



ADVANCED COMPOSITES SOLUTIONS

HIGH PERFORMANCE EPOXY AND POLYURETHANE SYSTEMS

CREATING A STRONG FUTURE

Worldwide solutions in PUR and EP resins

YOUR ADDED VALUE

Reliability and Safety

Sika Advanced Resins is on your side as a strong global player. As an inherent part of the Swiss concern Sika AG you can rely on us.

Quality and Innovation

Our clients expect high-quality end products. Benefit from over 75 years of intensive expertise in the development of high-quality PUR and EP resins. With innovative and coordinated PUR and EP product systems, we help you to achieve end user satisfaction.

Flexibility and integrated solutions

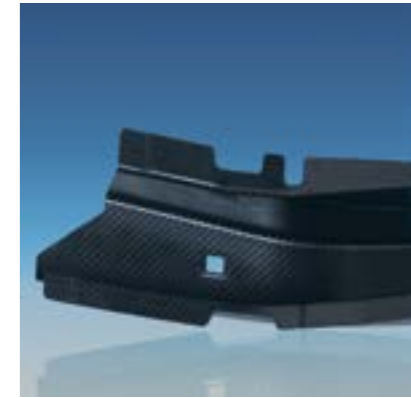
As individual as your task. The comprehensive and integrated product range of Sika Advanced Resins offers you even more solutions for your applications.

Professional global support worldwide

Local experts provide you with personal on-site support in all issues relating to product processing and plant technology.

Global Availability

The consolidation of worldwide production sites, several development departments and our global dealer network maximizes the availability of our products – wherever you are located.



“As a global leader in Tooling and Composites it is our aim to provide our customers with best in class innovative and tailor made solutions. Being close to our customers is not only a word for us: Worldwide production and on-site support of our experts is the basis of our success. Every day, we are looking forward to create new and better solutions together with our customers.“

MORTEN MUSCHAK
Head Sika Advanced Resins

CUSTOMIZED SOLUTIONS FOR ...

- Foundry model making
- Automotive industry
- Transportation industry
- Sports and leisure
- Industrial applications
- Boat and yacht building industry
- Aviation industry
- Renewable energies
- Dielectrics

WITH OVER 75 YEARS OF EXPERIENCE, Sika Advanced Resins is the world leading provider and developer of high-performance resins, block materials and pastes for model and mould making. Sika Advanced Resins offers customized solutions for the composites industry – from the model to the shape and finished parts up to the fitting structural adhesive. In addition, Sika Advanced Resins offers casting resins and functional coatings for industrial filters and dielectrics. Sika Advanced Resins generates an annual turnover of € 150 million with 450 employees. Sika Advanced Resins is part of Sika AG, which is headquartered in Baar, Switzerland. Sika has subsidiaries in 101 countries worldwide, with more than 200 manufacturing sites. It has approx. 19,500 employees, who generated an annual turnover of CHF 7.1 billion in 2018.

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BOARD MATERIALS AND PASTES FOR MODEL AND MOULD MAKING

We offer a wide range of application-oriented system solutions consisting of special model and tooling boards and appropriate adhesives and filler putties.

The boards are based on Polyurethane (PUR) and Epoxy (EP) and can be used for the construction of plugs and master models as well as for diverse moulds and other manufacturing tools. Especially for very big plugs or moulds, for example in the wind or the marine industry, we can also offer versatile model pastes based on EP and PUR for near net shape designs with completely joint-free surfaces.

BOARD MATERIALS:

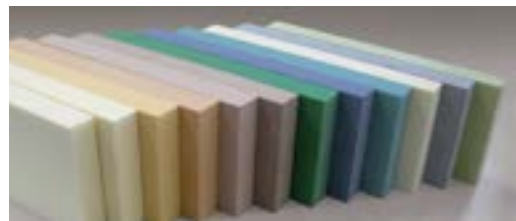
Depending on the required demands for a model or a mould it is possible to choose between different boards with densities from 0.08 up to 1.3 kg/dm³.

The wide range offering in densities enables to select suitable board in surface quality and mechanical properties.

EP boards offer particularly high heat resistance with excellent dimensional stability due to low CTE and can be used for prepreg applications.

MODEL PASTES:

Model pastes are processed on 2-component mixing and metering machines. The cured resin systems are easy to finish to the correct dimensions by CNC-milling. The results are joint-free, smooth surfaces with a high level of precision.



Board materials available in different densities and performance qualities.



CNC-milling of a lightweight PUR board.



Low CTE offers a high dimensional stability.



High performance epoxy boards for prepreg tools and parts.



Biresin® M72 for large scale models.



CNC-milled model of a boat deck with a homogenous, jointless and smooth surface.



Good non sagging properties also on vertical surfaces.



CNC-milling of a boat deck made with epoxy extrudable paste SC175.

| OVERVIEW BOARD MATERIALS ▶ Detailed Information see page 6/7 | | | | | |
|---|---------------------------|---------------------------|------------------------------|--------------------|---|
| | Suitable for model making | Suitable for mould making | Density [g/cm ³] | Colour | Characteristics |
| PUR | | | | | |
| Labelite 8CY SikaBlock® M80 | ○ | | 0.08 | grey yellowish | Low density boards with fine, dense non-powdery surface; easily workable with low dust formation when milled ▶ simple big models/moulds, backup/reinforcements constructions |
| Labelite 25YW SikaBlock® M330 | ○ | | 0.25 | peach yellow siena | |
| Labelite 45PK | ○ | ○ | 0.45 | pink | |
| SikaBlock® M600 | ○ | ○ | 0.60 | light brown | Medium density boards with fine, dense surface; good compressive strength and edge stability ▶ models and moulds for lower number of pieces |
| SikaBlock® M700 | ○ | ○ | 0.70 | light brown | |
| SikaBlock® M1000 | ○ | ○ | 1.0 | white | Tooling boards with dense smooth surface, higher compressive strength and edge stability ▶ models and moulds for higher number of pieces |
| SikaBlock® M945 | ○ | ○ | 1.35 | green | |
| EP | | | | | |
| Lab 975 New | ● | ● | 0.70 | light green | Medium density EP-boards with fine, dense surface; high heat distortion temperature and low CTE ▶ models and moulds for Prepreg applications |
| Lab 973 | ● | ● | 0.75 | blue | |

- highly recommended
- recommended
- conditionally possible

| OVERVIEW MODEL PASTES ▶ Detailed Information see page 6/7 | | | | |
|--|---------------------------|---------------------------|------------------------------|--|
| | Suitable for model making | Suitable for mould making | Density [g/cm ³] | Characteristics |
| PUR | | | | |
| Biresin® M72 | ● | ○ | 0.9 | Easily workable; fine, dense surface; offers various advantages especially in large scale modeling; low risk of cracks due to high flexibility |
| EP | | | | |
| SC 175 | ● | ○ | 0.63 | Very good surface aspect; good behaviour on vertical support up to 30 mm; high thermal resistance |
| SC 380 | ● | ○ | 0.82 | Very good surface aspect; good behaviour on vertical support up to 30 mm; high thermal resistance and high mechanical properties; for large dimension tools/composite tooling and mocks-up production |
| SC 390 | ○ | ● | 1.06 | Very good surface aspect; good behaviour on vertical support up to 30 mm; short hardening time even for 2 mm thickness; high using temperature; low CTE: good dimensional stability, especially suitable for prepreg tools |

