

**LOCTITE®**  
**BONDERITE®**  
**TECHNOMELT®**  
**TEROSON®**

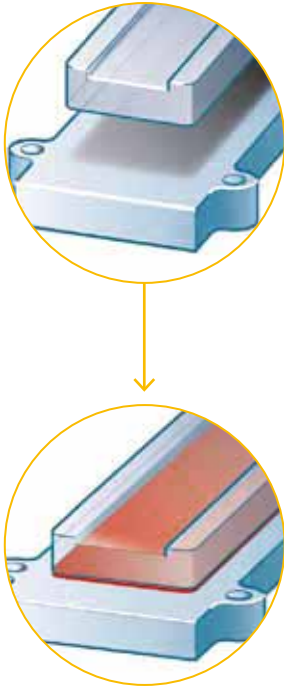
## Product Selector

Industrial Adhesive, Sealant and  
Functional Coating Solutions



# Structural Bonding

## For Demanding Requirements



### Why use a Henkel adhesive for structural bonding?

The Henkel range of structural bonding products offers a wide choice of solutions to meet the different requirements and conditions that apply to industrial design and construction.

#### Bonding

Adhesive bonding is a process in which two similar or dissimilar materials are solidly and permanently assembled using an adhesive.

Adhesives build "bridges" between the surfaces of substrates to be joined.

**To achieve the optimal bonding result, the following prerequisites must be met:**

- Compatibility of the adhesive with the materials to be bonded
- Compatibility of the adhesive with the specified requirements
- Correct application of the adhesive

### Advantages of bonding compared to conventional joining methods

#### More uniform stress distribution over the entire bond face

This has a very positive effect on the static and dynamic strength achieved. Where welding and riveting result in localised stress peaks, adhesive bonding achieves uniform distribution and absorption of stress loads.

#### No change in surface and structure of the joined materials

Welding temperatures may change the structure and therefore the mechanical properties of materials. In addition, welding, riveting and bolting all affect the visual appearance of the parts.

#### Weight saving

Adhesives are particularly popular for light-weight constructions, where thin-walled parts (wall thickness < 0.5mm) must be joined.

#### Sealed joints

Adhesives also act as sealants, preventing loss of pressure or liquids, blocking the penetration of condensation water and protecting against corrosion.

#### Joining dissimilar materials and reducing the risk of corrosion

The adhesive forms an insulating film to prevent contact corrosion when different types of metals are joined. It also acts as an electrical and thermal insulator.

## Surface preparation

The following key points should be observed for the design of bonded joints:

- The surfaces to be joined should be as large as possible for maximum load transmission capability
- Forces acting on the joint should be distributed across the entire bond line

### Joint designs suitable for adhesive bonding

All designs involving a shear, tensile or compressive load e.g. single and double lap joint, single and double cover plate, tapered overlap and double overlapping.

### Joint designs unfavourable for adhesive bonding

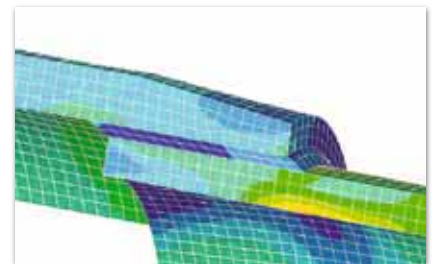
Butt joint, cleavage loading and peel loading.

## Rigid bonding

Rigid adhesives are mainly used for high load transmission to replace common mechanical joining methods. Two parts bonded with such an adhesive could be considered as structurally linked. Mechanical characteristics like high strength, high modulus and high adhesion have proven to be effective for customer applications, particularly in demanding industries like aerospace and automotive.

**Rigid bonding offers significant benefits for users:**

- Simplifies construction by increasing strength/rigidity for load transmission
- Prevents material fatigue and failure by achieving uniform transmission of loads (stress distribution) and by maintaining structural integrity (no thermal or mechanical weakening of parts)
- Saves production costs by replacing conventional mechanical fasteners (screws, rivets or welding)
- Saves material cost and saves weight by reducing material thickness while maintaining load transmission characteristics
- Allows the most varied substrate combinations, e.g. metal/plastics, metal/glass, metal/wood etc



Stress analysis of bonded pipe joint

## Available technologies

### Epoxies

- Rigid bonding
- 1K or 2K solutions
- Capability to fill large gap
- Very high strength
- For small to medium surface areas
- Very good chemical resistance

### Acrylics

- Rigid to slightly flexible bonding
- 1K or 2K solutions
- For small surface areas
- Very high strength
- Good chemical resistance

### Polyurethanes

- Slightly flexible bonding
- 2K solution
- Capability to fill large gaps
- High strength
- For medium to large surface areas
- Good chemical resistance

