



TECHNICAL DATA SHEET

ADIMOK-HT

Description

ADIMOK-HT are useful solvents in a variety of applications. At room temperature ADIMOK-HT is a solid, while ADIMOK-HT is liquid. These solvents possess low toxicity, high polarity, and relatively low vapour pressure and a miscible with many other solvents. Some materials which dissolve in few if any other solvents will dissolve in the ADIMOK-HT. They can be used as reactants as well as solvents. Because of their reactivity and the dilution effect the ADIMOK-HT have a considerable effect on the behavior of certain amine-cured epoxy resin systems.

FEATURES

The effects of the ADIMOK-HT in the epoxy formulation will depend on the ADIMOK-HT concentration and on the reactivity of the amine curing agent. With relatively reactive unhindered aliphatic amine curing agents such as ethyleneamines and polyoxy alkylene amines the effects are more significant. in general the following features are noted:

- Lower viscosity
- Shorter gel time
- Improved cured resin properties
- Greater elongation

BENEFITS

ADIMOK-HT modified epoxy systems are good candidates for use in any application where reactive curing agents are used and where reduced viscosity, faster cure, and improved strength and modulus would be desirable. Suggested applications would include flooring, potting, and coatings. The reduced viscosities that are can be useful in formulating highly filled systems that retain good mechanical properties.



DISCUSSION

Addition of ADIMOK-HT results in a decrease in resin viscosity. The 10,000-12,000 cP viscosity of the typical liquid epoxy resin can be reduced to around 1,000 cP by addition of 20 phr of a ADIMOK-HT . Although the ADIMOK- HT is thus not as effective in viscosity reduction as conventional glycidyl ether diluents, in some cases (with reactive amines) they enhance the formulation properties in other ways besides viscosity reduction. Table(1) shows comparisons of some ambient cure and heat cure data.

The focus in the table is on cures with relatively reactive amines, because they are representative of the curing agents which give enhanced properties in the ADIMOK-HT diluted systems.

Unlike other reactive diluents, the ADIMOK-HT (used with the more reactive curing agents) give a reduction in the gel time that is roughly proportional to their concentration, at least up through about 20 phr. his decrease in gel time is accompanied by little if any change in the exotherm temperature. The typical polyoxyalkyleneamines gel time of about 70 minutes, for example, can be reduced to 20 minutes or less with The consumption of some amine through reaction with the ADIMOK-HT results in some increase in the mix ratio that gives the optimum glass transition temperature .In general the strength, modulus and elongation values with either room temperature or elevated temperature cures are increased by the presence of low levels of the ADIMOK-HT. In a room temperature cure, better properties are attained in a given period of time. Thermal properties and solvent resistance, on the other hand, are reduced somewhat.

- Density, lb/gal 10.02
- Boiling point, °C 242
- Flash point, PMCC, of 275



Table 1. Cured Resin Properties with ADIMOK-HT

Ambient Cure vs. Heat Cure

Liquid epoxy resin e.e.w. 188	100	100	100	100	100	100	100
DETA	21	21	-	-	-	-	-
TETA	-	-	13	20	20	-	-
TEPA	-	-	-	-	-	20	20
HT	10	10	-	10	10	10	10
Cure conditions	heat	rt	rt	heat	rt	heat	rt
Tensile strength, psi	13,700	5,250	2,100	12,500	8,300	9,000	8,900
Tensile modulus, psi	615,000	599,000	640,000	565,000	581,000	541,000	554,000
Ultimate elongation,%	6.4	0.95	0.4	3.8	1.6	2.1	1.6
Flexural strength, psi	23,600	9,700	4,900	22,600	16,800	21,800	15,800
Flexural modulus, psi	555,000	541,000	470,000	521,000	550,000	509,000	547,000
HDT, °C, 264 psi	68	51	51	86	54	89	50
%Wt.gain,24 hr water boil	9.3	9.8	1.8	5.4	5.4	4.4	4.5
%Wt.gain,3 hr acetone boil	4.9	8.5	0.3	1.6	8.3	0.92	8.4

Cure conditions: **heat** : 2 hr 78°C, 3 hr 130°C; **rt** :7 days approx. 25°C

Typical Physical Properties

EEW	100
Ash, wt	%< 0.01
Autoignition temperature, °C (°F)	432 (810)
Boiling point, °C (°F)	240 (464)
Dielectric constant, esu, 25 °C	65
Flash point, PMCC, °C (°F)	137 (278)
LEL, (v/v) at 200 °C	% 4.7
Melting point, °C (°F)	-49 (-56)



pH	7
Specific gravity, 20/20 , °C	1.2
Specific resistance, ohm-cm 25° C	1-8x106
UEL (v/v) at 200 ° C	% 21
Vapor pressure, mm Hg ,25° C (68° F)	0.02
Viscosity, Kinematic,cSt 43.3° C (110° F)	1.6
VOC Content by ASTM D2369	VOC Exempt
Water Solubility (%)	1-10
Weight, lb/gal, 20°C	10.1