- highly recommended
- recommended
- conditionally possible

DETAILED INFORMATION: BOARD MATERIALS AND PASTES

| BOARD MATERIALS | | | | | | | | | | | | |
|--|------------------------------|----------------------|---|------------------------------------|----------------|-----------------|--|-------------------------|----------------------------|--------------------------|-----------------------|---|
| | Density [g/cm ³] | Colour | Dimensions [mm]; [ltr.] | Adhesive | Shore hardness | E-Modulus [MPa] | | Flexural strength [MPa] | Compressive Strength [MPa] | CTE, αT [1/K] | Thermal resistance °C | Characteristics |
| PUR | | | | | | | | | | | | |
| Labelite 8 GY SikaBlock® M80 | 0.08 | light grey yellowish | 2,000 x 1,000 x 100; 200 2,000 x 1,000 x 200; 400 | Labelite Glue or Kleber orange | A 28 | - | | 1.0 | 0.7 | 40 x 10 ⁻⁶ | 115* | Low density boards with fine, dense non-powdery surface; easily workable with low dust formation when milled ▶ simple big models/moulds, backup/reinforcements constructions |
| Labelite 25YW SikaBlock® M330 | 0.25 | peach yellow siena | 1,500 x 500 x 50; 37.5 1,500 x 500 x 100; 75 1,500 x 500 x 200; 150 2,000 x 1,000 x 100; 200 2,000 x 1,000 x 150; 300 2,000 x 1,000 x 200; 400 | | D 25 | - | | 5.4 | 3.8 | 60 x 10 ⁻⁶ | 75* | |
| Labelite 45PK | 0.45 | pink | 1,500 x 500 x 50; 37.5 1,500 x 500 x 75; 56.25 1,500 x 500 x 100; 75 1,500 x 500 x 150; 112.5 | | D 45 | - | | 12 | 10 | 55 x 10 ⁻⁶ | 65* | |
| SikaBlock® M600 | 0.60 | light brown | 1,500 x 500 x 30; 22.5 1,500 x 500 x 50; 37.5 1,500 x 500 x 75; 56.25 1,500 x 500 x 100; 75 1,500 x 500 x 150; 112.5 1,500 x 500 x 200; 150 | Kleber braun or Prolab Glue | D 58 | 750 | | 18 - 20 | 16 - 18 | 55 x 10 ⁻⁶ | 75 - 80** | Medium density boards with fine, dense surface; good compressive strength and edge stability ▶ models and moulds for lower number of pieces |
| SikaBlock® M700 | 0.70 | light brown | 1,500 x 500 x 30; 22.5 1,500 x 500 x 50; 37.5 1,500 x 500 x 75; 56.25 1,500 x 500 x 100; 75 1,500 x 500 x 150; 112.5 | | D 66 | 1,000 | | 26 | 25 | 55 x 10 ⁻⁶ | 90** | |
| SikaBlock® M1000 | 1.0 | white | 1,500 x 500 x 50; 37.5 1,500 x 500 x 75; 56.25 1,500 x 500 x 100; 75 | Power Adhesive Thix | D 75 | 1,800 | | 48 | 47 | 55 x 10 ⁻⁶ | 85** | Tooling boards with dense smooth surface, higher compressive strength and edge stability ▶ models and moulds for higher number of pieces |
| SikaBlock® M945 | 1.30 | green | 1,500 x 500 x 30; 15 1,500 x 500 x 50; 25 1,500 x 500 x 75; 37.5 1,500 x 500 x 100; 50 | Power Adhesive Thix or Kleber grün | D 83 | 3,400 | | 100 | 95 | 65-70 x 10 ⁻⁶ | 80** | |
| EP | | | | | | | | | | | | |
| Lab 975 New | 0.70 | light green | 1,500 x 500 x 50; 37.5 1,500 x 500 x 75; 56.25 1,500 x 500 x 100; 75 other dimensions on request | H8973/GC 15 | D 75 | 2,500 | | 30 | 50 | 35-45 x 10 ⁻⁶ | 130* | Medium density EP-boards with fine, dense surface; high heat distortion temperature and low CTE ▶ models and moulds for Prepreg applications |
| Lab 973 | 0.75 | blue | 1,500 x 500 x 50; 37.5 1,500 x 500 x 75; 56.25 1,500 x 500 x 100; 75 other dimensions on request | H8973 / GC15 | D 73 | 2,200 | | 30 | 50 | 35-45 x 10 ⁻⁶ | 125* | |

| MODEL PASTES | | | | | | | | | | | | | | | |
|---------------------|--------|------------------|-----|------------------------------|----------|------------------|-------|-----------------------|---|---------------------------------|--------------------|----------------|-------------------------|---------------|--|
| A | B | Mixing ratio [g] | | Density [g/cm ³] | Colour | Viscosity [mPas] | | | Potlife, after coating by machine [min] | Workable after [h] | Filler | Shore hardness | Flexural strength [MPa] | Tg value [°C] | Characteristics |
| | | A | B | | | A | B | Mixture | | | | | | | |
| PUR | | | | | | | | | | | | | | | |
| Biresin® M72 | M70 | 100 | 45 | 0.9 | brown | 15,000 | 175 | pasty after 10-15 sec | 10-15 | > 8 | Spachtel braun Neu | D 65 | 20 | 47 | Easily workable; fine, dense surface; offers various advantages especially in large scale modeling; low risk of cracks due to high flexibility |
| EP | | | | | | | | | | | | | | | |
| SC 175 | SC 175 | 100 | 100 | 0.63 | off grey | pasty | pasty | pasty | 180 | on thickness 30 mm: > 24 | Spachtel braun Neu | D 52 | 13 | 45 | Very good surface aspect; good behaviour on vertical support up to 30 mm; high thermal resistance |
| SC 380 | SC 380 | 100 | 100 | 0.82 | grey | pasty | pasty | pasty | 150 | on thickness 25 mm: 24 | | D 65 | 24 | 50 | Very good surface aspect; good behaviour on vertical support up to 30 mm; high thermal resistance and high mechanical properties; for large dimension tools/composite tooling and mocks-up production |
| SC 390 | SC 390 | 100 | 100 | 1.06 | grey | pasty | pasty | pasty | 140 | depending on thickness: 12 - 20 | | D 74 | 36 | 89 | Very good surface aspect; good behaviour on vertical support up to 30 mm; short hardening time even for 2 mm thickness; high using temperature; low CTE: good dimensional stability; especially suitable for prepreg tools |

*Tg (°C) **HDT (°C)

Information regarding products for surface (pre-)treatment like cleaner, sealer, release agents, filler and primer can be found in the respective product data sheets

HIGH PERFORMANCE COMPOSITES SYSTEMS AND GELCOATS

Aimed for parts production as well as for mould making applications in versatile industries, these high performance composite resins are designed to meet the highest standards of production, process efficiency and end-use performance.

The systems are specially designed for different working temperatures ranging from 80 °C up to ~ 225 °C. Additionally it is possible to adjust the reactivity of the systems by using different hardeners.

Our composites matrix systems are specially formulated to give the optimal viscosity as well as other processing parameters to meet the different specific processes in the composites industry like Wet Lay-up, Vacuuminfusion, RTM, Pultrusion, Filament Winding, etc.

