



## SR 8500 / SD 820x Epoxy laminating system

### Systems based on the resin SR 8500

SR 8500 is a new generation epoxy system suitable for small and large scale production. The system has been specially formulated to meet the growing demand for low toxicity system. The main characteristics of these Epoxy systems are :

- Safer handling.
- Low fumes emission.
- Good mechanical and thermal properties.
- Competitive prices.
- Range of hardeners.

### Slow hardeners SD 8202 / 8203

Suitable for Hand Lay Up, press moulding and for medium to large parts by vacuum. Requires post cure at 50 °C. See schedule for curing.

Suitable for parts with service temperature up to 100 °C, high performance composites.

### Epoxy resin SR 8500

|                              |         |                    |
|------------------------------|---------|--------------------|
| Appearance                   |         | Viscous liquid     |
| Colour                       |         | yellow Gardner < 3 |
| Viscosity (m.Pas)            | @ 20 °C | 9 800 +/- 500      |
|                              | @ 25 °C | 4 500 +/- 500      |
| Density (g/cm <sup>3</sup> ) | @ 20 °C | 1.175              |

### Hardeners SD 820x.

| Hardener                     |            | <b>SD 8202</b>     | <b>SD 8203</b> |
|------------------------------|------------|--------------------|----------------|
| Reactivity type              |            | <b>"very slow"</b> | <b>"slow"</b>  |
| Appearance / colour          |            | Yellow liquid      | Yellow liquid  |
| Viscosity (m.Pas)            | @ 20 °C    | 35                 | 70             |
|                              | @ 25 °C    | 30                 | 50             |
| Viscosity of mix (m.Pas)     | @ at 20 °C | 520                | 670            |
|                              | @ 25 °C    | 385                | 480            |
| Density (g/cm <sup>3</sup> ) | @ 20 °C    | 0.961              | 0.982          |
| Mixing ratio by weight       |            | <b>31 g</b>        | <b>31 g</b>    |
| Mixing ratio by volume       |            | <b>38 ml</b>       | <b>37 ml</b>   |



## Reactivity of mixes SR 8500 / SD 820.




| Systems  | 8500 / <b>8202</b> | 8500 / <b>8203</b> |
|--|--------------------|--------------------|
| <b>Exothermic temperatures (°C) for 100 g. mix</b> |                    |                    |
| à 30 °C  | 204                | 202                |
| à 25 °C  | 158                | 197                |
| à 20 °C  | 70                 | 110                |
| <b>Exothermic temperatures (°C) for 100 g. mix</b> |                    |                    |
| à 30 °C  | 1 h 10'            | 52'                |
| à 25 °C  | 1 h 55'            | 1 h 26'            |
| à 20 °C  | 3 h 40'            | 2 h 27'            |
| <b>Time to achieve 50 °C for 100 g mix:</b>        |                    |                    |
| à 30 °C  | 52'                | 40'                |
| à 25 °C  | 1 h 35'            | 1 h 10'            |
| à 20 °C  | 2 h 10'            | 2 h 05'            |
| <b>500 microns dust free film :</b>                |                    |                    |
| à 30 °C  | 3 h 15'            | 2 h 10'            |
| à 25 °C  | 3 h 50'            | 2 h 40'            |
| à 20 °C  |                    |                    |

## Polymerisation

Hardeners 8202 and 8203 must be post-cured for 16 hrs at 60 °C.  
Temperature /Time rate : 10 °C / Hour.

|                                    | <b>SD 8202</b> | <b>SD 8203</b> |
|------------------------------------|----------------|----------------|
| Time to wait at 20°C before curing | 48 hours       | 12 hours       |
| Minimum curing cycle time          | 20 h at 50°C   | 12 h at 50°C   |

## Toxicity / Labelling regulation

| Reference      | Symbol   | Danger   | Risk phrase      |
|----------------|--|--|------------------|
| <b>SR 8500</b> | <br> | Xi Irritant<br><br>N Dangerous for the environment | 36/38 - 51/53 43 |
| <b>SD 820x</b> |   | C Corrosive  | 21/22 - 34 - 43  |

EEC Classification according to directive 67 / 548 / EEC

## Kits (kg)

| Resin <b>SR 8500</b> | Hardeners <b>SD 820x</b> |
|----------------------|--------------------------|
| 1 Ton                | 200 kg                   |
| 200 or 250 kg        |                          |
| 30                   | 9.3                      |
| 12                   | 2 x 1.86                 |
| 3                    | 0.93                     |
| 1                    | 0.31                     |



