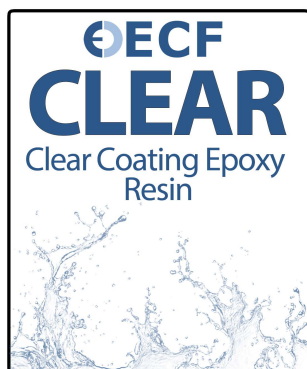
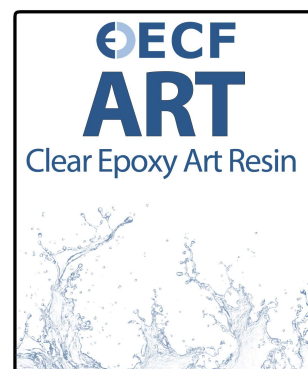


## ECF CLEAR/ ECF ART

### Epoxy system for Coating and Art resin



**PART A: RESIN**  
MIX RATIO - 100 PART A: 50 PART B by vol  
sales@ecfcomposites.co.uk  
For technical info or advice on application call  
0191 497 5134



**PART A: RESIN**  
MIX RATIO - 100 PART A: 50 PART B by vol  
sales@ecfcomposites.co.uk  
For technical info or advice on application call  
0191 497 5134

|                              |                   | SD EVO Slow | SD EVO Medium | SD EVO Fast |
|------------------------------|-------------------|-------------|---------------|-------------|
| Reactivity level             |                   | Slow        | Standard      | Fast        |
| Initial viscosity (mPa.s)    | @ 20 °C           | 1020        | 1570          | 2000        |
|                              | @ 30 °C           | 440         | 610           | 660         |
| Pot Life (150 g)             | @ 20 °C           | 01 h 10     | 10 min        | 8 min       |
|                              | @ 30 °C           | 33 min      | 6 min         | 4 min       |
| Mixing ratio                 |                   |             |               |             |
|                              | By weight         | 100 / 38    | 100 / 39      | 100 / 41    |
|                              | By volume         | 100 / 50    | 100 / 50      | 100 / 50    |
|                              | N/mm <sup>2</sup> | 72          | 70            | 68          |
| % Elongation at max strength | %                 | 3,9         | 4,1           | 4           |
| TG1 max onset                | °C                | 89          | 84            | 80          |
| Gel Time                     | @ 20 °C           | 09 h 20     | 03 h 18       | 02 h 51     |
|                              | @ 30 °C           | 05 h 00     | 01 h 57       | 01 h 42     |
| Time to reach 400 mPa.s      | @ 20 °C           | 04 h 20     | -             | 01 h 08     |
|                              | @ 30 °C           | 02 h 40     | 49 min        | 44 min      |
| Demold time                  | @ 20 °C           | 28 h 00     | 09 h 54       | 08 h 33     |
|                              | @ 30 °C           | 15 h 00     | 05 h 51       | 05 h 06     |

## Characteristics:

Easy ratio per volume 2:1.

UV stability for artists as such the number one priority was always to ensure that **Surf Clear EVO** looks as good in years to come as it does when you first pour it.

Other applications: jewelry and model coating, and surf repairs etc...  
Low odor and reduced skin aggression for a better work environment.

## Advices for application:

Work in a clean environment with heating facility.

Ideal working temperature from 18 °C to 30 °C.

Maintain a constant temperature during coating.

Avoid high ambient humidity.

Avoid exposure to U.V. during the cure. Coatings benefitting from a sun free post cure or polymerized for at least 7 days at 18°C will obtain greater U.V. resistance and mechanical properties

Do not dilute with solvents. Please consult our technical assistance.

The use of compatible pigments is possible.

Keep packaging well-sealed as hardeners are sensitive to carbonic gas and humidity.

A polyurethane or other top coat paint can (for best UV protection) be applied, without primer, after sanding the final layer of **Surf Clear EVO**.

## Green Technology:

Sicomin is heavily involved in green chemistry. When technology and availability of raw materials allows, we choose raw materials from biomass sourcing.

**Surf Clear EVO** epoxy resin is manufactured with a bio-based carbon content of about 40 % (resin alone)

## OH additive, the shiniest Resin in the world

Sicomin offers the possibility to use an extra additive to mix with the resin **Surf Clear EVO** to improve the light radiance of your project. A perfect, super shiny finish can transform watercolours, oils, mixed media, photographs, child masterpieces, in fact just about any creative project, in new exciting ways.

