

Elvacite® 2776 Acrylic Resin **for Water-Based Inks**

Elvacite® 2776 is a solid acrylic bead resin which is soluble in slightly alkaline aqueous solutions as well as many organic solvents. This resin exhibits truly outstanding performance in flexographic, gravure, as well as screen printing ink applications.

Using Elvacite® 2776, the formulator is able to obtain a water-based system which performs like a solvent-based system. The distinct capability of water solvency makes this product particularly suitable for use where solvent emissions must be minimized or where the substrate may be sensitive to organic solvents.

The carboxyl functionality of Elvacite® 2776 permits cross-linking with epoxides, isocyanates, and poly-functional alcohols, thereby affording the advantages of a thermosetting resin to a predominantly thermoplastic system.

The low molecular weight of the polymer allows the formulator to achieve high solids with low viscosities in both water based and solvent based inks.

Elvacite® 2776 is broadly compatible with other commonly used binders such as nitrocellulose, cellulose acetate butyrate/propionate, vinyl resins, many rosin derivatives, as well as acrylic emulsions and therefore provides wide latitude in formulating to meet specific performance requirements.

ELVACITE® 2776 PERFORMANCE FEATURES

- Superior adhesion to many substrates such as vinyl, styrene, coated polyesters and polyolefins, paper, etc.
- Cross-linkable carboxyl functionality and excellent solvent resistance
- Exceptional resistance to abrasion, moisture, and blocking
- Excellent resistance to discoloration by UV light or heat
- Outstanding printability
- Excellent flexibility
- High Gloss
- Good resolubility
- Easy clean-up

TYPICAL PROPERTIES ^a

Specific gravity	1.1
Density (lb. resin/gal. resin)	8.8
Inherent Viscosity ^b	0.085 – 0.105
Molecular weight (Mw)	16,000
Moisture (% max.)	1.0
Glass Transition (Tg)	40° C / 104° F
Acid Number	80
Appearance	Small solid white beads
Particle Size	approx. 100-350 microns

a) Typical properties listed are approximate values and should not be considered manufacturers release specifications. As manufacturers release specifications are subject to change, please contact your Lucite International Representative for details.

b) Inherent viscosity of a solution containing 0.25g polymer in 50 ml of methylene chloride measured at 20°C using a No. 50 Cannon – Fenske viscometer.

VISCOSITY IN cP

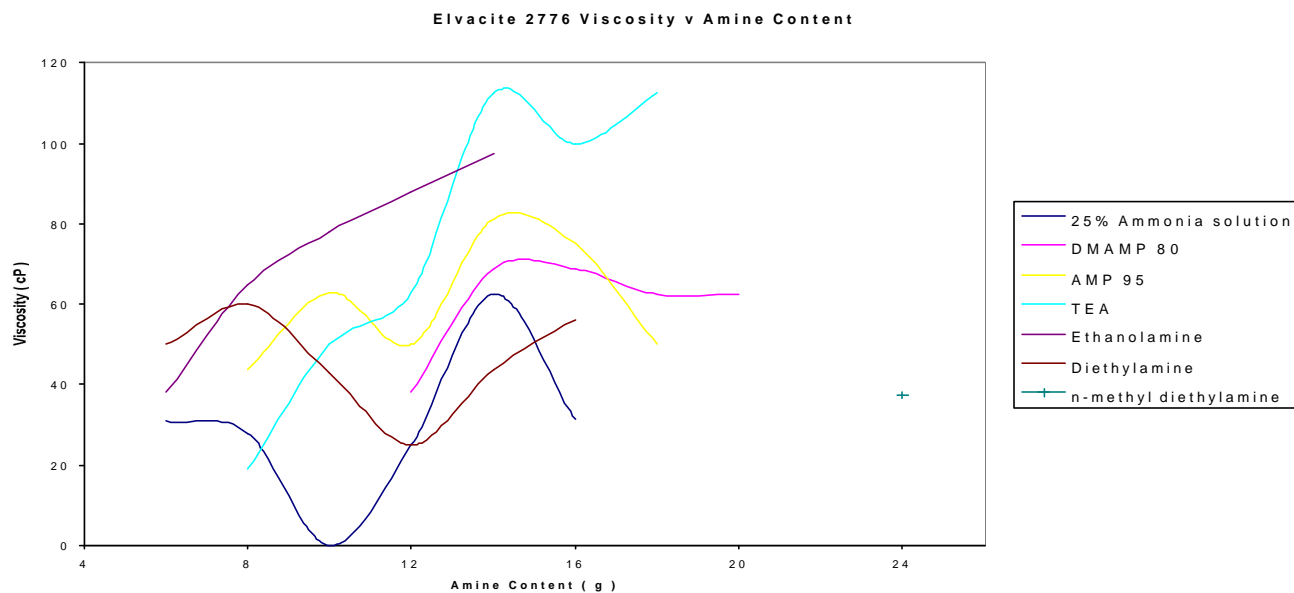
<u>% Solids</u>	<u>Ethanol</u>	<u>Acetone</u>	<u>Ethyl Acetate</u>	<u>MEK</u>
20	7	3	7	3
30	19	6	24	8
40	66	20	170	41
50	385	114	1596	269
60	3050	3326	30496	4193

FORMULATING GUIDELINES

A neutralised solution of Elvacite ® 2776 in water can be prepared by blending various amines plus 220 grams of water, then dissolving 50 grams of the polymer into the solution. The actual amounts for each amine can be seen below. Substantial improvement in water resistance may be obtained by the addition of 2-5% of a zinc oxide solution such as “ Zinc Oxide Solution #1 “ from S.C.Johnson. Solution viscosities are easily adjusted by varying the concentrations of the ingredients or by choosing alternative amines and co-solvents

The following data shows the amount of amine recommended, together with viscosity measurements, for the Elvacite ® 2776 resin to go into solution. The viscosities were carried out using a Brookfield LVT viscometer, spindle 2 @12 rpm and 20 degrees Centigrade. A recommended minimum pH for each amine is also detailed; the amounts quoted are there as a guide.

<u>Amine</u>	<u>Amount</u>	<u>pH</u>	<u>Viscosity (cP)</u>
Diethylamine	6g	11.16	50
Ethanolamine	6g	10.05	38
25% Ammonia solution	6g	9.43	31
AMP 95	8g	9.97	44
Triethylamine (TEA)	8g	10.3	19
DMAMP 80	12g	10.29	38
n-methyl diethylamine	24g	9.62	37.5



Plasticiser Compatibility

The following Table lists the compatibility of Elvacite® 2776 with various plasticizers. Each was added 5% w/w on resin. If immiscible, 12% b.w. co-solvent was added to improve compatibility. The following results were obtained:

Plasticiser	Observation	Addition of Butyl Glycol	Film Appearance
Di Butyl Phthalate	OK		
Butyl Benzyl Phthalate	OK		
Adipinsaeure Dibutylester Dibutyl Adipate	OK		
Bisoflex DOA	Immiscible	Cloudy	Glossy
Bisolube DTDA	Immiscible	Very Cloudy	No Film Formed
Di Octyl Sebacate	Immiscible	Very Cloudy	Poor gloss – rough
Di Octyl Phthalate	Immiscible	Cloudy	Glossy
Cereclor 42	Immiscible	Immiscible	-

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