# Structural Bonding – Epoxies

## Product Table

### What is your focus?

| Solution                         | General bonding                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                | Fast curing                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  | High viscosity                                                                                                                                                                                                                                                                                                   | Flowable                                                                                                                                                                                                                                                                                                                                       | Clear                                                                                                                                                                                                                                                                                                                                                                |
|                                  | LOCTITE EA 3423                                                                                                                                                                                                                                                                                                  | LOCTITE EA 9483                                                                                                                                                                                                                                                                                                                                | LOCTITE EA 3430                                                                                                                                                                                                                                                                                                                                                      |
|                                  |                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                   |
| <b>Description</b>               | 2K Epoxy                                                                                                                                                                                                                                                                                                         | 2K Epoxy                                                                                                                                                                                                                                                                                                                                       | 2K Epoxy                                                                                                                                                                                                                                                                                                                                                             |
| <b>Mix ratio by volume (A:B)</b> | 1:1                                                                                                                                                                                                                                                                                                              | 2:1                                                                                                                                                                                                                                                                                                                                            | 1:1                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Mix ratio by weight (A:B)</b> | 100:70                                                                                                                                                                                                                                                                                                           | 100:46                                                                                                                                                                                                                                                                                                                                         | 1:1                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Working life</b>              | 45 min.                                                                                                                                                                                                                                                                                                          | 30 min.                                                                                                                                                                                                                                                                                                                                        | 7 min.                                                                                                                                                                                                                                                                                                                                                               |
| <b>Fixture time</b>              | 180 min.                                                                                                                                                                                                                                                                                                         | 210 min.                                                                                                                                                                                                                                                                                                                                       | 15 min.                                                                                                                                                                                                                                                                                                                                                              |
| <b>Colour</b>                    | Grey                                                                                                                                                                                                                                                                                                             | Ultra clear                                                                                                                                                                                                                                                                                                                                    | Ultra clear                                                                                                                                                                                                                                                                                                                                                          |
| <b>Viscosity</b>                 | 300 Pa·s                                                                                                                                                                                                                                                                                                         | 7 Pa·s                                                                                                                                                                                                                                                                                                                                         | 23 Pa·s                                                                                                                                                                                                                                                                                                                                                              |
| <b>Shear strength (GBMS)</b>     | 17 N/mm <sup>2</sup>                                                                                                                                                                                                                                                                                             | 23 N/mm <sup>2</sup>                                                                                                                                                                                                                                                                                                                           | 22 N/mm <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                 |
| <b>Peel strength (GBMS)</b>      | 2.7 N/mm                                                                                                                                                                                                                                                                                                         | 1.5 N/mm                                                                                                                                                                                                                                                                                                                                       | 3 N/mm                                                                                                                                                                                                                                                                                                                                                               |
| <b>Service temperature range</b> | -55°C to +120°C                                                                                                                                                                                                                                                                                                  | -55°C to +150°C                                                                                                                                                                                                                                                                                                                                | -55°C to +100°C                                                                                                                                                                                                                                                                                                                                                      |
|                                  | <b>LOCTITE EA 3423</b> <ul style="list-style-type: none"> <li>• Non-sag paste</li> <li>• Medium working life</li> <li>• Excellent chemical resistance</li> </ul> LOCTITE EA 3423 is a general purpose 2K epoxy adhesive, suitable for gap filling and vertical applications. Ideal for bonding metal components. | <b>LOCTITE EA 9483</b> <ul style="list-style-type: none"> <li>• Flowable</li> <li>• Ultra-clear</li> <li>• Low moisture absorption</li> </ul> LOCTITE EA 9483 is a general purpose 2K epoxy adhesive, suitable for bonding and potting where optical clarity and high strength are required. Ideal for bonding decorative panels and displays. | <b>LOCTITE EA 3430</b> <ul style="list-style-type: none"> <li>• Medium viscosity</li> <li>• Ultra-clear</li> <li>• Toughened</li> <li>• Water resistant</li> </ul> LOCTITE EA 3430 is a five minute 2K epoxy adhesive suitable for applications requiring an optically clear bond line. Ideal for bonding glass, decorative panels and displays, and general repair. |

\* Gel time at +120°C

\*\* Cure time at +120°C or higher: see technical data sheet

## Food contact

## High technical performance

## Food approved

## Toughened

## High temperature resistant

## LOCTITE EA 9480



2K Epoxy

2:1

100:46.5

110 min.

270 min.

Off-white

8.7 Pa·s

24 N/mm<sup>2</sup>

0.4 N/mm

-55°C to +120°C

**LOCTITE EA 9480**

- Good chemical resistance
- Toughened
- Good adhesion on stainless steel

LOCTITE EA 9480 is a food approved 2K epoxy adhesive suitable for bonding metals and most plastic parts in and around food processing areas.

**KTW approval for potable water, Fraunhofer approval for incidental food contact**

## LOCTITE EA 9466



2K Epoxy

2:1

100:50

60 min.

180 min.

Yellowish

35 Pa·s

37 N/mm<sup>2</sup>

8 N/mm

-55°C to +120°C

**LOCTITE EA 9466**

- Medium viscosity
- Low density – SG = 1.0
- High strength

LOCTITE EA 9466 is a toughened 2K epoxy adhesive suitable for multi-purpose applications requiring a long open time and high bonding strength. Ideal for a wide variety of substrates such as metals, ceramics and most plastics.

## LOCTITE EA 9514



1K Epoxy

–

–

5 min.\*

30 min.\*\*

Grey

45 Pa·s

46 N/mm<sup>2</sup>

9.5 N/mm

-55°C to +200°C

**LOCTITE EA 9514**

- Suitable for induction curing
- High shear and peel strength
- Excellent chemical resistance
- High temperature resistance (+200°C)

LOCTITE EA 9514 is a toughened 1K epoxy adhesive suitable for gap filling and resistant to high operating temperatures. Ideal for applications requiring toughness such as filter and magnet bonding.

## LOCTITE EA 9497



2K Epoxy

2:1

100:50

3 hr

8 hr

Grey

12 Pa·s

20 N/mm<sup>2</sup>

–

-55°C to +180°C

**LOCTITE EA 9497**

- Medium viscosity
- High thermal conductivity
- High compressive strength
- High temperature resistance (+180°C)

LOCTITE EA 9497 is a thermally conductive 2K epoxy adhesive for high temperature filling and bonding applications. Ideal for heat dissipation.