OH additive can modify the color perception (blue effect with carbon or pink effect with wood or linen fabrics), please test before to avoid any surprises. Mixing: 1 g of OH for 1 kg of resin SR Surf Clear EVO - First mix resin and OH additive, then mix with hardener



|                   |         |              |
|-------------------|---------|--------------|
| Appearance        |         | liquid       |
| Color             |         | purple       |
| Viscosity (mPa.s) | @ 15 °C | 5500 ± 1100  |
|                   | @ 20 °C | 2925 ± 575   |
|                   | @ 25 °C | 1680 ± 320   |
|                   | @ 30 °C | 1070 ± 220   |
| Density           | @ 20 °C | 1,1817       |
| Refractive index  | @ 25 °C | 1,545 ± ,002 |
| Storage (months)  | @ Ta    | 24           |

## Hardener(s)

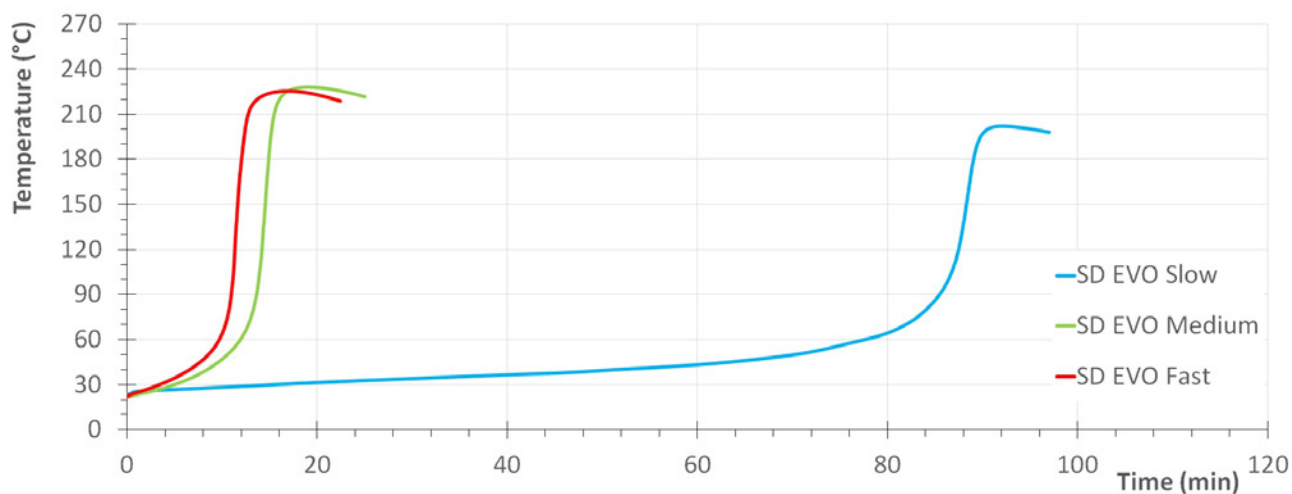
|                   |         | Slow         | Medium        | Fast          |
|-------------------|---------|--------------|---------------|---------------|
| Appearance        |         | liquid       | liquid        | liquid        |
| Color             |         | colourless   | light yellow  | colourless    |
| Gardner color     |         | ≤ 2          | ≤ 1           | ≤ 1           |
| Reactivity level  |         | Slow         | Standard      | Fast          |
| Viscosity (mPa.s) | @ 15 °C | 80 ± 15      | 180 ± 40      | 290 ± 60      |
|                   | @ 20 °C | 60 ± 15      | 120 ± 25      | 190 ± 40      |
|                   | @ 25 °C | 45 ± 10      | 80 ± 20       | 125 ± 25      |
|                   | @ 30 °C | 32 ± 6       | 60 ± 12       | 90 ± 20       |
| Density           | @ 20 °C | 0,9710       | 0,9920        | 1,0000        |
| Refractive index  | @ 25 °C | 1,471 ± ,002 | 1,5113 ± ,002 | 1,5169 ± ,002 |
| Storage (months)  | @ Ta    | 24           | 24            | 24            |

