Elvacite® 4021

Acrylic Resin

Elvacite® 4021 is designed for use in ceramic covercoat applications, and is soluble in a variety of solvents, including high flashpoint aromatics (e.g., Shellsol® A). It can also be used in a variety of coatings and overprinting formulations, such as coatings for plastics and heat sealing lacquers. It has excellent flexibility and good gloss. Additionally, it has good compatibility with many binders and waxes. Elvacite® 4021 is non-reactive for use in reactive systems.

Performance Features and Key Benefits

- Good adhesion to a variety of substrates
- Smooth, clean burn out minimizes popping and image distortion
  Excellent solubility

Typical Properties[a]	
Appearance	Solid bead
Glass Transition Temp, onset (calculated)	40°C
Molecular Weight (Mw)	130,000

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.*

Storage & Handling

Elvacite® 4021 should be stored in a cool, dry place away from heat sources. If possible, do not store at or above the glass transition temperature as resin blocking can occur. If a resin block is formed, extra time and care must be taken to break up the mass for use. Please consult the Safety Data Sheet for additional safety information.

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 below depicts the solubility of Elvacite® 4021 at 30% solids in various solvents.

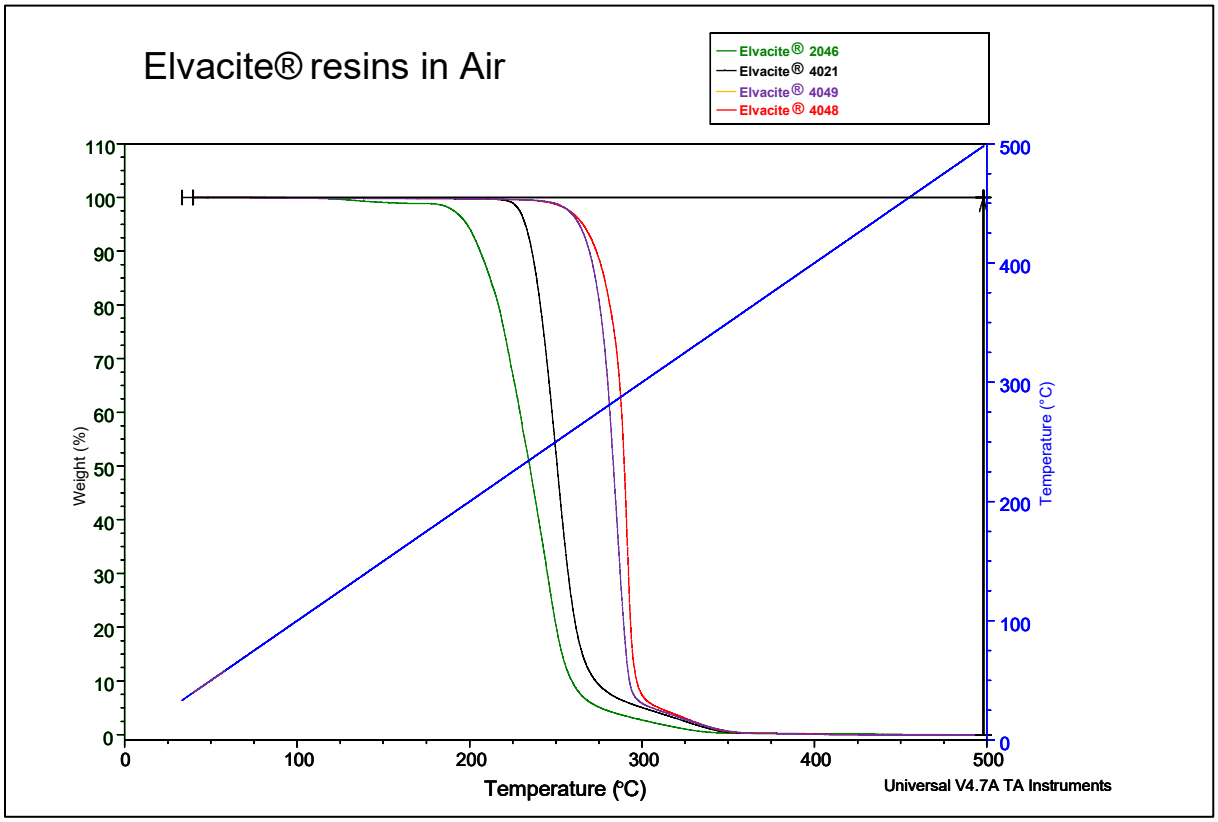
Solubility of Elvacite® 4021		
Solvent	**Solubility**	**Rating**
Toluene	S	C
Acetone	S	C
Methyl ethyl ketone	S	C
Dimethyl carbonate	S	C
Methyl isobutyl ketone	S	C
n-Butyl acetate	S	C
Ethyl acetate	S	C
n-Propyl acetate	S	C
2-propanol	S	C
Mineral Spirits	I	-
(C= Clear solution, S = Soluble, H = Hazy solution, I = Insoluble)		

Viscosity and Gloss

Table below illustrates typical viscosities of Elvacite® 4021 in varying solvents at 30% solids.

Solvent	Viscosity	Gloss (60°)
Toluene	144	87
Acetone	68	81
Methyl ethyl ketone	56	-
Dimethyl carbonate	126	-
Methyl isobutyl ketone	125	-
n-Butyl acetate	129	-
Ethyl acetate	80	-
n-Propyl acetate	119	-

Thermal Gravimetric Analysis



COMPLIANCE WITH FDA REGULATIONS

Pasadena, Texas, USA Grade: ELVACITE® 4021

Issue date: February 2009

We, MITSUBISHI CHEMICAL AMERICA, INC., Specialty Resins Division, confirm that Elvacite® 4021 complies with the compositional requirements of the following United States of America's Food and Drug Administration (FDA) regulations.

Elvacite® 4021 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® 4021 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® 4021 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® 4021 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® 4021 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® 4021 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® 4021 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