# Structural Bonding – Epoxies

## Product List

| Product                         | Technology | Colour mix   | Mixed viscosity            | Mix ratio by volume | Working life   | Fixture time | Service temperature range |  |
|---------------------------------|------------|--------------|----------------------------|---------------------|----------------|--------------|---------------------------|--|
| <b>LOCTITE EA Double Bubble</b> | 2K Epoxy   | Clear        | 35 Pa·s                    | 1:1                 | 3 min.         | 5 min.       | -55°C to +100°C           |  |
| <b>LOCTITE EA 3032</b>          | 2K Epoxy   | Grey         | 80 Pa·s                    | 1:1                 | 120 min.       | 480 min.     | -55°C to +80°C            |  |
| <b>LOCTITE EA 3421</b>          | 2K Epoxy   | Clear amber  | 37 Pa·s                    | 1:1                 | 30 – 150 min.  | 240 min.     | -55°C to +120°C           |  |
| <b>LOCTITE EA 3423</b>          | 2K Epoxy   | Grey         | 300 Pa·s                   | 1:1                 | 30 – 60 min.   | 180 min.     | -55°C to +120°C           |  |
| <b>LOCTITE EA 3425</b>          | 2K Epoxy   | Yellow/white | 1350 Pa·s                  | 1:1                 | 55 – 105 min.  | 240 min.     | -55°C to +120°C           |  |
| <b>LOCTITE EA 3430</b>          | 2K Epoxy   | Ultra-clear  | 23 Pa·s                    | 1:1                 | 5 – 10 min.    | 15 min.      | -55°C to +100°C           |  |
| <b>LOCTITE EA 3450</b>          | 2K Epoxy   | Grey         | 35 Pa·s                    | 1:1                 | 4 – 6 min.     | 15 min.      | -55°C to +100°C           |  |
| <b>LOCTITE EA 3455</b>          | 2K Epoxy   | Grey         | Pasty                      | 1:1                 | 40 min.        | 120 min.     | -55°C to +100°C           |  |
| <b>LOCTITE EA 4108</b>          | 1K Epoxy   | Silver       | 170 Pa·s                   | –                   | –              | Heat curing  | -55°C to +180°C           |  |
| <b>LOCTITE EA 9250</b>          | 2K Epoxy   | White        | 45 Pa·s                    | 3:1                 | 9 min.         | 12 min.      | -55°C to +150°C           |  |
| <b>LOCTITE EA 9450</b>          | 2K Epoxy   | Translucent  | 200 Pa·s                   | 1:1                 | 2 – 7 min.     | 13 min.      | -55°C to +100°C           |  |
| <b>LOCTITE EA 9461</b>          | 2K Epoxy   | Grey         | 72 Pa·s                    | 1:1                 | 40 min.        | 240 min.     | -55°C to +120°C           |  |
| <b>LOCTITE EA 9464</b>          | 2K Epoxy   | Grey         | 96 Pa·s                    | 1:1                 | 10 – 20 min.   | 180 min.     | -55°C to +120°C           |  |
| <b>LOCTITE EA 9466</b>          | 2K Epoxy   | Yellowish    | 35 Pa·s                    | 2:1                 | 60 min.        | 180 min.     | -55°C to +120°C           |  |
| <b>LOCTITE EA 9480</b>          | 2K Epoxy   | Off-white    | 8.7 Pa·s                   | 2:1                 | 110 – 190 min. | 270 min.     | -55°C to +120°C           |  |
| <b>LOCTITE EA 9483</b>          | 2K Epoxy   | Ultra-clear  | 7 Pa·s                     | 2:1                 | 25 – 60 min.   | 210 min.     | -55°C to +150°C           |  |
| <b>LOCTITE EA 9489</b>          | 2K Epoxy   | Grey         | 45 Pa·s                    | 1:1                 | 60 – 120 min.  | 300 min.     | -55°C to +120°C           |  |
| <b>LOCTITE EA 9492</b>          | 2K Epoxy   | White        | 30 Pa·s                    | 2:1                 | 15 min.        | 75 min.      | -55°C to +180°C           |  |
| <b>LOCTITE EA 9497</b>          | 2K Epoxy   | Grey         | 12 Pa·s                    | 2:1                 | 165 – 255 min. | 480 min.     | -55°C to +180°C           |  |
| <b>LOCTITE EA 9514</b>          | 1K Epoxy   | Grey         | 45 Pa·s                    | –                   | –              | Heat curing  | -55°C to +200°C           |  |
| <b>TEROSON EP 5055</b>          | 2K Epoxy   | Grey         | A: 145 Pa·s;<br>B: 75 Pa·s | 1:1                 | 75 min.        | 270 min.     | -55°C to +100°C           |  |