## Mixe(s) SR Surf Clear EVO / SD EVO

|                               |           | SD EVO Slow | SD EVO Medium | SD EVO Fast |
|-------------------------------|-----------|-------------|---------------|-------------|
| Appearance                    |           | liquid      | liquid        | liquid      |
| Color                         |           | purple      | purple        | purple      |
| Mixing ratio                  |           |             |               |             |
|                               | By weight | 100 / 38    | 100 / 39      | 100 / 41    |
|                               | By volume | 100 / 50    | 100 / 50      | 100 / 50    |
| Initial viscosity (mPa.s)     | @ 20 °C   | 1020        | 1570          | 2000        |
| PP 50 mm / 10 s <sup>-1</sup> | @ 30 °C   | 440         | 610           | 660         |
| Density                       | @ 20 °C   | 1,1         | 1,1           | 1,1         |

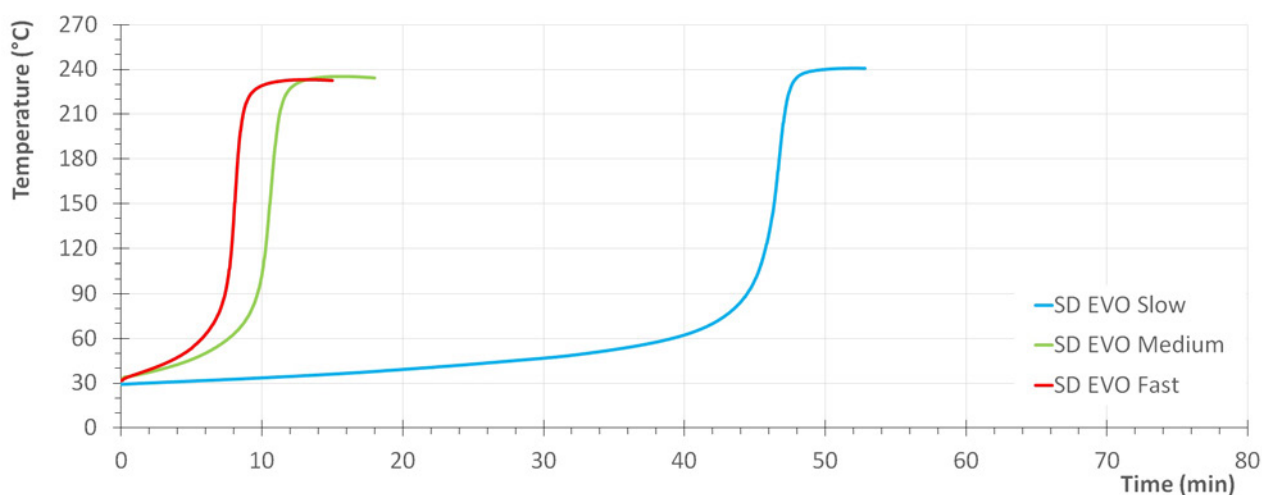
## Reactivity @ 20 °C for 150 g SR Surf Clear EVO / SD EVO

|                             | Slow    | Medium | Fast   |
|-----------------------------|---------|--------|--------|
| Exothermic temperature (°C) | 202     | 228    | 225    |
| Exothermic peak time        | 01 h 30 | 18 min | 15 min |
| Time to reach 50 °C         | 01 h 10 | 10 min | 8 min  |