## Mechanical properties of pure resin:

| Cure Schedule                       |                   | SR 8500 / SD 8202          |                           |                            |                            | SR 8500 / SD 8203          |                           |                            |                            |
|-------------------------------------|-------------------|----------------------------|---------------------------|----------------------------|----------------------------|----------------------------|---------------------------|----------------------------|----------------------------|
|                                     |                   | 12 h Ta<br>+<br>16 h 60 °C | 12 h Ta<br>+<br>8 h 80 °C | 12 h Ta<br>+<br>4 h 100 °C | 12 h Ta<br>+<br>2 h 120 °C | 12 h Ta<br>+<br>16 h 60 °C | 12 h Ta<br>+<br>8 h 80 °C | 12 h Ta<br>+<br>4 h 100 °C | 12 h Ta<br>+<br>2 h 120 °C |
| <b>Tensile</b>                      |                   |                            |                           |                            |                            |                            |                           |                            |                            |
| Modulus of elasticity               | N/mm <sup>2</sup> | 3 680                      | 4 150                     | 3 030                      | 2 930                      | 3 640                      | 3 900                     | 2 900                      | 3 050                      |
| Maximum resistance                  | N/mm <sup>2</sup> | 64                         | 63                        | 82                         | 80                         | 68                         | 83                        | 73                         | 82                         |
| Resistance at break                 | N/mm <sup>2</sup> | 64                         | 62                        | 82                         | 80                         | 68                         | 83                        | 73                         | 82                         |
| Elongation at max. resistance       | %                 | 1.7                        | 1.7                       | 5.7                        | 4.8                        | 2.2                        | 3.1                       | 3.7                        | 5.1                        |
| Elongation at break                 | %                 | 1.7                        | 1.8                       | 5.7                        | 4.9                        | 2.2                        | 3.1                       | 3.7                        | 5.3                        |
| <b>Flexion</b>                      |                   |                            |                           |                            |                            |                            |                           |                            |                            |
| Modulus of elasticity               | N/mm <sup>2</sup> | 3 770                      | 3 450                     | 3 200                      | 3 100                      | 3 750                      | 3 500                     | 3 280                      | 3 900                      |
| Maximum resistance                  | N/mm <sup>2</sup> | 138                        | 135                       | 126                        | 127                        | 128                        | 136                       | 132                        | 161                        |
| Elongation at max. load             | %                 | 5                          | 6                         | 5.8                        | 6.2                        | 4.2                        | 6.2                       | 6.2                        | 6.4                        |
| Elongation at break                 | %                 | 5.8                        | 7.5                       | 6.6                        | 7.8                        | 4.4                        | 6.2                       | 8                          | 8.2                        |
| <b>Compression</b>                  |                   |                            |                           |                            |                            |                            |                           |                            |                            |
| Compressive yield strength          | N/mm <sup>2</sup> |                            |                           |                            |                            |                            |                           |                            |                            |
| Offset compressive yield            | %                 |                            |                           |                            |                            |                            |                           |                            |                            |
| <b>Charpy impact strength</b>       |                   |                            |                           |                            |                            |                            |                           |                            |                            |
| Resilience                          | KJ/m <sup>2</sup> | 16.5                       | 20                        | 19.5                       | 17.5                       | 17                         | 24                        | 18                         | 26                         |
| <b>Water absorption 48 h / 70°C</b> |                   |                            |                           |                            |                            |                            |                           |                            |                            |
|                                     | %                 |                            |                           |                            |                            |                            |                           |                            |                            |
| <b>Glass Transition / DSC</b>       |                   |                            |                           |                            |                            |                            |                           |                            |                            |
| Tg1                                 | °C                | 93                         | 108                       | 119                        | 123                        | 90                         | 110                       | 121                        | 122                        |
| Tg1 max.                            | °C                |                            |                           |                            | 123                        |                            |                           |                            | 120                        |

Tests carried out on samples of pure cast resin, without prior degassing, between steel plates.

Measures undertaken according to Afnor norms :

Tension: NF T 51-034

Flexion : NF T 51-001

Charpy impact: NF T 51-035

Glass transition : DSC according to norm I SO 11357-2. Tg 1: Onset Glass transition / 1999 20°C / mm, temperature range from -5 to 180°C

Tg1 max: 2nd passage



### SR 8500 / Reactivity of 100 g. mix