|  | Tensile strength       | Peel strength  | Pack sizes                | Comments                                                                                                 |
|--|------------------------|----------------|---------------------------|----------------------------------------------------------------------------------------------------------|
|  | —                      | —              | 3g                        | For small and quick repairs, fast curing                                                                 |
|  | —                      | —              | Not available in the U.K. | Multiple purpose bonder, suitable for contact with potable water (approved to the Waters Byelaws Scheme) |
|  | 28 N/mm <sup>2</sup>   | 2 – 3 N/mm     | 50ml, 200ml, 1kg          | Structural adhesive, general purpose, long open time                                                     |
|  | 24 N/mm <sup>2</sup>   | 2 – 3 N/mm     | 50ml, 1kg                 | Multiple purpose bonder, excellent for metals, good humidity resistance                                  |
|  | 27 N/mm <sup>2</sup>   | 1.5 – 2.5 N/mm | 50ml, 200ml               | Multiple purpose bonder, excellent for metals, for large surfaces, thixotropic                           |
|  | 36 N/mm <sup>2</sup>   | 3 N/mm         | 24ml, 50ml, 200ml         | Multiple purpose bonder, fast cure, ultra-clear                                                          |
|  | —                      | —              | 25ml                      | Structural adhesive, fast cure, ideal for metal repair                                                   |
|  | —                      | —              | Not available in the U.K. | Structural adhesive, fast cure, high viscosity                                                           |
|  | —                      | —              | Not available in the U.K. | Free flowing, high chemical resistance, looks like silver solder                                         |
|  | —                      | —              | Not available in the U.K. | Thixotropic, high temperature resistance, good chemical resistance, cream coloured, fast set             |
|  | 17 N/mm <sup>2</sup>   | 0.6 N/mm       | 50ml, 200ml, 1kg          | Multiple purpose bonder, fast cure (5 min.), gap filling, translucent                                    |
|  | 30 N/mm <sup>2</sup>   | 10 N/mm        | 50ml, 400ml, 20kg         | Structural adhesive, toughened, gap filling                                                              |
|  | —                      | 7 – 10 N/mm    | 50ml, 400ml               | Structural adhesive, toughened, gap filling, fast cure                                                   |
|  | 32 N/mm <sup>2</sup>   | 8 N/mm         | 50ml, 400ml, 1kg          | Toughened multiple purpose bonder, high bond strength for all substrates                                 |
|  | 47 N/mm <sup>2</sup>   | 0.4 N/mm       | 50ml, 400ml               | Multiple purpose bonder, approved for incidental food contact and potable water                          |
|  | 47 N/mm <sup>2</sup>   | 1.5 N/mm       | 50ml, 400ml, 1kg          | Multiple purpose bonder, ultra-clear, excellent for panels and displays                                  |
|  | 14 N/mm <sup>2</sup>   | 2.2 N/mm       | 50ml                      | Structural adhesive, general purpose, extended working life                                              |
|  | 31 N/mm <sup>2</sup>   | 1.6 N/mm       | 50ml, 400ml               | High temperature resistance, high chemical resistance                                                    |
|  | 52.6 N/mm <sup>2</sup> | —              | 50ml, 400ml               | High temperature resistance, thermally conductive, excellent for bonding metal components (thixotropic)  |
|  | 44 N/mm <sup>2</sup>   | 9.5 N/mm       | 300ml, 1kg                | High temperature resistance, heat resistant bonding, toughened, high mechanical resistance               |
|  | 23 N/mm <sup>2</sup>   | 4 N/mm         | 250ml                     | Crash resistant structural bonder for car panels                                                         |



# Structural Bonding – Acrylics

## Product Table

| Solution                    | No-mix                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                            |                                                                                                                                                                                                                 |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             | General purpose                                                                                                                                                                                                                                                                                  | High temperature                                                                                                                                                                                                           | Glass bonding                                                                                                                                                                                                   |
|                             | LOCTITE AA 330                                                                                                                                                                                                                                                                                   | LOCTITE AA 3342                                                                                                                                                                                                            | LOCTITE AA 3298                                                                                                                                                                                                 |
|                             |                                                                                                                                                                                                                 |                                                                                                                                          |                                                                                                                              |
| Activator                   | 7388                                                                                                                                                                                                                                                                                             | 7386                                                                                                                                                                                                                       | 7386                                                                                                                                                                                                            |
| Mix ratio by volume (A:B)   | –                                                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                          | –                                                                                                                                                                                                               |
| Colour                      | Pale yellow                                                                                                                                                                                                                                                                                      | Yellow opaque                                                                                                                                                                                                              | Green-grey                                                                                                                                                                                                      |
| Viscosity                   | 67,500 mPa·s                                                                                                                                                                                                                                                                                     | 90,000 mPa·s                                                                                                                                                                                                               | 29,000 mPa·s                                                                                                                                                                                                    |
| Working life                | –                                                                                                                                                                                                                                                                                                | –                                                                                                                                                                                                                          | –                                                                                                                                                                                                               |
| Fixture time                | 3 min.                                                                                                                                                                                                                                                                                           | 1 – 1.5 min.                                                                                                                                                                                                               | 3 min.                                                                                                                                                                                                          |
| Shear strength (GBMS)       | 15 – 30 N/mm <sup>2</sup>                                                                                                                                                                                                                                                                        | 15 – 30 N/mm <sup>2</sup>                                                                                                                                                                                                  | 26 – 32 N/mm <sup>2</sup>                                                                                                                                                                                       |
| Service temperature (up to) | +100°C                                                                                                                                                                                                                                                                                           | +180°C                                                                                                                                                                                                                     | +120°C                                                                                                                                                                                                          |
| Pack sizes                  | 1 ltr, 5 ltr                                                                                                                                                                                                                                                                                     | 300ml                                                                                                                                                                                                                      | 300ml                                                                                                                                                                                                           |
|                             | <b>LOCTITE AA 330</b> <ul style="list-style-type: none"> <li>• General purpose product</li> <li>• Good impact resistance</li> <li>• Ideal for bonding dissimilar substrates like PVC, phenolic and acrylic compounds</li> <li>• Use with activator LOCTITE SF 7386 or LOCTITE SF 7388</li> </ul> | <b>LOCTITE AA 3342</b> <ul style="list-style-type: none"> <li>• High temperature resistance</li> <li>• Good impact resistance</li> <li>• Good humidity resistance</li> <li>• Use with activator LOCTITE SF 7386</li> </ul> | <b>LOCTITE AA 3298</b> <ul style="list-style-type: none"> <li>• Very good adhesion on glass</li> <li>• High strength</li> <li>• Good impact resistance</li> <li>• Use with activator LOCTITE SF 7386</li> </ul> |



## Pre-mix

## Magnet bonding

## LOCTITE AA 326



7649

–

Yellow to amber

18,000 mPa·s

–

3 min.

15 N/mm<sup>2</sup>

+120°C

50ml, 250ml

**LOCTITE AA 326**

- Product for magnet bonding
- Medium viscosity (thixotropic)
- Good adhesion to different types of ferrite
- Use with activator LOCTITE SF 7649

## General purpose

## LOCTITE AA 3295



–

1:1

Green

17,000 mPa·s

4 min.

5 – 10 min.

25 N/mm<sup>2</sup>

+120°C

50ml, 600ml

**LOCTITE AA 3295**

- 2K general purpose product
- Good impact resistance
- Bonding of metals, ceramics and plastics

## Clear bond line

## LOCTITE AA V5004



–

1:1

Pale mauve, clear

18,000 mPa·s

0.5 min.

