

**Advanced Materials****Araldite® LY 3508\* / Hardener XB 3403\*****TOUGHENED EPOXY RESIN**

Araldite® LY 3508 is a medium viscosity toughened epoxy resin.

|                     |                                                                                                                                                             |                    |                      |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------|
| <b>APPLICATIONS</b> | Industrial composites                                                                                                                                       |                    |                      |
| <b>PROPERTIES</b>   | Laminating Resin XU 3508 has a good toughness effect combined with a low viscosity                                                                          |                    |                      |
| <b>PROCESSING</b>   | <ul style="list-style-type: none"><li>• Wet lay-up</li><li>• Filament Winding</li><li>• Pressure Moulding</li><li>• Resin Transfer Moulding (RTM)</li></ul> |                    |                      |
| <b>PRODUCT DATA</b> | <b>Araldite® LY 3508</b>                                                                                                                                    |                    |                      |
|                     | Aspect (visual)                                                                                                                                             | white liquid       |                      |
|                     | Viscosity at 25 °C (ISO 2555)                                                                                                                               | 11000 – 20000 **   | [mPa s]              |
|                     | Density at 25 °C (ISO 1675)                                                                                                                                 | 1.15 - 1.20        | [g/cm <sup>3</sup> ] |
|                     | Epoxy value (ISO 3001)                                                                                                                                      | 4.8 - 5.4 **       | [ep/Kg]              |
|                     | <b>Hardener XB 3403</b>                                                                                                                                     |                    |                      |
|                     | Aspect (visual)                                                                                                                                             | transparent liquid |                      |
|                     | Viscosity at 25 °C (ISO 12058-1)                                                                                                                            | 5 - 20             | [mPa s]              |
|                     | Density at 25 °C (ISO 1675)                                                                                                                                 | 0.95 - 1.0         | [g/cm <sup>3</sup> ] |

*\*\* Specified data are on a regular basis analysed. Data which is described in this document as 'typical' is not analysed on a regular basis and is given for information purposes only. Data values are not guaranteed or warranted unless if specifically mentioned.*

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>STORAGE</b> | Provided that Araldite® LY 3508, Hardener XB 3403 are stored in a dry place in their original, properly closed containers at the storage temperatures mentioned in the MSDS they will have the shelf lives indicated on the labels. Partly emptied containers should be closed immediately after use.<br>Epoxy Araldite® LY 3508 which has crystallized and looks cloudy can be restored to its original state by heating to 60 - 80 °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.

**TYPICAL SYSTEM DATA****PROCESSING DATA**

| <b>MIX RATIO</b> | <i>Components</i> | <i>Parts by weight</i> | <i>Parts by volume</i> |
|------------------|-------------------|------------------------|------------------------|
|                  | Araldite® LY 3508 | 100                    | 100                    |
|                  | Hardener XB 3403  | 30                     | 37                     |

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.

When processing large quantities of mixture the pot life will decrease due to exothermic reaction. It is advisable to divide large mixes into several smaller containers.

| <b>INITIAL MIX VISCOSITY</b><br>(CONE PLATE) |                            | <i>[°C]</i> | <i>[mPa s]</i> |
|----------------------------------------------|----------------------------|-------------|----------------|
|                                              | LY 3508 / Hardener XB 3403 | at 25       | 650 - 800      |

| <b>POT LIFE</b><br>(TECAM) |                            | <i>[°C]</i> | <i>[g]</i> | <i>[min.]</i> |
|----------------------------|----------------------------|-------------|------------|---------------|
|                            | LY 3508 / Hardener XB 3403 | at 23       | 100        | 600 - 720     |

| <b>GEL TIME</b><br>(HOT PLATE) |                            | <i>[°C]</i> | <i>[min]</i> |
|--------------------------------|----------------------------|-------------|--------------|
|                                | LY 3508 / Hardener XB 3403 | at 80       | 30 – 36      |
|                                |                            | at 100      | 13 – 18      |

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.

**PROPERTIES OF THE CURED, NEAT FORMULATION**

|                                     |                                    |                     |                    |
|-------------------------------------|------------------------------------|---------------------|--------------------|
| <b>GLASS TRANSITION TEMPERATURE</b> | <i>Cure:</i>                       | $T_G$               | LY 3508<br>XB 3403 |
| (ISO 11357-2,<br>DSC, 10 K/MIN)     | 8 h 60 °C<br>4 h 60 °C + 6 h 80 °C | [ °C]<br>[ °C]      | 63 – 68<br>70 – 75 |
| <b>FLEXURAL TEST</b>                | <i>Cure:</i>                       |                     | LY 3508<br>XB 3403 |
| (ISO 178)                           | 4 h 60 °C + 6 h 80 °C              |                     |                    |
|                                     | Flexural strength                  | [MPa]               | 1010 – 125         |
|                                     | Elongation at flexural strength    | [%]                 | 4.5 – 5.5          |
|                                     | Ultimate strength                  | [MPa]               | 80 – 90            |
|                                     | Ultimate elongation                | [%]                 | 9.0 – 11.0         |
|                                     | Flexural modulus                   | [MPa]               | 2900 – 3100        |
| <b>FRACTURE PROPERTIES</b>          | <i>Cure:</i>                       |                     | LY 3508<br>XB 3403 |
| <b>BEND NOTCH TEST</b>              | 4 h 60 °C + 6 h 80 °C              |                     |                    |
| (ISO 13586)                         | Fracture toughness $K_{1C}$        | [MPa√m]             | 2.1 – 2.3          |
|                                     | Fracture energy $G_{1C}$           | [J/m <sup>2</sup> ] | 1250 - 1400        |
| <b>WATER ABSORPTION</b>             | <i>Cure:</i>                       |                     | LY 3508<br>XB 3403 |
| (ISO 62)                            | 4 h 60 °C + 6 h 80 °C              |                     |                    |
|                                     | 10 days H <sub>2</sub> O 23 °C     | [%]                 | 0.44 – 0.52        |

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

|                        |                                      |
|------------------------|--------------------------------------|
| protective clothing    | yes                                  |
| gloves                 | essential                            |
| arm protectors         | recommended when skin contact likely |
| goggles/safety glasses | yes                                  |

*Skin protection*

|                      |                                     |
|----------------------|-------------------------------------|
| before starting work | Apply barrier cream to exposed skin |
| after washing        | 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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