

Advanced Materials**Araldite® LY 1556* / Aradur® 1571* / Accelerator 1573* / Hardener XB 3471*****PREPREG SYSTEM BASED ON CHEMICAL B-STAGE**

Araldite® LY 1556 (Epoxy resin)
 Aradur® 1571 (Hardener paste)
 Accelerator 1573 (Accelerator paste)
 XB 3471 (Hardener based on polyamine)

APPLICATIONS	Industrial composites, Sport & Leisure		
PROPERTIES	Prepreg system with a long shelf life and curable from 80°C		
PROCESSING	Prepregging		
KEY DATA	Araldite® LY 1556		
	Aspect (visual)	Clear, pale yellow liquid	
	Viscosity at 25 °C (ISO 9371B)	10000-12000	[mPa s]
	Flash point (ISO 2719)	>200	[°C]
	Density at 25 °C (ISO 1675)	1.15 -1.20	[g/cm ³]
	Storage temperature	2-40	[°C]
	(See expiry date on original container)		
	Aradur® 1571		
	Aspect (visual)	White viscous paste	
	Viscosity at 25 °C	28000-40000	[mPa s]
	Density at 25 °C (ISO 1675)	1.2	[g/cm ³]
	Storage temperature	< 8	[°C]
	Accelerator 1573		
	Aspect (visual)	White viscous paste	
	Viscosity at 25 °C	60000 - 90000	[mPa s]
	Density at 25 °C (ISO 1675)	1.08	[g/cm ³]
	Storage temperature	< 8	[°C]
	Hardener XB 3471		
	Aspect (visual)	Transparent, liquid	
	Flash point (ISO 2719)	≥ 100	[°C]
	Density at 25 °C (ISO 1675)	1.0	[g/cm ³]
	Storage temperature	2 - 40	[°C]

STORAGE Provided that the products described above are stored in a dry place in their original, properly closed containers at the above mentioned storage temperatures they will have the shelf lives indicated on the labels. Partly emptied containers should be closed immediately after use. Hardener XB 3471 which has crystallized and looks cloudy can be restored to its original state by heating to 40°C – 60°C.

* In addition to the brand name product denomination may show different appendices, which allows us to differentiate between our production sites: e.g., BD = Germany, US = United States, IN = India, CI = China, etc.. These appendices are in use on packaging, transport and invoicing documents. Generally the same specifications apply for all versions. Please address any additional need for clarification to the appropriate Huntsman contact.

PROCESSING DATA

MIX RATIO	<i>Components, parts by weight</i>	<i>System 1</i>	<i>System 2</i>	<i>System 3</i>
	Araldite® LY 1556	100	100	100
	Aradur® 1571	23	23	23
	Accelerator 1573	3	5	7
	HardenerXB 3471	14	14	14

Mix Aradur® 1571 with Accelerator 1573 to get homogeneous paste, this pre-mix has a long shelf life at RT (min. 2 weeks)

The pre-mix Aradur® 1571 / Accelerator 1573 is blended into the resin Araldite® LY 1566 and mixed homogeneously just before the prepegging process.

We recommend that the components are weighed with an accurate balance to prevent mixing inaccuracies which can affect the properties of the matrix system. The components should be mixed thoroughly to ensure homogeneity. It is important that the side and the bottom of the vessel are incorporated into the mixing process.

INITIAL MIX VISCOSITY			<i>System 1</i>	<i>System 2</i>	<i>System 3</i>
	at 25°C	<i>[mPas]</i>	5000-5500	5400-5800	5500-5900
GEL TIME (HOT PLATE)			<i>System 1</i>	<i>System 2</i>	<i>System 3</i>
	at 110°C	<i>[min]</i>	18 - 22	13 - 17	11 - 15
	at 120°C	<i>[min]</i>	8 - 12	6 - 10	5 - 9
	at 130°C	<i>[min]</i>	4 - 6	2 - 5	2 - 5

The values shown are for small amounts of pure resin/hardener mix. In composite structures the gel time can differ significantly from the given values depending on the fibre content and the laminate thickness.

PREPREG PRODUCTION	Impregnation bath temperature	25 - 30°C
B-STAGING (PRE REACTION)		System 1 – System 3 2-3min. at 80-90°C
PREPREG SHELF LIFE	at 23 °C	System 1 > 6 weeks System 2 > 6 weeks System 3 > 6 weeks

PROPERTIES OF THE CURED, NEAT FORMULATION

GLASS TRANSITION TEMPERATURE (T_G) (IEC 1006, DSC, 10 K/MIN)	Cure after B-Stage 10 h 90 °C 6 h 100 °C 2 h 120 °C	System 1 T_G [°C]	System 2 T_G [°C]	System 3 T_G [°C]
		118 - 122	119 - 123	120 - 124
		122 - 126	120 - 124	118 - 122

FLEXURAL TEST (ISO 178)	Cure cycle: B-Stage+2h 120°C	Tested at 23°C	System 1	System 2	System 3
Ultimate elongation [%]			6.5 - 8.5	5.5 - 7.5	6-8
Flexural modulus [MPa]			2800-3000	2800 - 3300	2650 - 2850

FRACTURE PROPERTIES BEND NOTCH TEST (PM 258-0/90)	Cure cycle: B-Stage+2h 120°C	Tested at 23°C	Fracture toughness K_{1C}	Fracture energy G_{1C}	[MPa√m]	0.75 - 0.85	0.70 - 0.83	0.78 - 0.89

PROPERTIES OF THE CURED, REINFORCED FORMULATION

INTERLAMINAR SHEAR TEST Samples: 12 layers of unidirectional E-glass fabric (425g/m²)
Laminate thickness: 3.1 – 3.3mm

(ASTM D 2344)	Cure cycle: B-Stage+2h 120°C	[MPa]	46 - 50	49 - 53	51 - 55

**HANDLING
PRECAUTIONS****Personal hygiene***Safety precautions at workplace*

protective clothing	yes
gloves	essential
arm protectors	recommended when skin contact likely
<u>goggles/safety glasses</u>	yes

Skin protection

before starting work	Apply barrier cream to exposed skin
<u>after washing</u>	Apply barrier or nourishing cream

Cleansing of contaminated skin

Dab off with absorbent paper, wash with warm water and alkali-free soap, then dry with disposable towels. Do not use solvents

Disposal of spillage

Soak up with sawdust or cotton waste and deposit in plastic-lined bin

Ventilation

of workshop	Renew air 3 to 5 times an hour
of workplaces	Exhaust fans. Operatives should avoid inhaling vapours

FIRST AID

Contamination of the eyes by resin, hardener or mix should be treated immediately by flushing with clean, running water for 10 to 15 minutes. A doctor should then be consulted.

Material smeared or splashed on the *skin* should be dabbed off, and the contaminated area then washed and treated with a cleansing cream (see above). A doctor should be consulted in the event of severe irritation or burns. Contaminated clothing should be changed immediately.

Anyone taken ill after *inhaling* vapours should be moved out of doors immediately.

In all cases of doubt call for medical assistance.

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Main Office :
Huntsman Advanced Materials (Switzerland) GmbH
Klybeckstrasse 200
4057 BASEL
Switzerland
+41 61 299 1111