3 min.

21 N/mm<sup>2</sup>

+80°C

50ml

**LOCTITE AA V5004**

- Clear bond line after curing
- Fast curing
- Medium strength
- Good adhesion to metals and plastics

## Polyolefin bonder

## LOCTITE AA 3038



–

1:10

Yellow

12,000 mPa·s

4 min.

&gt; 40 min.

13 N/mm<sup>2</sup> (PBT)

+100°C

50ml, 490ml, 15kg, 18kg

**LOCTITE AA 3038**

- Very good adhesion to polyolefin substrates (PP, PE)
- Good impact resistance
- Good adhesion to e-coated metals

# Structural Bonding – Acrylics

## Product List

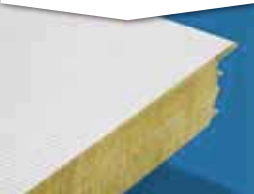
| Product                 | Activator       | Mix ratio by volume (A:B) | Colour            | Viscosity    | Working life |  |
|-------------------------|-----------------|---------------------------|-------------------|--------------|--------------|--|
| <b>LOCTITE AA 319</b>   | LOCTITE SF 7649 | –                         | Light amber       | 2,750 mPa·s  | –            |  |
| <b>LOCTITE AA 326</b>   | LOCTITE SF 7649 | –                         | Yellow to amber   | 18,000 mPa·s | –            |  |
| <b>LOCTITE AA 329</b>   | LOCTITE SF 7386 | –                         | Light straw       | 26,500 mPa·s | –            |  |
| <b>LOCTITE AA 330</b>   | LOCTITE SF 7388 | –                         | Pale yellow       | 67,500 mPa·s | –            |  |
| <b>LOCTITE AA 366</b>   | LOCTITE SF 7649 | –                         | Yellow to amber   | 7,500 mPa·s  | –            |  |
| <b>LOCTITE AA 3038</b>  | –               | 1:10                      | Yellow            | 12,000 mPa·s | 4 min.       |  |
| <b>LOCTITE AA 3295</b>  | –               | 1:1                       | Green             | 17,000 mPa·s | 4 min.       |  |
| <b>LOCTITE AA 3298</b>  | LOCTITE SF 7386 | –                         | Green-grey        | 29,000 mPa·s | –            |  |
| <b>LOCTITE AA 3342</b>  | LOCTITE SF 7386 | –                         | Yellow opaque     | 90,000 mPa·s | –            |  |
| <b>LOCTITE AA 3504</b>  | LOCTITE SF 7649 | –                         | Amber             | 1,050 mPa·s  | –            |  |
| <b>LOCTITE AA V1315</b> | –               | 1:1                       | Off-white         | Thixotropic  | –            |  |
| <b>LOCTITE AA V5004</b> | –               | 1:1                       | Pale mauve, clear | 18,000 mPa·s | 0.5 min.     |  |

|  | Fixture time | Shear strength (GBMS)      | Service temperature (up to) | Pack sizes                | Comments                  |
|--|--------------|----------------------------|-----------------------------|---------------------------|---------------------------|
|  | 1 min.       | 10 N/mm <sup>2</sup>       | +120°C                      | 0.5g kit                  | Glass-metal bonder        |
|  | 3 min.       | 15 N/mm <sup>2</sup>       | +120°C                      | 50ml, 250ml               | Magnet bonder             |
|  | 1 min.       | 20 N/mm <sup>2</sup>       | +100°C                      | 315ml, 1 ltr              | Fast fixture              |
|  | 3 min.       | 15 – 30 N/mm <sup>2</sup>  | +100°C                      | 1 ltr, 5 ltr              | General purpose           |
|  | –            | 13.5 N/mm <sup>2</sup>     | +120°C                      | 250ml                     | Additional UV cure        |
|  | > 40 min.    | 13 (PBT) N/mm <sup>2</sup> | +100°C                      | 50ml, 490ml, 15kg, 18kg   | PO bonder                 |
|  | 5 – 10 min.  | 25 N/mm <sup>2</sup>       | +120°C                      | 50ml, 600ml               | General purpose           |
|  | 3 min.       | 26 – 32 N/mm <sup>2</sup>  | +120°C                      | 300ml                     | Glass bonding             |
|  | 1 – 1.5 min. | 15 – 30 N/mm <sup>2</sup>  | +180°C                      | 300ml                     | High temperature          |
|  | –            | 22 N/mm <sup>2</sup>       | +120°C                      | Not available in the U.K. | Additional UV cure        |
|  | 15 min.      | 15 N/mm <sup>2</sup>       | +120°C                      | 50ml                      | Composite/plastic bonding |
|  | 3 min.       | 21 N/mm <sup>2</sup>       | +80°C                       | 50ml                      | Clear bond line           |