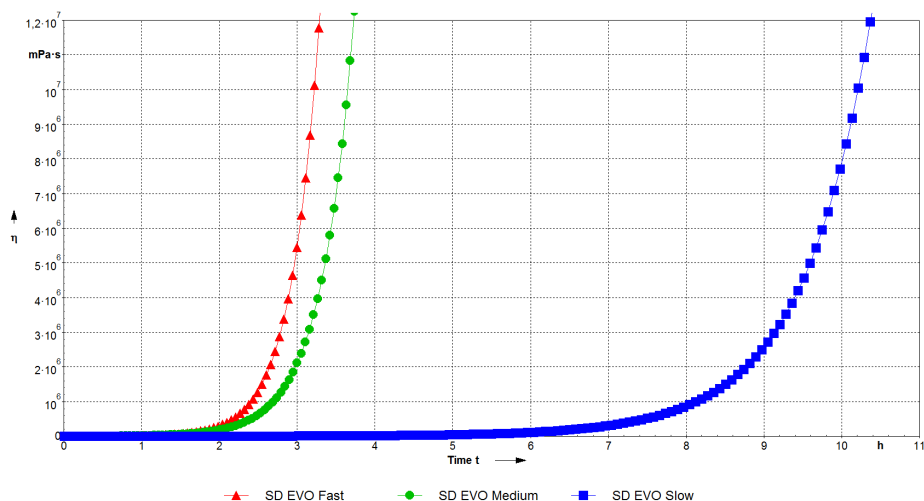
## Reactivity @ 30 °C for 150 g

|                             | Slow   | Medium | Fast   |
|-----------------------------|--------|--------|--------|
| Exothermic temperature (°C) | 241    | 235    | 233    |
| Exothermic peak time        | 53 min | 14 min | 12 min |
| Time to reach 50 °C         | 33 min | 6 min  | 4 min  |

