

Accelerators for Epoxy Resins

Commercial Products	Formula	Custom Name	CAS-No.
Dyhard UR 200	$C_6H_3Cl_2-NH-CO-N(CH_3)_2$	Diuron	[330-54-1]
Dyhard UR 300	$C_6H_5-NH-CO-N(CH_3)_2$	Fenuron	[101-42-8]
Dyhard UR 500	$H_3C-C_6H_3[NH-CO-N(CH_3)_2]_2$	TDI-Uron	[17526-94-2]

Specification	Dyhard UR 200	Dyhard UR 300	Dyhard UR 500
Content	min. 98 %	min. 98 %	min. 95 %
Volatiles	max. 1 %	max. 1 %	max. 1 %
Melting point	min. 155 °C	min. 125 °C	min. 180 °C
Particle size 98 % <	10 µm	10 µm	10 µm

Properties	Dyhard UR 200	Dyhard UR 300	Dyhard UR 500
Molecular weight	233.10	164.21	264.33
Solubility in water	0.042 g/l	3.85 g/l	25.9 g/l
LD ₅₀ oral, rat	4150 mg/kg	6400 mg/kg	6400 mg/kg

Packing:

Cardboard boxes containing 10 kgs

Storage:

At least 1 year storability in a dry place.

Handling:

The acute toxicity levels are low. Nevertheless the usual precautions for handling chemicals must be observed. Particularly the general threshold level for dust (6 mg/m³) and a sufficient skin and eye protection must be observed.

Applications:

Dyhard[®] Urones apply as latent accelerators to elevated temperature curing epoxy formulations. Particularly they combine very well with micronized Dicyandiamide (Dyhard 100 S) as a curing agent.

Dyhard UR 200 and Dyhard UR 300 have comparable reactivities, the difunctional Dyhard UR 500 gives higher temperature resistance combined with lower curing temperatures. For applications, where a chlorine-free formulation is required, Dyhard UR 300 and Dyhard UR 500 are suitable.

For formulations based on liquid epoxy resins (EEW ~ 190) Dyhard® Urones should be added in amounts of 0.5 – 5 phr depending on the application. Doubling of the Urone amount lowers the minimal curing temperature by 5° C. Simultaneously the maximum achievable glass transition temperature lowers by 10° C. This indicates the necessity to balance the optimum dosage for each application.

Due to their latency Dyhard® Urones give storage-stable one package formulations. Depending on the filler, the Dyhard UR type and the storage temperature shelf lifes of 3-24 months will be obtained.

Formulation examples	A	B	C	D	E
Dyhard UR 200	2 Parts	--	--	--	--
Dyhard UR 300	--	2 Parts	--	--	--
Dyhard UR 500	--	--	0.5 Parts	2 Parts	5 Parts
Dyhard 100 S	6 Parts	6 Parts	6 Parts	6 Parts	6 Parts
liquid bisphenol-A-epoxy resin (EEW ~ 190)	100 Parts	100 Parts	100 Parts	100 Parts	100 Parts
Onset (DSC)	150 °C	147 °C	153 °C	139° C	126 °C
Tg (DSC)	141 °C	134 °C	151 °C	141° C	135 °C
Geltime 150 °C	3'45"	3'31"	3'32"	2'29"	2'07"

This information is based on our present state of knowledge and is intended to provide general notes on our products and their uses. It should not therefore be construed as guaranteeing specific properties of the products described or their suitability for a particular application. Any existing industrial property rights must be observed.

The prospective user is recommended to determine the suitability of our suggestions and products before adopting them on a commercial scale.

Edition June 2001/ FC-SI-FB-bhu-be

Provided that a new edition is published this data sheet loses its validity.

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