# Structural Bonding – Polyurethanes

## Product Table

| Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Large surface bonding                                                              |                                                                                     |                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Gap variation tolerance                                                            |                                                                                     |                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1K                                                                                 |                                                                                     | 2K                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | General purpose                                                                    | Fast curing                                                                         | General purpose                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | LOCTITE UR 7221                                                                    | LOCTITE UR 7228                                                                     | LOCTITE UK 8103                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |
| Technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1K PU                                                                              | 1K PU                                                                               | 2K PU                                                                                |
| Viscosity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5,500 – 10,500 mPa·s                                                               | 5,500 – 10,500 mPa·s                                                                | 8,000 – 10,000 mPa·s                                                                 |
| Initial strength                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2 – 4 hr                                                                           | 10 – 15 min.                                                                        | 5 – 8 hr                                                                             |
| Working life at 20°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | –                                                                                  | –                                                                                   | 40 – 70 min.                                                                         |
| Tensile shear strength                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | > 6 N/mm <sup>2</sup>                                                              | > 6 N/mm <sup>2</sup>                                                               | > 6 N/mm <sup>2</sup>                                                                |
| Service temperature range (short exposure)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | -40°C to +80 (+100)°C                                                              | -40°C to +80 (+100)°C                                                               | -40°C to +80 (+120)°C                                                                |
| Pack sizes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 11lb kit                                                                           | 1kg, 30kg                                                                           | 250kg                                                                                |
| <div> <div> <b>Handy Hints</b> <ul style="list-style-type: none"> <li>• LOCTITE SF 8040 is used for cleaning tanks, pumps, hoses and mixing heads of metering equipment</li> <li>• LOCTITE SF 7515 can be used to increase ageing resistant of polyurethane adhesives on metals in humid conditions. For further information please refer to the TDS.</li> <li>• Refill working packs into new buckets to prevent applying unmixed adhesive from the bottom of the working pack</li> </ul> </div> <div> <b>LOCTITE UR 7221</b> <ul style="list-style-type: none"> <li>• Long open time</li> <li>• Multi-purpose</li> <li>• Foaming</li> <li>• IMO approval</li> </ul> <p>A 1K PU adhesive which cures with humidity from the air or fine water spray to bond PVC and PU rigid foams to lacquered or (epoxy primer) coated metal sheets. Good ratio of open time to press time.</p> </div> <div> <b>LOCTITE UR 7228</b> <ul style="list-style-type: none"> <li>• Short fixture time</li> <li>• Foaming</li> <li>• IMO approval</li> </ul> <p>A 1K PU adhesive which cures with humidity from the air or fine water spray to bond PVC and PU rigid foams to lacquered or (epoxy primer) coated metal sheets. Very fast application for panel bonding.</p> </div> <div> <b>LOCTITE UK 8103</b> <ul style="list-style-type: none"> <li>• Multi-purpose</li> <li>• Different acceleration levels available</li> <li>• Good flow properties</li> <li>• IMO approval</li> </ul> <p>A general purpose 2K PU adhesive, easy to spread over large surface areas for bonding coated metals and PU foams, especially in the shipbuilding industry.</p> </div> </div> |                                                                                    |                                                                                     |                                                                                      |

## Structural bonding

## Gap filling

1K

2K

Low temperature  
resistance

Elastic bonding

Primerless adhesion

Good adhesion to  
plastics

High strength

**LOCTITE  
UK 8202****TEROSON  
PU 8597 HMLC****LOCTITE  
UK 8326 B30****LOCTITE  
UK 1366 B10****LOCTITE  
UK 1351 B25**

2K PU

1K PU

2K PU

2K PU

2K PU

8,000 – 10,000 mPa·s

Pasty

250,000 – 310,000 mPa·s

400,000 – 500,000 mPa·s

400,000 – 500,000 mPa·s

8 – 10 hr

1 h/4 hr\*

3 – 4 hr

40 – 60 min.

1 – 2 hr

80 – 120 min.

–

25 – 35 min.

7 – 13 min.

20 – 30 min.

> 12 N/mm<sup>2</sup>> 5 N/mm<sup>2</sup> at 5 mm layer> 12 N/mm<sup>2</sup>> 10 N/mm<sup>2</sup>> 20 N/mm<sup>2</sup>

-190°C to +80 (+150)°C

-40°C to +90 (+120)°C

-40°C to +80 (+150)°C

-40°C to +80 (+100)°C

-40°C to +120 (+150)°C

24kg pail

310ml cartridge,  
400ml foil, 570ml foil, set

3.6kg combi pack

415ml twin cartridge,  
25kg

400ml twin cartridge

**LOCTITE UK 8202**

- Good flexibility at low temperatures
- High strength

A low viscous 2K PU adhesive suitable for the construction of panels for LNG/LPG tankers complying with the regulations of American Bureau of Shipping (ABS).

**TEROSON PU 8597 HMLC**

- High modulus
- Low conductivity
- Elastic
- Stress compensation

An elastic 1K PU adhesive which cures by moisture from the air. Used for direct glazing in automotive industry and in joints where tension should be leveraged by the adhesive (elastic bonding).

**LOCTITE UK 8326 B30**

- Primerless metal adhesion
- Good ageing stability
- Sag resistant

A sag resistant 2K PU adhesive which is suitable for vertical application combining primerless metal adhesion with good elastic and shock absorption properties for use in trailer production.

**LOCTITE UK 1366 B10**

- Short fixture time
- Good adhesion to plastics and metal
- Shock absorbent

A multi purpose, sag resistant cartridge grade 2K PU adhesive with a very good extrusion rate and outstanding adhesion to metals and plastics. Slightly elastic for good shock absorption.

**LOCTITE UK 1351 B25**

- GL approved
- High strength
- No tempering required

A cartridge grade 2K PU adhesive with high strength and stiffness and good compressive strength. It is certified by Germanischer Lloyd for bonding in wind power applications.