Suitable gelcoats for mould making can be found in the alongside box.

GELCOATS

SIKA

Our gelcoats are very easy to apply and specially formulated to suit the particular needs of moulds or tools for composites applications. They have the necessary resistance to external influences such as mechanical, thermal or chemical stress. Some of them can be polished to a high gloss to get a shiny surface on the final parts.

OVERVIEW GELCOATS [▶ Detailed Information see page 10/11](#)

| | Colour | Thermal resistance | Characteristics |
|---------------------|------------------|--------------------|---|
| Biresin® S8 | black | 136** | Polishable to high gloss; heat resistant, good styrene resistance |
| Biresin® S12 | grey | > 100** | Abrasion resistant; heat resistant; good solvent and styrene resistance |
| CC1 080 | blue/white/green | 85* | Good solvent and styrene resistance. Could be sanded to glossy aspect |
| Biresin® S19 | black | > 150* | Very high heat resistance |

*Tg (°C) ** HDT (°C)

OVERVIEW COMPOSITE SYSTEMS [▶ Detailed Information see page 10-15](#)

| | Wet Lay-Up (+ optional vacuum bagging) | Vacuum- infusion | RTM | Press Processes | Filament Winding | Pultrusion | Tg [°C] | Characteristics |
|---|---|---------------------|-----|--------------------|---------------------|------------|---------|--|
| RSF816 G | ● | | | | | | 75 | "Green", clear system for transparent laminates and good UV stability. Provides a glossy surface. (e.g. for surfboards) |
| Biresin® CR80 | ○ | ● | ○ | | | | 85-95 | GL-approved, modular standard system for infusion and injection processes with 4 hardeners for a wide range of processing times and a Tg potential up to 95 °C |
| Biresin® CR82 | ● | | | ○ | | | 80-90 | GL-approved, modular standard system for wet lay-up with 4 hardeners for a wide range of processing times and a Tg potential up to 90 °C |
| Biresin® CR83 | | ● | ○ | | | | 80-95 | GL-approved, modular system with an extremely low viscosity and a low tendency to crystallize. Especially suitable for big and/or complex parts |
| Biresin® CR84 / CH84-20, CH120-6 | ○ | | | ○ | ● | | 80-105 | With hardeners CH84-20 and CH120-6: Thixotropic GL-approved system for filament winding with very long processing times and very good non-draining properties. |
| Biresin® CR84 / G30, S12 | ○ | | | ● | | | 95-110 | With hardeners G30 and S12: Especially suitable for press processes to bond different substrates together (e.g. for ski and snowboard) |
| Biresin® CR120 | | ● | ○ | | | | 110-115 | GL-approved, modular standard system for infusion and injection processes with 2 hardeners and a Tg potential up to 115 °C. |
| Biresin® CR122 | ● | ○ | ○ | ○ | | | 100-145 | GL-approved, modular standard system for wet lay-up with excellent properties and with additional LBA/RHV approval to build gliders, motor gliders and ultralights. |
| Biresin® CR132 | ● | | | | | | 130-165 | Basic system of a 130 °C product family with standard hardeners for a wide range of processing times. The same hardeners can be used for Biresin® CR132 FR and CR134 FR to use it as a flame retardant wet lay-up system or with Biresin® CR131 to use it for infusion or injection processes. |
| Biresin® CR132 FR | ● | | | ○ | | | 130-145 | Flame retardant version of Biresin® CR132 with UL94 V-0 classification (with CH132-2) for the production of structural parts in wet lay-up. |
| Biresin® CR134 FR | ● | | | | | | 125-135 | Flame retardant version of Biresin® CR132 with UL94 V-0 classification (with CH132-5) for the production of visual parts in wet lay-up. |
| Biresin® CR131 | | ● | ○ | | | | 125-140 | Standard system for infusion and injection processes with 4 hardeners for a wide range of processing times and a Tg potential up to 140 °C. (e.g. for wind blade moulds) |
| Epolam 2500 | ● | | | | | | 100 | Flame retardant system for wet lay-up with FAR25.853. Product meets the ECS2185.20 standard. |
| Epolam 8064 / 2026 | | | | | ● | | 140 | System with a low viscosity and a long open time. Tg up to 140 °C |
| Epolam 8064 / 8011, 8012 | | | ● | | | | 120-140 | Low viscosity RTM-system showing excellent flexibility and high reactivity. |
| Biresin® CR135 | | | ● | | | | 150 | RTM-System, which supports a high surface quality of carbon parts (Class A) |
| Biresin® CR170 | | | ● | | ○ | | 90-175 | High Tg system for RTM processes, which provides short cycle times (< 3 min.) in variothermal processes and isothermal processes. Suitable for parts, which have to run through the cathodic dip coating process. Also suitable for continuous filament winding processes. |
| Biresin® CR172 | ● | ○ | | | | | 170-175 | Nontoxic high Tg system for wet lay-up. Can also be used for vacuum infusion in certain cases. |
| Epolam 2092 | ○ | ● | | | | | 225 | High temperature resistant system for infusion and injection processes with Tg 225 °C |
| EP with Anhydride | | | | | | | | |
| Biresin® CR141 / CH141 / CA141 | | | | | | ● | 120-140 | Anhydride cured system with GL-approval for the production of carbon fibre reinforced parts. Especially suitable for pultrusion processes (e.g. for printing rollers, pipes, high performance profiles) |
| Biresin® CR144 / CH141 / CA144 | | | | | | ● | 155 | Anhydride cured system with GL-approval for the production of fibre reinforced parts. Especially suitable for pultrusion processes with glass fibres due to its high elongation at break. (e.g. for printing rollers, pipes, high performance profiles) |
| Biresin® CR144 / CH141 / CA141 | | | | | | ● | 140 | Anhydride cured system for the production of carbon fibre reinforced parts. Especially suitable for pultrusion processes (e.g. for printing rollers, pipes, high performance profiles) |
| PUR Hybrid | | | | | | | | |
| Epolam 8180 | | | ● | | | | 185 | Hot curing urethane system for industrial composites applications by RTM |

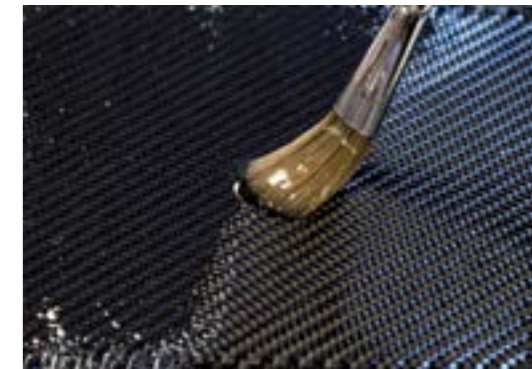
- highly recommended
- recommended
- conditionally possible