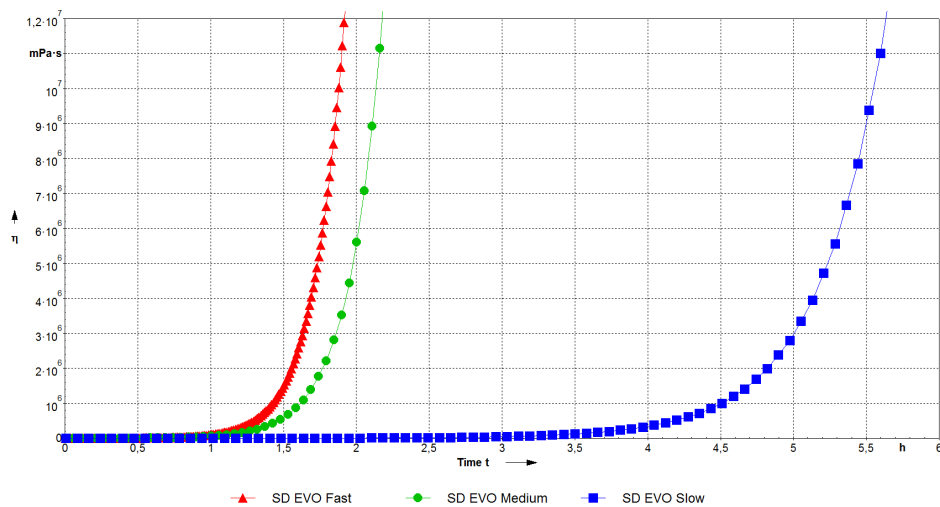


## Reactivity on 1 mm thick layer

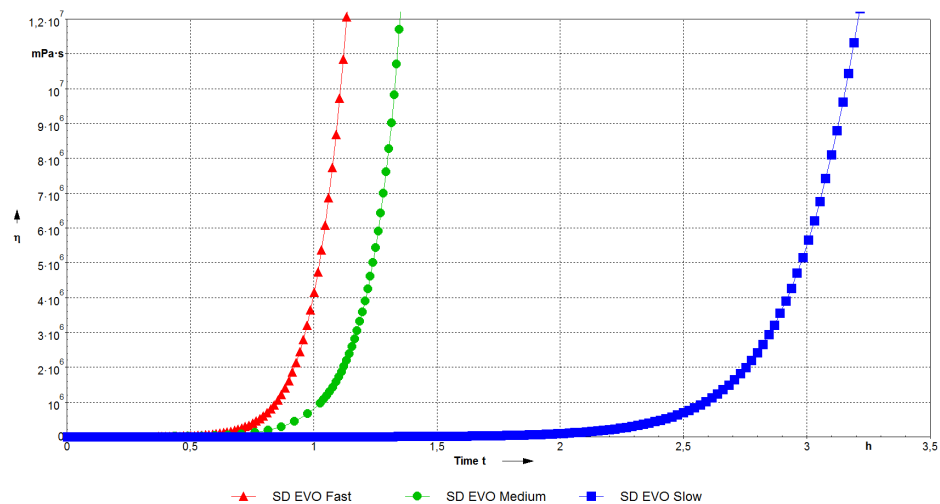
@ 20 °C



@ 30 °C



@ 40 °C



## Mechanical properties on cast resin :

|                               |                                                                                   | Slow                        |  |  | Medium                      |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------|--|--|-----------------------------|--|--|
| Curing cycles                 |  | 24 h @ Ta +<br>16 h @ 60 °C |  |  | 24 h @ Ta +<br>16 h @ 60 °C |  |  |
| <b>Tensile</b>                |                                                                                   |                             |  |  |                             |  |  |
| Modulus                       | N/mm <sup>2</sup>                                                                 | 3 400                       |  |  | 3 400                       |  |  |
| Maximum strength              | N/mm <sup>2</sup>                                                                 | 72                          |  |  | 70                          |  |  |
| Breaking Strength             | N/mm <sup>2</sup>                                                                 | 67                          |  |  | 66                          |  |  |
| Elongation at max strength    | %                                                                                 | 3,9                         |  |  | 4,1                         |  |  |
| Elongation at break           | %                                                                                 | 5,1                         |  |  | 6                           |  |  |
| <b>Flexion</b>                |                                                                                   |                             |  |  |                             |  |  |
| Modulus                       | N/mm <sup>2</sup>                                                                 | 3 100                       |  |  | 3 200                       |  |  |
| Maximum strength              | N/mm <sup>2</sup>                                                                 | 120                         |  |  | 122                         |  |  |
| Breaking Strength             | N/mm <sup>2</sup>                                                                 | 111                         |  |  | 108                         |  |  |
| Elongation at max strength    | %                                                                                 | 5,4                         |  |  | 5,7                         |  |  |
| Elongation at break           | %                                                                                 | 7,2                         |  |  | 8,2                         |  |  |
| <b>Shear</b>                  |                                                                                   |                             |  |  |                             |  |  |
| Breaking Strength             | N/mm <sup>2</sup>                                                                 | 47                          |  |  | 49                          |  |  |
| <b>Compression</b>            |                                                                                   |                             |  |  |                             |  |  |
| Modulus                       | N/mm <sup>2</sup>                                                                 |                             |  |  |                             |  |  |
| Yield strength                | N/mm <sup>2</sup>                                                                 | 99                          |  |  | 105                         |  |  |
| Offset compression yield      | %                                                                                 | 13,4                        |  |  | 15,8                        |  |  |
| <b>Charpy impact strength</b> |                                                                                   |                             |  |  |                             |  |  |
| Resilience                    | kJ/m <sup>2</sup>                                                                 | 44                          |  |  | 40                          |  |  |
| <b>DSC glass transition</b>   |                                                                                   |                             |  |  |                             |  |  |
| TG1 onset                     | °C                                                                                | 86                          |  |  | 88                          |  |  |
| TG1 max onset                 | °C                                                                                | 89                          |  |  | 84                          |  |  |
| <b>DTMA glass transition</b>  |                                                                                   |                             |  |  |                             |  |  |
| TG tan delta                  | °C                                                                                |                             |  |  |                             |  |  |
| TeiG onset G'                 | °C                                                                                |                             |  |  |                             |  |  |
| TmG midpoint G'               | °C                                                                                |                             |  |  |                             |  |  |
| TefG endpoint                 | °C                                                                                |                             |  |  |                             |  |  |
| TG peak G''                   | °C                                                                                |                             |  |  |                             |  |  |

## Mechanical properties on cast resin :

|                               |                                                                                   | Fast                        |  |  |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------|--|--|
| Curing cycles                 |  | 24 h @ Ta +<br>16 h @ 60 °C |  |  |
| <b>Tensile</b>                |                                                                                   |                             |  |  |
| Modulus                       | N/mm <sup>2</sup>                                                                 | 3 400                       |  |  |
| Maximum strength              | N/mm <sup>2</sup>                                                                 | 68                          |  |  |
| Breaking Strength             | N/mm <sup>2</sup>                                                                 | 65                          |  |  |
| Elongation at max strength    | %                                                                                 | 4                           |  |  |
| Elongation at break           | %                                                                                 | 6,5                         |  |  |
| <b>Flexion</b>                |                                                                                   |                             |  |  |
| Modulus                       | N/mm <sup>2</sup>                                                                 | 3 200                       |  |  |
| Maximum strength              | N/mm <sup>2</sup>                                                                 | 117                         |  |  |
| Breaking Strength             | N/mm <sup>2</sup>                                                                 | 103                         |  |  |
| Elongation at max strength    | %                                                                                 | 5,6                         |  |  |
| Elongation at break           | %                                                                                 | 8,5                         |  |  |
| <b>Shear</b>                  |                                                                                   |                             |  |  |
| Breaking Strength             | N/mm <sup>2</sup>                                                                 | 48                          |  |  |
| <b>Compression</b>            |                                                                                   |                             |  |  |
| Modulus                       | N/mm <sup>2</sup>                                                                 |                             |  |  |
| Yield strength                | N/mm <sup>2</sup>                                                                 | 103                         |  |  |
| Offset compression yield      | %                                                                                 | 14,3                        |  |  |
| <b>Charpy impact strength</b> |                                                                                   |                             |  |  |
| Resilience                    | kJ/m <sup>2</sup>                                                                 | 38                          |  |  |
| <b>DSC glass transition</b>   |                                                                                   |                             |  |  |
| TG1 onset                     | °C                                                                                | 80                          |  |  |
| TG1 max onset                 | °C                                                                                | 80                          |  |  |
| <b>DTMA glass transition</b>  |                                                                                   |                             |  |  |
| TG tan delta                  | °C                                                                                |                             |  |  |
| TeiG onset G'                 | °C                                                                                |                             |  |  |
| TmG midpoint G'               | °C                                                                                |                             |  |  |
| TefG endpoint                 | °C                                                                                |                             |  |  |
| TG peak G''                   | °C                                                                                |                             |  |  |



