TECHNICAL BULLETIN

OMICURE® 33-DDS

Miconized Amine Curative
3,3' Diaminodiphenyl Sulfone
CAS No. 599-61-1

DESCRIPTION

OMICURE® 33-DDS epoxy curing agent is an effective, safer-to-use replacement for methylene dianiline (MDA). Due to its asymmetric structure, 33-DDS can yield cured systems with higher compressive strength, less brittleness and higher heat deflection temperatures than MDA. Unlike 4,4' DDS, OMICURE 33-DDS can cure at rates comparable to MDA. In polyimide production, OMICURE 33-DDS exhibits good reactivity. Polyimides produced using 33-DDS exhibit higher temperature performance.

APPLICATIONS

- Prepregs/composites
- Castings
- Chemical resistant coatings
- Polyimide resins
- Electronic adhesives
- High-temperature electrical varnishes
- Polyurethane crosslinking accelerator

TYPICAL PROPERTIES

Form	**Tan free-flowing powder**
Melting Point, °C	**160 – 177**
Assay, min. %	**97**
Moisture Content, max %	**0.15**
Bulk Density:	
33-DDS, Fine, lbs/gal	**2.0 – 2.5**

CVC Thermoset Specialties
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MECHANICAL PROPERTIES

Comparison of Cured Physical Properties
EPON 828 cured* with OMICURE 33-DDS and 4,4' DDS

	OMICURE 33-DDS			4,4' DDS
Property	30 phr + 1 phr catalyst	30 phr + 3 phr catalyst	35 phr + 3 phr catalyst	35 phr + 3 phr catalyst
Flexural Strength, psi	19900	21300	21300	18400
Tensile Strength, psi	7100	9900	10100	9500
Compressive Strength, psi	> 28800	> 28800	> 28800	> 28800
Impact Strength, Kg-cm/cmn^2	3.5	4.0	4.2	4.3

**Cure schedule: 2 hr at 130 °C + 2 hrs at 200 °C*

Comparison of EPON 828 cured with OMICURE 33-DDS vs 4,4' DDS and MDA

Fomulation, pbw	OMICURE 33-DDS	4,4' DDS	MDA
Curing Agent Concentration, phr	36	36	30
Gel Time, min, @ 80 °C	480	–	90
Gel Time, min, @ 125 °C	60 (130 °C)	120	–
Cure Schedule	2 hr @ 130 °C) + 2 hr @ 200 °C	24 hr (120 °C) + 4 hr @ 175 °C	2 hr (80 °C) + 3 hr @ 150 °C
Tensile Strength, psi	7100	7500	10200
Compressive Strength, psi	> 28800	19800	17100
Flexural Strength, psi	19900	17600	16000
HDT, °C	181	192	161

PERFORMANCE DATA

Gel Times and Heat Deflection Values of OMICURE 33-DDS with standard Liquid Bisphenol A resin (EEW 180-190)

Uncatalyzed System

	Pot Life			
OMICURE 33-DDS Concentration, phr	@ 80 °C, hr	@ 130 °C, min	Cure schedule	HDT, °C
25	3-5	60	2 hr @ 130 °C + 2 hr @ 200 °C	180
30	"	"	"	181
35	"	"	"	178
40	"	"	"	167

Catalyzed with BF_3 amine complex @ 30 phr OMICURE 33-DDS

	Pot Life			
BF_3 Amine Concentration	@ 80 °C, min	@ 130 °C, min	Cure schedule	HDT, °C
1	60	10	2 hr @ 130 °C + 2 hr @ 200 °C	175
3	20	5-6	"	175

4,4' DDS control catalyzed with BF_3 amine complex

	Pot Life			
4,4 DDS Concentration, phr	@ 80 °C, min	@ 130 °C, min	Cure schedule	HDT, °C
30	90	15	2 hr @ 130 °C + 2 hr @ 200 °C	175

PACKAGING & AVAILABILITY

OMICURE 33-DDS is available in antistatic liner bags inside of corrugated boxes (net weight 40 lb.) Various particle sizes are available and packaged weight will depend on bulk density. OMICURE 33-DDS Ground averages 50-70 microns and OMICURE 33-DDS Fine averages 5-10 microns. Unground material generally averages 300-500 microns. Drum inventory is available at most CVC regional warehouses. Check with your local sales representative for the shipping location nearest you.

HEALTH & SAFETY PRECAUTIONS

Care must be taken to avoid breathing dust. Good point ventilation and face masks are adequate. It is important to avoid skin contact where possible. Butyl rubber gloves, full eye protection and protective clothing are recommended. Refer to CVC Thermoset Specialties Material Safety Data Sheet on OMICURE 33-DDS for additional safety and health information. The MSDS is revised as new data becomes available.

DISCLAIMER

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