DETAILED INFORMATION: WET LAY-UP SYSTEMS AND GELCOATS

HIGH PERFORMANCE COMPOSITES SYSTEMS – WET LAY-UP

| A | B | Mixing ratio [g] | | Tg [°C] | Potlife, 100 g, RT [min] | Mixed viscosity, RT [mPas] | Impact resist. [kJ/m²] | Tensile E-Modulus [GPa] | Tensile strength [MPa] | Elongation at break [%] | Characteristics |
|--------------------------------|---------|------------------|----|---------|--------------------------|----------------------------|------------------------|-------------------------|------------------------|-------------------------|---|
| | | A | B | | | | | | | | |
| Wet Lay-up | | | | | | | | | | | |
| RSF816 G | RSF 816 | 100 | 40 | 75 | 28* | 500** | 15 | 3.2*** | 60 | 5 | "Green" system for clear laminates and good UV stability. Provides a glossy surface. (e.g. for surfboards) |
| Biresin® CR82 | CH80-1 | 100 | 27 | 83 | 50 | 740 | 68 | 2.9 | 78 | 6.1 | GL-approved, modular standard system for wet lay-up with 4 hardeners for a wide range of processing times and a Tg potential up to 90 °C |
| | CH80-2 | | | 80 | 600 | 70 | 2.9 | 78 | 6.5 | | |
| | CH80-6 | | | 220 | 400 | 55 | 2.9 | 84 | 6.4 | | |
| | CH80-10 | | | 330 | 390 | 56 | 2.9 | 82 | 6.2 | | |
| Biresin® CR84 | CH84-20 | 100 | 30 | 81 | 600 | 575 | 76 | 3.6 | 89 | 5.7 | With hardeners CH84-20 and CH120-6: Thixotropic GL-approved system for filament winding but also suitable for wet lay-up if a very long potlife or good non-draining properties are required. |
| | CH120-6 | 100 | 28 | 104 | 300 | 850 | 32 | 3.2 | 85 | 4.2 | |
| | S12 | 100 | 20 | 100 | 60 | 1,600 | 31 | 3.0 | 86 | 5.5 | With hardeners G30 and S12: Especially suitable for press processes (e.g. for ski and snowboard) to bond different substrates together |
| Biresin® CR122 | CH122-1 | 100 | 30 | 103 | 30 | 310 | 58 | 2.9 | 86 | 6.3 | GL-approved, modular standard system for wet lay-up with excellent properties and with additional LBA/RHV approval to build gliders, motor gliders and ultralights. |
| | CH122-3 | | | 90 | 370 | 47 | 2.8 | 84 | 5.4 | | |
| | CH122-5 | | | 150 | 380 | 34 | 2.8 | 84 | 5.6 | | |
| | CH122-9 | 100 | 40 | 145 | 330 | 680 | 44 | 2.6 | 87 | 6.9 | |
| Biresin® CR132 | CH132-2 | 100 | 28 | 130 | 60 | 360 | 47 | 2.6 | 79 | 5.3 | Basic system of a 130 °C product family with standard hardeners for a wide range of processing times. The same hardeners can be used for Biresin® CR132 FR, Biresin® CR134 FR and Biresin® CR131. |
| | CH132-5 | | | 150 | 550 | 32 | 2.7 | 88 | 6.2 | | |
| | CH132-7 | 100 | 32 | 135 | 210 | 550 | 33 | 2.4 | 78 | 5.7 | |
| | CH122-9 | 100 | 38 | 162 | 480 | 940 | 25 | 2.4 | 68 | 3.9 | |
| | CH172-6 | 100 | 20 | 159 | 180 | 550 | 24 | 2.7 | 80 | 4.5 | Two hardener options for Tg potential > 150 °C and long pot life. |
| Biresin® CR172 | CH170-3 | 100 | 17 | 170 | 110 | 800 | 28 | 2.9 | 70 | 3.0 | Nontoxic high Tg system for Wet Lay-up. |
| | CH172-6 | 100 | 19 | 174 | 260 | 810 | 26 | 2.8 | 76 | 3.9 | |
| Wet Lay-up – FR systems | | | | | | | | | | | |
| Biresin® CR132 FR | CH132-2 | 100 | 20 | 132 | 60 | 1,330 | 15 | 3.6 | 52 | 1.6 | Flame retardant version of Biresin® CR132 with UL94 V-0 classification (with CH132-2) for the production of structural parts in wet lay-up. |
| | CH132-5 | 100 | 20 | 142 | 160 | 2,100 | 10 | 3.6 | 43 | 1.4 | |
| | CH132-7 | 100 | 23 | 133 | 200 | 1,900 | 12 | 3.5 | 42 | 1.4 | |
| | CH172-6 | 100 | 28 | 157 | 460 | 2,100 | 15 | 3.1 | 48 | 1.8 | |
| Biresin® CR134 FR | CH132-2 | 100 | 23 | 125 | 60 | 900 | 29 | 3.0 | 62 | 3.3 | Flame retardant version of Biresin® CR132 with UL94 V-0 classification (with CH132-5) for the production of visual parts in wet lay-up. |
| | CH132-5 | 100 | 24 | 132 | 115 | 1,000 | 21 | 3.0 | 65 | 3.9 | |
| | CH132-7 | 100 | 27 | 129 | 150 | 1,000 | 22 | 2.9 | 58 | 3.0 | |
| Epilam 2500 | 2500 | 100 | 22 | 100 | 90* | 3,500** | - | 3.9*** | - | - | Flame retardant system for wet lay-up with FAR25.853. Product meets the ECS2185.20 standard. |

* 500g, RT ** Brookfield LVT, RT *** Flexural E-Modulus [GPa]



Top-down:
 ■ Motor glider produced by Schempp-Hirth with Biresin® CR122.
 ■ Biresin® CR82 with optimized mixed viscosity for Wet Lay-up.



GELCOATS

| A | B | Mixing ratio [g] | | Colour | Potlife, 500g, RT [min] | Density [g/cm³] | Shore hardness | Flexural strength [MPa] | Thermal resistance | Characteristics |
|-----------------|-------|------------------|----|------------------|-------------------------|-----------------|----------------|-------------------------|--------------------|---|
| | | A | B | | | | | | | |
| Gelcoats | | | | | | | | | | |
| Biresin® S8 | S8 | 100 | 20 | black | 25 | 1.22 | D 86 | 90 | 136 ** | Polishable to high gloss, heat resistant, good styrene resistance |
| Biresin® S12 | S12 | 100 | 8 | grey | 30 | 2.1 | D 92 | 78 | > 100 ** | Heat resistant, abrasion resistant, good solvent and styrene resistance |
| GC1 080 | GC 13 | 100 | 10 | blue/white/green | 20* | 1.74 | D 89 | 75 | 85 *** | Good solvent and styrene resistance, could be sanded to glossy aspect |
| Biresin® S19 | S19 | 100 | 12 | black | 45 – 60 | 1.75 | D 85 | 73 | > 150 *** | High mechanical and heat resistance |

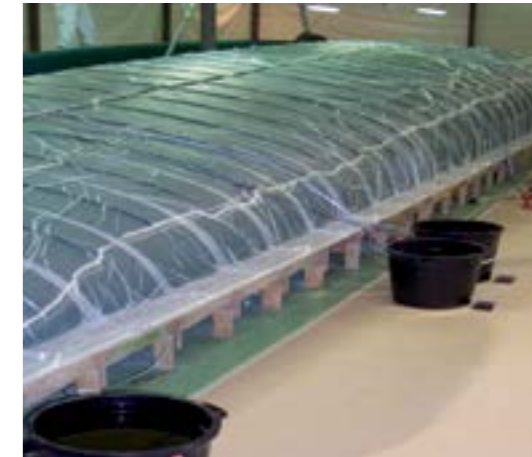
* 300 g, RT ** HDT (°C) *** Tg (°C)