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

**Measures undertaken according to the following norms:**

**Mechanical tests:**

|                                  |                                                         |
|----------------------------------|---------------------------------------------------------|
| Tension:                         | NF EN ISO 527-2:2012                                    |
| Flexion:                         | NF EN ISO 178:2011                                      |
| Compression:                     | NF EN ISO 604:2004 or NF EN ISO 844:2014 (foam product) |
| Charpy impact strength:          | NF EN ISO 179-1:2010                                    |
| Shear Strength:                  | ASTM D732-17 (Punch Tool)                               |
| Interlaminar shrinkage strength: | ASTM D5528-13                                           |
| Toughness (GIC et KIC) :         | ISO 13586:2000                                          |

Water absorption: Internal. Polymerization according to cycle, machining, weighing, time spent in distilled water at 70 °C / 48 hours, weighing 1 hour after emerging,

**Thermal tests:**

|                        |                                                                   |
|------------------------|-------------------------------------------------------------------|
| Glass transition DSC:  | NF EN ISO 11357-2:2014 -5°C to 180 °C under nitrogen gas          |
|                        | $T_{G1}$ or Onset: 1 <sup>st</sup> scan at 20 °C/min              |
|                        | $T_{G1}$ maximum or Onset: 2nd scan at 20 °C/min                  |
| Glass transition DTMA: | Temperature ramp 0 °C to 180 °C @ 2°C/min under normal atmosphere |
|                        | NF EN ISO 11357-1:2016 $T_g$ onset G'                             |
|                        | ASTM D4065-12 $T_g$ peak G''                                      |

**Physical tests:**

|                        |                                             |                                                |
|------------------------|---------------------------------------------|------------------------------------------------|
| Gardner color:         | NF EN ISO 4630:2016                         | Visual method                                  |
| Refractive index:      | NF ISO 280:1999                             |                                                |
| Viscosity:             | NF EN ISO 3219:1994                         | Rheometer 50 mm, shear 10 s <sup>-1</sup>      |
| Density on liquids:    | ISO 2811-1:2016                             | Pycnometer                                     |
| Density on solid:      | NF EN ISO 1183-3:1999                       | Helium Pycnometer                              |
| Density on foam:       | NF EN ISO 845:2009                          |                                                |
| Gel time:              | Cross G' G''                                | Rheometer CP50 - Shear rate 10 s <sup>-1</sup> |
| Green Carbone content: | ASTM D6866-16 or XP CEN/TS 16640 Avril 2014 |                                                |

TA: Ambient temperature (20 to 25 °C)

**LEGAL NOTES:**

Information given in writing or verbally, in the context of our technical assistance and our trials, does not engage our responsibility. Information is given in good faith based on SICOMIN's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with SICOMIN's recommendations. We advise users of SICOMIN products to check by some practical trials that they are suitable for the intended processes and applications. The customer's storage, the use, the implementation and the transformation of the supplied products are not under SICOMIN's control and entirely under the sole responsibility of the user.

SICOMIN reserves the right to change the properties of its products. All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data and tolerance may vary due to circumstances beyond our control.

If our responsibility should nevertheless be involved, it would be, for all the damages, limited to the value of the goods supplied by us and processed by the customer. We guaranty the non-reproachable quality of our products, in the general context of sales and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.