# Structural Bonding – Polyurethanes

## Product List (2K)

| Product                 | Technology | Viscosity               | Mix ratio by weight | Working life at 20°C | Initial strength | Tensile strength                       |  |
|-------------------------|------------|-------------------------|---------------------|----------------------|------------------|----------------------------------------|--|
| LOCTITE UK 1351 B25     | 2K PU      | 400,000 – 500,000 mPa·s | 2:1 vol.            | 20 – 30 min.         | 1 – 2 hr         | > 20 N/mm <sup>2</sup>                 |  |
| LOCTITE UK 1366 B10     |            | 400,000 – 500,000 mPa·s | 4:1 vol.            | 7 – 13 min.          | 40 – 60 min.     | > 10 N/mm <sup>2</sup>                 |  |
| LOCTITE UK 8101*        |            | Liquid                  | 4:1                 | 50 – 70 min.         | 5 – 8 hr         | > 9 N/mm <sup>2</sup>                  |  |
| LOCTITE UK 8103*        |            | 8,000 – 10,000 mPa·s    | 5:1                 | 40 – 70 min.         | 5 – 8 hr         | > 6 N/mm <sup>2</sup>                  |  |
| LOCTITE UK 8126*        |            | 300 – 900 mPa·s         | 100:65              | 45 – 70 min.         | –                | > 15 N/mm <sup>2</sup>                 |  |
| LOCTITE UK 8160*        |            | Pasty                   | 5:1                 | 60 – 90 min.         | 5 – 8 hr         | > 7 N/mm <sup>2</sup>                  |  |
| LOCTITE UK 8202*        |            | 8,000 – 10,000 mPa·s    | 4:1                 | 80 – 120 min.        | 8 – 10 hr        | > 12 N/mm <sup>2</sup>                 |  |
| LOCTITE UK 8303 B60*    |            | 200,000 – 300,000 mPa·s | 6:1                 | 60 – 75 min.         | 4 – 5 hr         | > 12 N/mm <sup>2</sup>                 |  |
| LOCTITE UK 8306 B60*    |            | 250,000 – 310,000 mPa·s | 5:1                 | 55 – 65 min.         | 4 – 5 hr         | > 12 N/mm <sup>2</sup>                 |  |
| LOCTITE UK 8309*        |            | 850,000 mPa·s           | 5:1                 | 40 – 60 min.         | 3.5 – 4 hr       | > 9 N/mm <sup>2</sup>                  |  |
| LOCTITE UK 8326 B30*    |            | 250,000 – 310,000 mPa·s | 5:1                 | 25 – 35 min.         | 3 – 4 hr         | > 12 N/mm <sup>2</sup>                 |  |
| LOCTITE UK 8436*        |            | 500 – 900 mPa·s         | 2:1                 | 90 – 130 sec         | 50 – 60 min.     | –                                      |  |
| LOCTITE UK 8445 B1 W*   |            | Liquid                  | 100:22              | 70 – 74 sec          | –                | > 6 N/mm <sup>2</sup>                  |  |
| TEROSON PU 6700         |            | Pasty                   | 1:1 vol.            | 10 min.              | 30 min.          | > 12 N/mm <sup>2</sup>                 |  |
| TEROSON PU 8630 2K HMLC |            | Pasty                   | 100:0.3 vol.        | 25 min.              | 2 hr***          | > 4 N/mm <sup>2</sup><br>at 5 mm layer |  |
| TEROSON PU 9225 SF ME   |            | Pasty                   | 1:1 vol.            | ~150 sec             | 6 min            | 13 N/mm <sup>2</sup>                   |  |

| Consumption per m <sup>2</sup> | Service temperature range (short exposure) | Pack sizes                                                                                | Comments                                                                                                                                                                                    |
|--------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| –                              | -40°C to +120 (+150)°C                     | 400ml twin cartridge                                                                      | Pasty/sag resistant, high strength, high compressive strength, no tempering necessary, GL approved as Duromeric Adhesive according to Rules for Classification and Construction, II, Part 2 |
| –                              | -40°C to +80 (+100)°C                      | 415ml twin cartridge, 25kg                                                                | Pasty/sag resistant, short fixture time, cartridge grade, good adhesion to plastics and metal, shock absorbent                                                                              |
| 200 – 400g                     | -40°C to +80 (+120)°C                      | Not available in the U.K.                                                                 | Low viscosity                                                                                                                                                                               |
| 200 – 400g                     | -40°C to +80 (+120)°C                      | 250kg drum                                                                                | Low viscosity, multi-purpose, different acceleration levels available, good flow properties, IMO approval for shipbuilding (wheel mark, low spread of flame)                                |
| –                              | -40°C to +80 (+150)°C                      | Not available in the U.K.                                                                 | Low viscosity, good penetration properties for laminates e.g. in the ski and snowboard industry                                                                                             |
| 200 – 500g                     | -190°C to +80 (+150)°C                     | 3.6kg combi pack**,                                                                       | Very pasty, IMO approval for shipbuilding (wheel mark, low spread of flame)                                                                                                                 |
| 200 – 400g                     | -190°C to +80 (+150)°C                     | 24kg pail                                                                                 | Liquid, good flexibility at low temperatures, high strength, ABS type approval (shipbuilding), Bureau Veritas (type approval liquefied Gas Tanks)                                           |
| 200 – 500g                     | -40°C to +80 (+150)°C                      | 24kg pail, 300kg drum                                                                     | Multi purpose, pasty/sag resistant, DIN 4102 B1, IMO approval for shipbuilding (wheel mark, low spread of flame)                                                                            |
| 200 – 500g                     | -40°C to +80 (+150)°C                      | Not available in the U.K.                                                                 | Pasty/sag resistant, high strength and good elasticity, different working life versions available                                                                                           |
| 200 – 500g                     | -40°C to +80 (+150)°C                      | 30kg pail                                                                                 | Pasty/sag resistant, good workability, used for truck body assembly                                                                                                                         |
| 200 – 500g                     | -40°C to +80 (+150)°C                      | 3.6kg combi pack**                                                                        | Pasty/sag resistant, primerless metal adhesion, good ageing stability                                                                                                                       |
| –                              | -40°C to +80 (+120)°C                      | Not available in the U.K.                                                                 | Good adhesion properties and excellent flowability                                                                                                                                          |
| –                              | -40°C to +80 (+150)°C                      | Not available in the U.K.                                                                 | Liquid, fast setting for top lid bonding                                                                                                                                                    |
| –                              | -40°C to +80 (+140)°C                      | 50ml (2 x 25ml) cartridge,<br>250ml (2 x 125ml) cartridge,<br>620ml (2 x 310ml) cartridge | Easy to use                                                                                                                                                                                 |
| –                              | -40°C to +90 (+120)°C                      | 310ml cartridge                                                                           | Warm applied, high modulus, low conductivity, 2K material, 2 hours drive away time acc. to European standard                                                                                |
| –                              | -40°C to +80 (+140)°C                      | 50ml (2 x 25ml) cartridge                                                                 | Developed for plastic repairs                                                                                                                                                               |