DETAILED INFORMATION: INFUSION AND RTM SYSTEMS

HIGH PERFORMANCE COMPOSITES SYSTEMS - INFUSIONS

| A | B | Mixing ratio [g] | | Tg [°C] | Potlife, 100g, RT [min] | Mixed viscosity, RT [mPas] | Impact resist. [kJ/m²] | Tensile E-Modulus [GPa] | Tensile strength [MPa] | Elongation at break [%] | Characteristics |
|-----------------------|---------|------------------|----|---------|-------------------------|----------------------------|------------------------|-------------------------|------------------------|-------------------------|---|
| | | A | B | | | | | | | | |
| Infusions | | | | | | | | | | | |
| Biresin® CR80 | CH80-1 | 100 | 30 | 88 | 45 | 400 | 84 | 2.9 | 78 | 7.1 | GL-approved. Modular standard system for infusion and injection processes with 4 hardeners for a wide range of processing times and a Tg potential up to 95 °C. |
| | CH80-2 | | | 92 | 80 | 350 | 75 | 2.9 | 81 | 6.1 | |
| | CH80-6 | | | 85 | 190 | 230 | 68 | 3.0 | 83 | 6.3 | |
| | CH80-10 | | | 85 | 330 | 210 | 76 | 3.0 | 80 | 6.5 | |
| Biresin® CR83 | CH94-2 | 100 | 24 | 97 | 60 | 320 | 41 | 3.0 | 78 | 4.6 | GL-approved. Modular system with an extremely low viscosity for infusion and injection processes and a low tendency to crystallize. Especially suitable for big and/or complex parts. |
| | CH83-2 | | | 84 | 60 | 155 | 93 | 3.0 | 84 | 4.7 | |
| | CH83-6 | | | 80 | 180 | 170 | 84 | 3.2 | 91 | 8.4 | |
| | CH83-10 | | | 81 | 300 | 155 | 83 | 3.1 | 86 | 7.9 | |
| Biresin® CR120 | CH120-3 | 100 | 30 | 113 | 90 | 240 | 55 | 2.8 | 80 | 5.8 | GL-approved. Modular standard system for infusion and injection processes with 2 hardeners and a Tg potential up to 115 °C. |
| | CH120-6 | | | 115 | 180 | 250 | 50 | 2.7 | 80 | 6.1 | |
| Biresin® CR131 | CH135-4 | 100 | 26 | 138 | 160 | 540 | 27 | 2.8 | 89 | 5.7 | Standard system for infusion and injection processes with 5 hardeners for a wide range of processing times and a Tg potential up to 150 °C. (e.g. for wind blade moulds) |
| | CH132-5 | | | 28 | 136 | 140 | 46 | 2.7 | 86 | 5.9 | |
| | CH132-7 | | | 32 | 127 | 260 | 37 | 2.7 | 84 | 6.7 | |
| | CH135-8 | | | 21 | 138 | 260 | 29 | 2.8 | 89 | 6.3 | |
| | CH172-6 | | | 19 | 150 | 220 | 33 | 2.8 | 87 | 8.2 | |
| Epolam 2092 | 2092 | 100 | 50 | 225 | 400* | 550** | - | 4.6 | 26 | 1.0 | High Tg system for infusion with a Tg potential of 225 °C |

* 500g, RT ** Brookfield LVT, RT



Vacuuminfusion with Biresin® CR131.



HIGH PERFORMANCE COMPOSITES SYSTEMS - RTM

| A | B | C | Mixing ratio [g] | | | Tg [°C] | Potlife, 100g, RT [min] | Mixed viscosity, RT [mPas] | Impact resist. [kJ/m²] | Tensile E-Modulus [GPa] | Flexural E-Modulus [GPa] | Tensile strength [MPa] | Elongation at break [%] | Characteristics |
|-----------------------|---------|------|------------------|-----|------|---------|-------------------------|----------------------------|------------------------|-------------------------|--------------------------|------------------------|-------------------------|--|
| | | | A | B | C | | | | | | | | | |
| RTM | | | | | | | | | | | | | | |
| Epolam 8064 | 8011 | - | 100 | 21 | - | 123 | 45 | 320 | - | 3.4 | 2.6 | 72 | 4 | Low viscosity amine-cured laminating epoxy system showing excellent flexibility and high reactivity. |
| | 8012 | - | | 25 | - | 140 | 130 | 550 | - | 3.1 | 2.8 | 78 | 5 | |
| Biresin® CR135 | CH135-4 | - | 100 | 24 | - | 152 | 160 | 940 | 27 | 2.9 | 2.9 | 72 | 3.3 | RTM-System which supports a high surface quality of carbon parts (Class A) |
| Biresin® CR170 | CH125-1 | - | 100 | 25 | - | 116 | 24 | 1,250 | 91 | 2.4 | 2.5 | 77 | 8.1 | |
| | CH170-3 | - | | 16 | - | 172 | 90 | 1,250 | 28 | 2.8 | 2.8 | 69 | 6.1 | |
| | CH135-4 | - | | 24 | - | 153 | 140 | 2,000 | 24 | 2.8 | 2.9 | 91 | 6.0 | |
| | CH150-3 | - | | | | 143 | 60 | 1,600 | 42 | 2.7 | 2.8 | 87 | 6.6 | |
| Epolam 8180 | 8180 | 8180 | 49 | 100 | 1.25 | 185 | 25 - 30 | 200** | - | 3.4 | 2.1 | 70 | 9 | Hot curing urethane system for industrial composites applications (e.g. used for manhole covers) |

** Brookfield LVT, RT



f.i.t.r.:
 ■ Biresin® CR80 offers ideal flowing properties and good wetting behaviour.
 ■ Lightweight transporter made by Carbon Truck & Trailer.
 ■ Monocoque of the lightweight transporter produced with Biresin® CR120.
 ■ High performance - bobsleigh produced with Biresin® CR83.

