluene	C		
Ethylene dichloride	C	Xylene	C		
Perchloroethylene	C	n-Hexane	H		
1, 1, 1-Trichloroethane	C	Cyclohexane	C		
		VM & P Naphtha	C		
Esters		Turpentine	C		
Methyl formate	C	Mineral Spirits (10% Aromatic)	C		
(C = Clear Solution, H = Hazy Solution, I = Insoluble)					

Viscosity

Elvacite® 2044 is a high molecular weight n-butyl methacrylate polymer. Table below illustrates typical viscosities of Elvacite® 2044 by varying both solvent and resin concentration.

Elvacite® 2044 Viscosity (cP)			
	Concentration (% Solids)		
Solvent	20%	30%	40%
Toluene	--	130	550
Methyl Ethyl Ketone	--	20	300
Isopropyl Acetate	--	90	850
Cellosolve Solvent	420	3500	>25000
Isopropyl Alcohol	800	7000	>25000
Mineral Spirits (10% aromatic)	175	600	2700

Typical Formulation

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

Film/Foil Laminating Adhesive (#25)

Ingredients	% by Wt.
Elvacite® 2044	36.00
Methyl Ethyl Ketone	54.00
Bakelite VMCC Vinyl Chloride – Acetate Resin	4.01
Toluene	5.99
	100.00
Typical 90° Peel Strength, polystyrene/aluminum foil, g/in	500

Resin Compatibility

Elvacite® 2044 is compatible with the following Elvacite® Resin Grades: 2028, 2045, and 2046. 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	Reichold Chemical Inc.	X	X	H
Aroplaz 1351	Long castor nondrying oil	30% in MEK	Reichold Chemical Inc.	C	H	C
Chempol 13-1410	Safflower drying oil, acrylate modified	50% in Xylene	Freeman Chemical	--	I	I
Paraplex RGA-2/80	Nondrying oil, sebacic	80% in n-Butyl Acetate	CP Hall Co.	I	I	I
Blagden 3105	Short coconut nondrying oil	60% in Xylene	Blagden Chemical Ltd	--	I	H
Cellulosic						
Cellulose acetate 39-5-5B		30% in Acetone or MEK	Hoechst Celanese	I	I	I
Cellulose Acetate Butyrate, ½ - sec.		30% in MEK	Eastman Chemical	I	I	H
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 Performance Prod	--	H	H
Epon 1001		30% in MEK	Resolution Performance Prod	I	I	I
Elastomers						
EMD-504	Polyisobutylene	30% in Toluene	Exxon Chemical	I	I	I
Hypalon 30	Chlorosulfonated 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.	C	C	C
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						
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	Copolymer	15% in MEK	Union Carbide	C	C	C

Exon 450	Copolymer	15% in MEK	Freestone Plastics	C	C	--
Exon 9290	Homopolymer	15% in THF	Freestone Plastics	--	--	--
Geon 103 EP	Homopolymer	15% in THF	B.F. Goodrich	--	--	--
Other Types						
Arochem 650	Maleic-modified hard resin	30% in MEK	Reichold Chemical Inc.	C	C	C
Aroset 4110	Acrylic resin	30% in MEK	Reichold Chemical Inc.	H	--	H
Dammar		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.	I	I	I
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	C	C
(C = Clear solution, H = Hazy solution, I = Insoluble)						

COMPLIANCE WITH FDA REGULATIONS revised April 1, 2019

Pasadena, Texas, USA Grade: ELVACITE® 2044

Issue date: December 2019

We, Mitsubishi Chemical America, Inc., Specialty Chemicals Division confirm that Elvacite® 2044 complies with the compositional requirements of the following United States of America's Food and Drug Administration (FDA) regulations.

Elvacite® 2044 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® 2044 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® 2044 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® 2044 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® 2044 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® 2044 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 the country chemical inventory status of Elvacite® 2044 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:

Mitsubishi Chemical America, Inc.
Specialty Resins Division
9675 Bayport Blvd.
Pasadena, Texas 77507
Phone (713)758-8190
www.m-chem.com/specialtyresins
MCA-SPR.sales@m-chem.com