\*\* Combi packs include hardener component LOCTITE UK 5400

\*\*\* Drive away time



# Structural Bonding – Polyurethanes

## Product List (1K)

| Product                        | Technology | Viscosity            | Open time at 23°C, 50% RH | Initial strength | Curing time | Tensile shear strength                   |  |
|--------------------------------|------------|----------------------|---------------------------|------------------|-------------|------------------------------------------|--|
| <b>LOCTITE UR 7220</b>         | 1K PU      | 5,500 – 10,500 mPa·s | 4 – 6 hr                  | 6 – 10 hr        | 3 days      | > 6 N/mm <sup>2</sup>                    |  |
| <b>LOCTITE UR 7221</b>         |            | 5,500 – 10,500 mPa·s | 40 – 60 min.              | 2 – 4 hr         | 2 days      | > 6 N/mm <sup>2</sup>                    |  |
| <b>LOCTITE UR 7225</b>         |            | 5,500 – 10,500 mPa·s | 20 – 25 min.              | 50 – 70 min.     | 1 day       | > 6 N/mm <sup>2</sup>                    |  |
| <b>LOCTITE UR 7228</b>         |            | 5,500 – 10,500 mPa·s | 7 – 9 min.                | 10 – 15 min.     | 1 day       | > 6 N/mm <sup>2</sup>                    |  |
| <b>LOCTITE UR 7388</b>         |            | 3,000 – 5,000 mPa·s  | 7 – 9 min.                | 10 – 15 min.     | 1 day       | > 6 N/mm <sup>2</sup>                    |  |
| <b>LOCTITE UR 7396</b>         |            | 2,000 – 4,000 mPa·s  | 25 – 35 min.              | 60 – 90 min.     | 1 day       | > 7 N/mm <sup>2</sup>                    |  |
| <b>LOCTITE UR 7398</b>         |            | 3,000 – 6,000 mPa·s  | 5 – 7 min.                | 7.5 – 9.5 min.   | 5 – 7 days  | > 4 N/mm <sup>2</sup>                    |  |
| <b>TEROSON PU 8596</b>         |            | Pasty                | 25 min.                   | 6 hr*            | 5 – 7 days  | > 5 N/mm <sup>2</sup><br>with 5 mm layer |  |
| <b>TEROSON PU 8597 HMLC</b>    |            | Pasty                | 20 min.                   | 1 hr / 4 hr*     | 5 – 7 days  | > 5 N/mm <sup>2</sup><br>with 5 mm layer |  |
| <b>TEROSON PU 8599 HMLC</b>    |            | Pasty                | 15 min.                   | 15 min.*         | 5 – 7 days  | > 4 N/mm <sup>2</sup><br>with 5 mm layer |  |
| <b>TEROSON PU 9097 PL HMLC</b> |            | Pasty                | 25 min.                   | 1 hr*            | 5 – 7 days  | > 5 N/mm <sup>2</sup><br>with 5 mm layer |  |

### Cleaner:

LOCTITE SF 8040 (viscosity – 3 mPa·s) in 30kg pack. Rinsing and cleaning agent for 1K and 2K polyurethane adhesives / high dissolving capacity / low evaporation rate.

For further information, please refer to the TDS and MSDS.

| Consumption per m <sup>2</sup> | Service temperature range (short exposure) | Pack sizes                                   | Comments                                                                                                                           |
|--------------------------------|--------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 100 – 200g                     | -40°C to +80 (+100)°C                      | Not available in the U.K.                    | Very long open time for large panel applications, foaming                                                                          |
| 100 – 200g                     | -40°C to +80 (+100)°C                      | 11 lb                                        | Long open time, foaming, IMO approval for shipbuilding (wheel mark, low spread of flame)                                           |
| 100 – 200g                     | -40°C to +80 (+100)°C                      | 1,000kg container                            | Medium open time, foaming, IMO approval for shipbuilding (wheel mark, low spread of flame)                                         |
| 100 – 200g                     | -40°C to +80 (+100)°C                      | 1kg, 30kg jerry can                          | Short fixture time, foaming, IMO approval for shipbuilding (wheel mark, low spread of flame)                                       |
| 100 – 200g                     | -40°C to +80 (+100)°C                      | 1,000 kg container                           | Low viscosity, fast setting                                                                                                        |
| 100 – 200g                     | -40°C to +80 (+100)°C                      | Not available in the U.K.                    | Low viscosity, thermally accelerated, medium open time                                                                             |
| 120 – 150g                     | -40°C to +80 (+100)°C                      | Not available in the U.K.                    | Low viscosity, thermally accelerated, IMO approval for shipbuilding (wheel mark, low spread of flame)                              |
| –                              | -40°C to +90 (+120)°C                      | 310ml cartridge, set                         | 6 hours drive away time acc. to FMVSS                                                                                              |
| –                              | -40°C to +90 (+120)°C                      | 310ml cartridge, 400ml foil, 570ml foil, set | High modulus, low conductivity, 4 hours drive away time acc. to European standard (frontal crash test at 64 km/h with 40% overlap) |
| –                              | -40°C to +90 (+120)°C                      | 310ml cartridge, 400ml, set                  | Warm applied, high modulus, low conductivity, 15 minutes drive away time acc. to FMVSS                                             |
| –                              | -40°C to +90 (+120)°C                      | 310ml cartridge, set                         | Primerless adhesion, high modulus, low conductivity, 1 hour drive away time acc. to FMVSS                                          |