DETAILED INFORMATION: FILAMENT WINDING AND PULTRUSION SYSTEMS

| HIGH PERFORMANCE COMPOSITES SYSTEMS – FILAMENT WINDING + PULTRUSION | | | | | | | | | | | | | | |
|---|---------|-------|---------------------------------------|------------------|-----|-------|---------------------|-----------------------|----------------------------|-------------------------------------|-------------------------|------------------------|-------------------------|--|
| A | B | C | Chemistry | Mixing ratio [g] | | | T _g [°C] | Potlife, 100g, RT [h] | Mixed viscosity, RT [mPas] | Impact resist. [kJ/m ²] | Tensile E-Modulus [GPa] | Tensile strength [MPa] | Elongation at break [%] | Characteristics |
| | | | | A | B | C | | | | | | | | |
| Filament Winding + Pultrusion | | | | | | | | | | | | | | |
| Biresin® CR84 | CH84-20 | - | EP cured with amine | 100 | 30 | - | 81 | 10 | 575 | 76 | 3.6 | 89 | 5.7 | With hardeners CH84-20 and CH120-6: Thixotropic GL-approved system for filament winding. Amine cured system with very long processing time and very good non-draining properties. |
| | CH120-6 | - | EP cured with amine | 100 | 28 | - | 104 | 5 | 850 | 32 | 3.2 | 85 | 4.2 | |
| Epolam 8064 | 2026 | - | EP cured with amine | 100 | 35 | - | 140 | 8-10 | 700 | - | 2.6 | 74 | 5 | System with a low viscosity at RT and long pot life at elevated temperatures. The cured system shows excellent mechanical, dynamic and thermal (hot/wet) properties and good chemical resistance. T _g up to 140 °C |
| Biresin® CR141 | CH141 | CA141 | EP cured with anhydride + accelerator | 100 | 90 | 2 | 139 | > 24 | 600 | 18 | 3.2 | 78 | 3.3 | Anhydride cured system with GL-approval for the production of carbon fibre reinforced parts. Especially suitable for pultrusion processes (e.g. for printing rollers, pipes, high performance profiles) with CH142 hardener it can be used as a two component system |
| | CH142 | - | EP cured with anhydride + accelerator | 100 | 100 | - | 119 | > 24 | 320 | 14 | 3.6 | 73 | 2.2 | |
| Biresin® CR144 | CH141 | CA141 | EP cured with anhydride + accelerator | 100 | 90 | 2 | 140 | 12 | 800 | 15 | 3.0 | 80 | 3.5 | Anhydride cured system for the production of carbon fibre reinforced parts. Especially suitable for pultrusion processes (e.g. for printing rollers, pipes, high performance profiles) |
| Biresin® CR144 | CH141 | CA144 | EP cured with anhydride + accelerator | 100 | 90 | 1-4 | 155 | > 24 | 800 | 15 | 2.9 | 98 | 6.4 | Anhydride cured system with GL-approval for the production of fibre reinforced parts. Especially suitable for pultrusion processes with glass fibres due to its high elongation at break. (e.g. for printing rollers, pipes, high performance profiles) |
| Biresin® CR201 | CH141 | CA144 | EP cured with anhydride + accelerator | 100 | 115 | 0.5-2 | 201 | > 24 | 82 | 8 | 2.85 | 50 | 1.9 | Hot curing system with a very high T _g potential up to 201 °C |



Gas bottle from LUXFER GAS CYLINDERS made with EP0912.



f.i.t.r.
 ■ Mae West Sculpture in Munich (Effnerplatz) produced with Biresin® CR84.
 ■ Segment of a 40 m pipe used for the Mae West sculpture.



ADHESIVES FOR COMPOSITES

ADHESIVES

We have been formulating tailor-made polyurethane and epoxy adhesive systems for the past 70 years for a variety of highly demanding markets on a worldwide basis. Today, we offer high end value adhesive resins for composite in automotive, aerospace, marine, general industry and wind mill industries.

Polyurethane – Structural bonding for dissimilar materials and high impact

We are offering a unique range of 2 component PUR adhesives offering a unique balance between structural properties and toughness. Polyurethane adhesives are used when dissimilar

material has to be join (CTE gap absorption), or when strong impact resistance is required.

Epoxy – Structural bonding with high modulus or temperature resistance

Structural epoxy adhesives are suitable for assembly where stiffness is required. They also keep good performances with temperature increase and under chemical stress.

Methacrylate – Multipurpose bonding

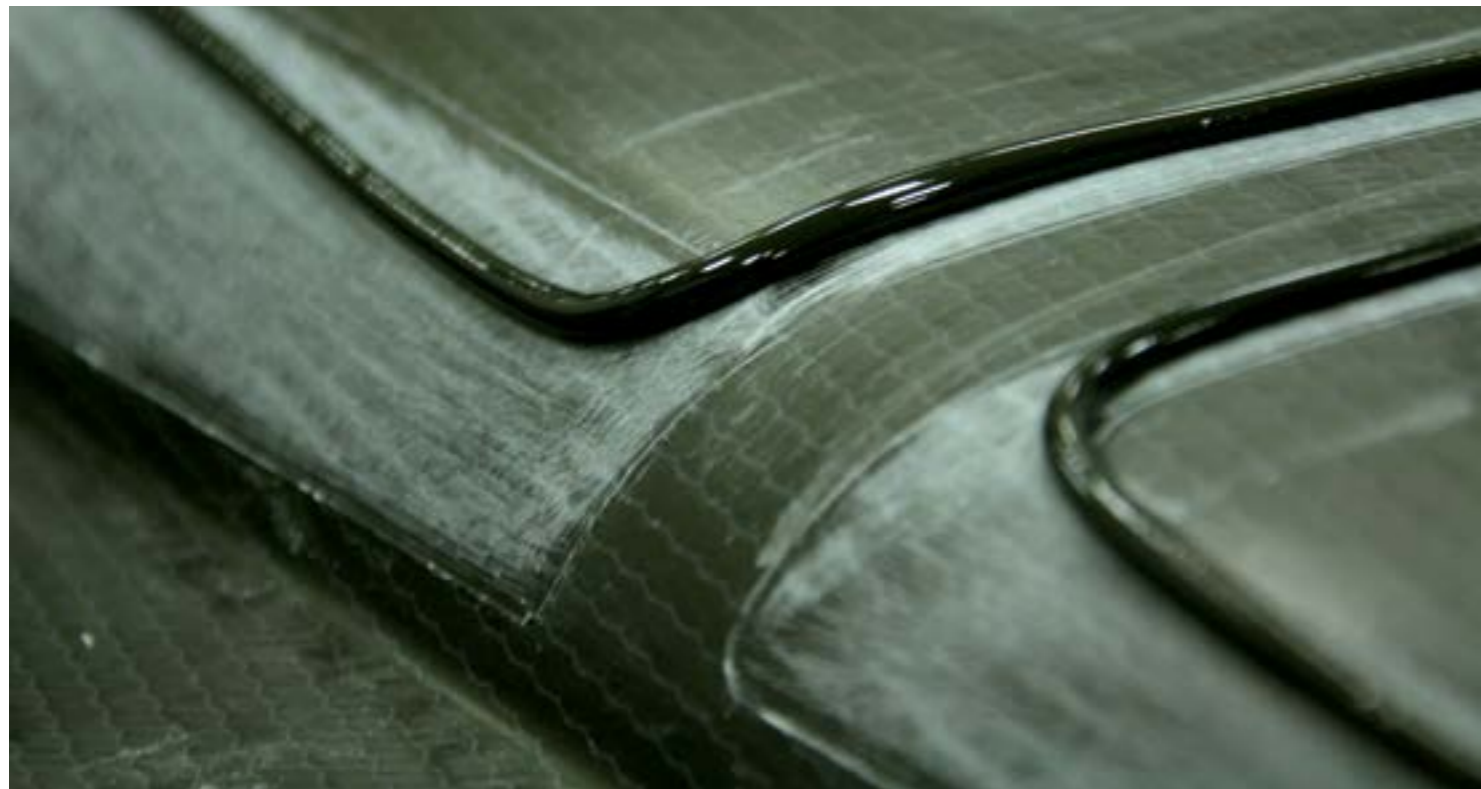
MMA-adhesives are recommended for bonding metal or plastic when operating conditions (like temperature) are not regulate. This specific chemistry allows a curing at low temperatures.

