

Elvacite[®] 4044

Acrylic Resin

Elvacite[®] 4044 is a medium molecular weight butyl methacrylate / methyl methacrylate copolymer. It is a relatively soft and flexible acrylic resin.

Suggested Applications

- Heat seal lacquers and inks for aluminium, PS and PVC foils
- Screen printing inks, especially for ceramic and glass decorative transfers
- Ceramic covercoats
- Masonry coatings and sealers for wood
- Weather resistant coatings for plastic substrates

Typical Properties ^a	
Appearance	Solid bead
Glass Transition Temp, onset (calculated)	35°C
Molecular Weight (Mw)	85,000
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.

Special Considerations

Elvacite® 4044 is an inherently soft polymer and may block or cake under certain storage conditions. This product should be stored and used at temperatures not exceeding 30°C. If stored under these conditions, lumps may form which may need increased mechanical effort to break down. This does not detract from the performance of the product.

Compatibility

Elvacite® 4044 is compatible with nitrocellulose, CAB, CAP, chlorinated rubber, vinyl resins and most formaldehyde based resins. It is also miscible with phosphate and sebacate plasticisers.

Solvent Solubility

Table depicts the solubility of Elvacite® 4044 at 30% solids in various solvents.

Solubility of Elvacite® 4044		
Solvent	Solubility	Rating
Acetone	S	C
Toluene	S	C
Methyl ethyl ketone	S	C
Dimethyl carbonate	S	C
Parachlorobenzotrifluoride	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
2-propanol	I	-
Low odor mineral spirits	I	-
<i>(C= Clear solution, S = Soluble, H = Hazy solution, I = Insoluble)</i>		

Viscosity

The table below illustrates typical viscosities of Elvacite® 4044 in varying solvents at 30% solids.

Solvent	Viscosity (cP)
Acetone	51
Toluene	122
Methyl ethyl ketone	72
Dimethyl carbonate	380
Parachlorobenzotrifluoride	1660
Methyl isobutyl ketone	101
n-Butyl acetate	198
Ethyl acetate	143
n-Propyl acetate	172
Methyl acetate	97

Peeling Load Formulations

	Aluminum / Polystyrene	Aluminum / Polyvinyl Chloride	Aluminum / Aluminum
Elvacite® 4044	14	8	8
UCAR® Solution Vinyl VMCH*	6	12	12
Methyl Ethyl Ketone	<u>80</u>	<u>80</u>	<u>80</u>
	100	100	100

*In geographic locations where VMCH is not available, we suggest VINNOL® H 15/45 M.

Test Procedure

Coat aluminum on the dull side with one of the above formulations.

Dry overnight at room temperature.

Place into an oven at 110°C (fan assisted) for 2 minutes once temperature has been reached.

Leave at room temperature overnight and then heat seal at 200°C, 28 psi for 1 second.

Cut into strips of 25mm width and calculate the peeling load using an Instron® machine.

Results – Average Peeling Load (N)

	Aluminum / Polystyrene	Aluminum / Polyvinyl Chloride	Aluminum / Aluminum
Elvacite® 4044	12.355	13.450	11.325
Competitive Acrylic Resin	11.715	15.577	9.959

COMPLIANCE WITH FDA REGULATIONS

Pasadena, Texas, USA Grade: ELVACITE® 4044

Issue date: February 2009

We, MITSUBISHI CHEMICAL AMERICA, INC., Specialty Resins Division, confirm that Elvacite® 4044 complies with the compositional requirements of the following United States of America's Food and Drug Administration (FDA) regulations.

Elvacite® 4044 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® 4044 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® 4044 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® 4044 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® 4044 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® 4044 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: February 2022

Mitsubishi Chemical America, Inc., Specialty Resins Division hereby certifies that the country chemical inventory status of Elvacite® 4044 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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