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Advanced Materials

Araldite® MY 0500

A LOW VISCOSITY TRIFUNCTIONAL EPOXY RESIN

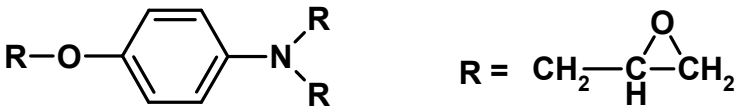
GENERAL

Araldite® MY 0500 is a low viscosity high functionality amine based resin (~3). It cures very rapidly to produce products having exceptionally high heat deflection temperatures.

CHEMICAL DESCRIPTION

Triglycidyl of para-aminophenol

CHEMICAL STRUCTURE



APPLICATIONS

Araldite® MY 0500 is a particularly effective resin in a wide variety of formulating applications including adhesives, laminating systems, etc. It can be used as a viscosity modifier and, also, with slow reactivity resins to boost their rate of cure; however, caution must be exercised in the selection of hardener and cure conditions because of its rapid cure characteristics. Even moderate amounts, when cured with aliphatic amines, can develop sufficient exotherm to cause charring and smoke evolution. This can also occur if aromatic amine hardened systems are gelled at excessively high temperatures or if catalysts, such as boron trifluoride monoethylamine are used alone or in conjunction with aromatic hardeners.

TYPICAL PROPERTIES*

Visual Appearance	Clear to slight haze
Color, Gardner, max	11
Epoxy Equivalent, g/eq.	105 - 115
Viscosity @ 25°C (77°F), mPa s (cPs)	2,000 - 5,000
Density @ 25°C(77°F), g/cm^3 (lb/gal.)	1.21 - 1.22 (10.1 - 10.2)
Flash Point, Closed Cup, °C (°F)	>93 (>200)

* Typical properties are based on Huntsman's test methods. Copies are available upon request.

FORMULATION I

All properties are based on MY 0500 / Aradur® 976-1 at a weight ratio of 100 / 49. The system properties can be tailored for specific properties by using a formulation approach.
Preheat Aradur® 976-1 to 200°C for 120 minutes; the hardener will melt and form a clear homogeneous low viscosity liquid. Preheat MY 0500 at 100°C for 30 minutes, then slowly add 976-1 liquid into MY 0500 with slow stir until a clear solution is obtained. Preheat a mold at 100°C prior to casting. For a clear casting, the solution should be degassed for 15 minutes under vacuum, before pouring into the mold. The pouring should be done slowly ensuring no entrapped air pockets.

Gel time, min

@180(°C)	13.8
@200(°C)	6.5

Cure schedule: 0.5hr/80°C + 0.5hr/100°C + 1.5hrs/120°C + 2hrs/177°C

Glass transition temperature

DMA (DRY) (°C)	252
DMA (WET[1]) (°C)	183

DMA Modulus, ksi (Gpa)	DRY	WET
@30°C	582 (4.0)	536 (3.7)
@150°C	381 (2.6)	317 (2.2)

Water absorbance[2] (%) 4.4

Flexural test	25°C (DRY)	25°C (WET)	150°C (DRY)
Modulus, ksi (GPa)	514 (3.5)	477 (3.3)	344 (2.4)
Strength, ksi (MPa)	19.4 (133)	14.5 (99.1)	12.8 (87.5)

Tensile test	25°C (DRY)	25°C (WET)	150°C (DRY)
Modulus, ksi (GPa)	549 (3.8)	503 (3.4)	339 (2.3)
Strength, ksi (MPa)	9.77 (66.8)	8.38 (56.6)	7.39 (50.5)
Elongation, %	2.3	2.1	2.5

[1] WET conditioning is done in water at 160°F for 48 hours.
[2] Water absorbance is measured in boiling water for 48 hours.

FORMULATION II

All properties are based on MY 0500 / Aradur® 5200 at a weight ratio of 100 / 41. The system properties can be tailored for specific properties by using a formulation approach.

Mix MY 0500 and Aradur® 5200 with stir until the solution is a clear homogeneous low viscosity liquid. For a clear casting, the solution should be degassed for 15 minutes under vacuum, before pouring into the mold. The pouring should be done slowly ensuring no entrapped air pockets.

Gel time, min

@120(°C)	60.3
@150(°C)	19.1

FORMULATION II (CONTINUED)

Cure schedule: 2hrs/150°C + 2hrs/200°C

Glass transition temperature	
DMA (DRY) (°C)	228
DMA (WET[1]) (°C)	160
DMA Modulus, ksi (Gpa)	DRY
@150°C	361 (2.5)
Water absorbance[2] (%)	3.3
Flexural test	25°C (DRY)
Modulus, ksi (GPa)	406 (2.8)
Strength, ksi (MPa)	17.2 (133)
Tensile test	25°C (DRY)
Modulus, ksi (GPa)	478 (3.3)
Strength, ksi (MPa)	11.6 (79.3)
Elongation, %	3.9

[2] Water absorbance is measured in boiling water for 48 hours.

STORAGE

Araldite® MY 0500 is supplied in 40 pound pails and 500 pound drums. This product should be stored in a dry place, in the sealed original container, at temperatures between +2°C and +8°C (+35.6°F and 46.4°F). Under these storage conditions, the shelf life is 1.5 years. The product should not be exposed to direct sunlight.

Never store Araldite® MY 0500 in warm areas, particularly near heat sources or hot equipment, or even in direct sunlight, because violent exothermic reaction or explosion may result

Storage at higher temperatures may adversely affect properties. Maximum temperature this product should be subjected to while thawing for use should not exceed 37.8°C (100°F).

To facilitate handling of Araldite® MY 0500 as a workable liquid, warm the container gradually by letting it stand in an area at room temperature 23.9°C (approximately 75°F) prior to use. Never accelerate warming by using hot ovens, band heaters, hot plates, open flames, or any means, which could cause a “hot spot”. Such practices may initiate violent exothermic reaction or explosion. Contamination, especially by acidic or basic substances, may also start a violent exothermic reaction and must be avoided.

PRECAUTIONARY STATEMENT

Huntsman Advanced Materials Americas LLC maintains up–to-date Material Safety Data Sheets (MSDS) on all of its products. These sheets contain pertinent information that you may need to protect your employees and customers against any known health or safety hazards associated with our products. Users should review the latest MSDS to determine possible health hazards and appropriate precautions to implement prior to using this material.

First Aid!
Refer to MSDS as mentioned above.

KEEP OUT OF REACH OF CHILDREN

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Main Offices :
Huntsman Corporation
10003 Woodloch Forest Dr.
The Woodlands
Texas 77380
(281) 719-6000

Huntsman Advanced Technology Center
8600 Gosling Rd.
The Woodlands
Texas 77381
(281) 719-7400