Flexible and semi rigid structural adhesives:

- Combination of flexibility & structural performance.
- Wide range of viscosities adapted to your application.
- vertical, thick, high-speed, robotic, thin layers or gap-filling.
- Shock resistance, vibration absorption.
- Approved for their performance and the durability of the assembly by rail, automotive & aerospace industries.
- High peel resistance.

High modulus and chemical resistant structural adhesives:

- Wide range of open times adjustable to the size of your parts & viscosities according to your application: vertical, thin layers or injection.
- Outstanding ageing resistance (humidity, temperature, solvent or UV).
- Manual or machine processes.



f.l.t.r.

- Carbon body sport car bonding. Adekit A252: structural 2 components PUR adhesive with high peel and elongation.
- Carbon part bonding.
- Bonding with H9952 on the skin on honeycomb (nomex or alu).



OVERVIEW ADHESIVES

► Detailed Information see page 18/19

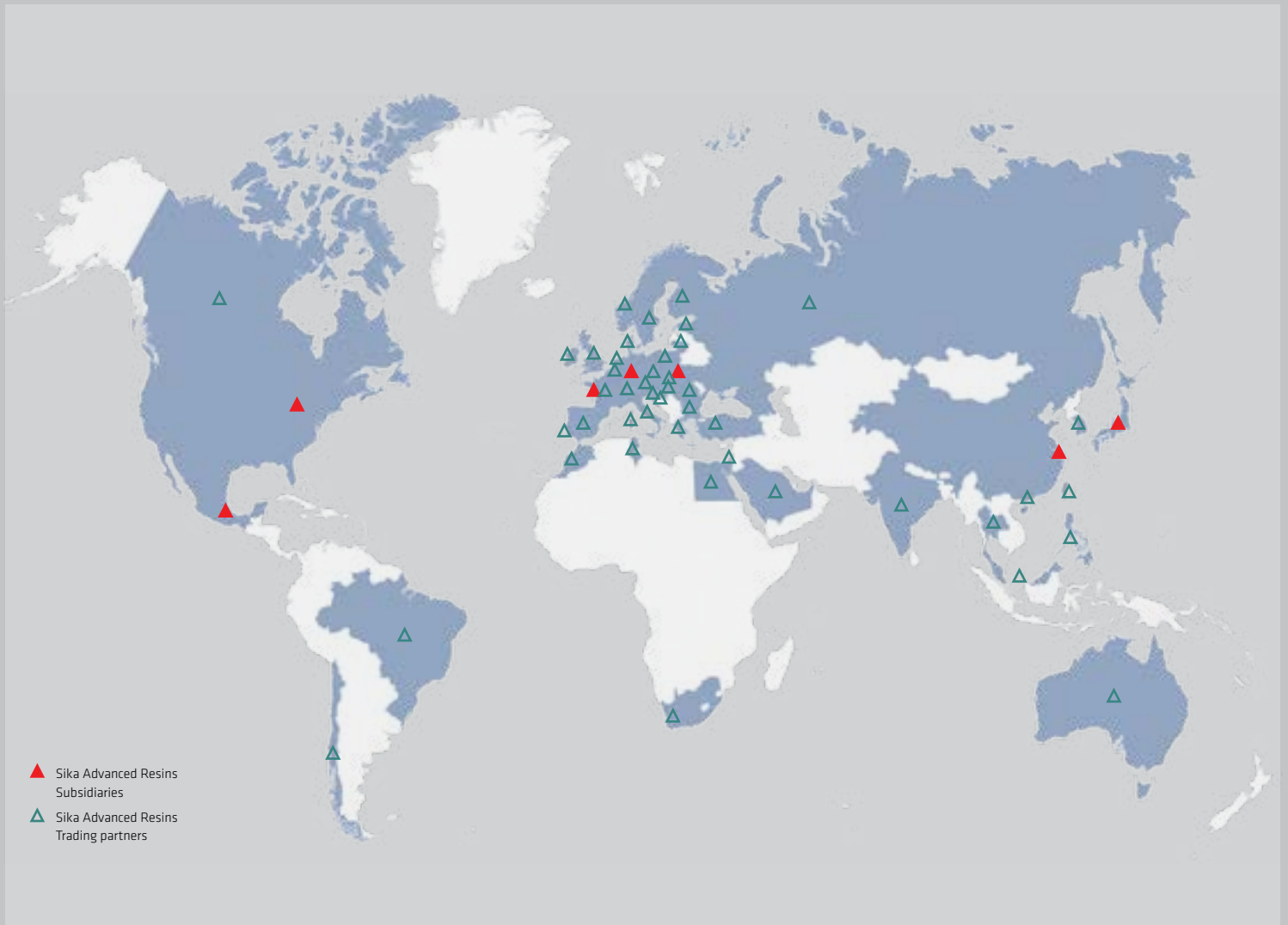
| | Open time | LSS (MPa) | Peel (N/mm) | Elongation (%) | Characteristics |
|------------------|-------------|-----------|-------------|----------------|---|
| PUR | | | | | |
| A280 A290 | 10' 3' | 16 | 12 | 95 | Structural bonding of spoiler, metallic inserts/big head to composites. Vibration absorbing. Good chemical resistance. Short handling with limited heating. Impact Resist: 30 N/mm |
| A252 | 4' | 12 | 9 | 300 | Non sagging paste product suitable for vertical applications and to fill irregular joints. Fast setting product to reduce assembly time. High flexibility. Impact Resist: 50 N/mm |
| A257 | 5' | 5 | 10 | 350 | Recommended for the bonding of plastics sensitive to the phenomena of bond line witness marks (thermoplastic, composite). Low hardness. Flexible product. Short handling with limited heating. Impact Resist: 55 N/mm |
| A236 | 25' 120' | 14 | 4 | 60 | Allows production with gaps up to 40 mm and parts assembly with large dimensions (deck/hull, windmill). Available in various reactivity's and colours (white or grey). Lloyd's Register. |
| A730 | 6' | 25 | 2 | 10 | UV stable white PU. High modulus. For fast and stiff bonding. |
| H6235 | 30' | 20 | 4 | 30 | Large dimensions assembly. Gap filling capacity. Used in industry assembling big parts. |
| MMA | | | | | |
| A300-1 A310-1 | 5' 10' | 24 | 9 | 30 35 | Excellent mechanical and thermal performances up to 120 °C. Multipurpose product with thermoplastic aspect. Product able to bond dissimilar materials. |
| EP | | | | | |
| A130 A135 | 6' | 17 | 1.5 | 3 | Fast cure at room temperature. Suitable for injection. Bonding of substrates such as composites, metal, wood, concrete. |
| A140 | 40' | 20 | 6 | 4 | Multipurpose with very good mechanical features. Pasty non sagging Gap filler material. Impact Resist: 10 N/mm |
| A155 | 60' | 35 | 3 | 8.5 | Pasty constructive adhesive with long pot life. For large composite parts, repair and maintenance. Good mechanical performance & chemical and temperature resistance. Impact Resist: 15 N/mm |
| H9011 | 100' | 24 | 5 | 9 | Multipurpose liquid adhesive. Bond most of materials. For general industry and maintenance. |
| H9951 H9951T | 50' | 26 | 4 | 10 | Non-filled adhesive for bonding large surfaces (ie panels) when mechanical and ageing as well as high peel resistance is needed. T for thixotropic product (hot cure process). Used in Railway. |
| H9952 | 120' | 22 | 5 | 3 | High shear/peel/ageing resistance. Filled with Nanoparticles. Short handling time with limited heating. Self extinguishable (EN45545 HL3 for R1, R2, R3, R6, R7, R17). Used in railway and aerospace applications. |

DETAILED INFORMATION: ADHESIVES

| ADHESIVES | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|--|------------------------------|--------|---------|-------|-------------|------------------|------------------|---------------|--------------------------|--|------------------------|-------------------------|----------------|--------------------|-----------------------|---------------|-----------------|--------------------------|-------------------|---------------------|-------------|------------|-------|--------------|------|-------|-------------|---------------------|-------------|-----------------------------|------------------------------|
| | Application, description | Colour | Liquid | Viscous | Pasty | Open time | Hardness (shore) | Viscosity (Pa.s) | Handling time | Lap shear strength (MPa) | | Peel resistance (kN/m) | Elongation at break (%) | Substrates | | | | | | | Resistance | | | | | 50ml | 400ml | Other sizes | Industrial packages | | | |
| | | | | | | | | | | | | | | Ferrous metals | Non ferrous metals | Composites, laminates | Thermo-plasts | Glass, ceramics | Foam materials (PUR, PS) | Elastomer, rubber | Polyurethane (hard) | Temperature | Chemically | Water | Shear stress | | | | | Peel stress | Ageing | |
| PUR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H6235 | Large dimensions assembly. Gap filling capacity. Used in industry assembling big parts. | grey | | | x | 30' | 45 D | 70 | 4 h | 20 | | 6 | 5 | ++ | ++ | ++ | + | 0 | ++ | 0 | + | + | 0 | ++ | ++ | + | + | | | | Drum | |
| A236 H6236 | Allows gaps up to 40mm and parts assembly with large dimensions (deck/hull, wind mill). Various reactivities and colours. Available in pail, cartridge and ready to use kit. Lloyd's Register. | grey / black / green / white | | | X | 25' 120' | 55 D | pasty | 3,5 h 6 h | 18 | | 5 | 60 | ++ | ++ | ++ | 0 | 0 | ++ | 0 | + | + | ++ | ++ | ++ | + | ++ | | X | | Drum | |
| A252 | Non sagging paste product suitable for vertical applications and to fill irregular joints. Fast setting product to reduce assembly time. High flexibility. Impact Resist: 50 N/mm | black | | | x | 4' | 75 A | 600 | 60' | 12 | | 9 | 300 | 0 | + | ++ | + | ++ | + | ++ | + | 0 | 0 | ++ | 0 | ++ | + | X | X | | Drum: H 6252 | |
| A257 | Recommended for the bonding of plastics sensitive to the phenomena of bond line witness marks (thermoplastic, composite). Low hardness. Flexible product. Short handling with limited heating. Impact Resist: 55 N/mm | black | | | x | 5' | 60 A | pasty | 90' | 5 | | 10 | 350 | + | + | ++ | ++ | ++ | ++ | 0 | + | + | + | ++ | + | ++ | ++ | | X | | Drum: H 6257 | |
| A280 A290 | Structural bonding of spoiler, metallic inserts/big head to composites. Vibration absorbing. Good chemical resistance. Short handling with limited heating. Impact Resist: 30 N/mm | beige / black | | | x | 10' 3' | 48 D | 150 | 45' 10' | 16 | | 12 | 95 | + | + | ++ | + | + | + | + | ++ | + | + | ++ | ++ | ++ | + | + | X | X | | Drum: H 6280 Drum: H 6290 |
| A730 | UV stable white PU. High modulus. For fast and stiff bonding. | white | | x | | 6' | 85 D | 20 | 30' | 25 | | 2 | 10 | ++ | ++ | ++ | + | 0 | 0 | 0 | + | + | ++ | ++ | ++ | + | ++ | | X | | | |
| MMA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A300-1 A310-1 | Excellent mechanical and thermal performances up to 120 °C. Multipurpose product with thermoplastic aspect. Product able to bond dissimilar materials. | light-brown | | | x | 5' 10' | 75 D | pasty | 20' 40' | 24 | | 9 | 30 35 | ++ | ++ | ++ | ++ | 0 | 0 | 0 | 0 | ++ | + | ++ | ++ | + | ++ | X | X | | Drum | |
| Epoxies | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A130 A135 | Fast cure at room temperature. Suitable for injection. Bonding of substrates such as composites, metal, wood, concrete. | transparent | | x | | 6' | 80 D | 45 | 15' | 17 | | 1.5 | 3 | + | + | + | 0 | + | ++ | 0 | ++ | 0 | 0 | + | ++ | 0 | + | X | | 200ml | Kit & Drum: H 9930 | |
| A140 | Multipurpose with very good mechanical features. Pasty non sagging Gap filler material. Impact Resist: 10 N/mm | light-brown / black | | | x | 40' | 80 D | 430 | 4 h 30' | 20 | | 6 | 4 | ++ | ++ | ++ | 0 | ++ | ++ | 0 | ++ | ++ | + | ++ | ++ | + | + | X | X | | Kit & Drum: H 9940 / H 9945 | |
| A155 | Pasty constructive adhesive with long pot life. For large composite parts, repair and maintenance. Good mechanical performance & chemical and temperature resistance. Impact Resist: 15 N/mm | white | | | x | 60' | 84 D | 160 | 10 h | 35 | | 3 | 8.5 | + | + | ++ | 0 | + | ++ | + | ++ | ++ | + | ++ | ++ | 0 | ++ | | X | | Drum: H 9955 | |
| H9011 | Multipurpose liquid adhesive. Bond most of materials. For general industry and maintenance. | transparent | x | | | 100' | 75 D | 45 | 7 h | 24 | | 5 | 9 | ++ | ++ | ++ | + | + | ++ | + | + | + | + | ++ | ++ | + | ++ | X | X | 200ml | Kit & Drum | |
| H9951 H9951T | Non-filled adhesive for bonding large surfaces (ie panels) when mechanical and ageing as well as high peel resistance is needed. T for thixotropic product (hot cure process). Used in Railway. | light-pink | x | | | 40' | 75 D | 9 | 6 h | 26 | | 4 | 10 | ++ | ++ | ++ | + | + | + | 0 | ++ | ++ | + | + | ++ | + | ++ | | | | Kit & Drum | |
| H9952 | High shear/peel/ageing resistance. Filled with Nanoparticles. Short handling time with limited heating. Self extinguishable (EN45545 HL3 for R1, R2, R3, R6, R7, R17). Used in railway and aerospace applications. FAR 25.853, ABD 0031. | black | | | x | 120' | 85 D | 230 | 8 h | 22 | | 5 | 3 | ++ | ++ | ++ | + | 0 | ++ | 0 | + | ++ | ++ | ++ | ++ | + | ++ | X | X | | Drum | |



Bonding of SMC parts with Adekit A280.



GLOBAL SOLUTIONS – LOCAL SERVICE

Our most current General Sales Conditions shall apply.

Please consult the Product Data Sheet prior to any use and processing.

Actual Product Data Sheets and information about additional products please find in:
www.sikaadvancedresins.com



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Subjects to alterations in the course of technical progress and also subject to error. Issue May 2019

