

## Merbenit RV30 + RV55 for railway vehicles

### **Elastic adhesives and sealants for railway vehicle manufacturing**

Only tested and classified components may be used to ensure that railway passengers and attendants are safe in the event of fire. Spark ignitions may also directly affect adhesives and sealants, which must therefore contribute to stopping the fire from spreading.

Merbenit RV30 and Merbenit RV55 now offer an elastic sealant and an elastic adhesive based on the latest SMP design and both tested and classified in accordance with EN 45545-2.

Their properties add value in that they reliably bond a very wide range of materials. They provide a well-balanced set of characteristics and options for interesting applications before, during and after installation.

### **SMP-based adhesives and sealants**

Both products excel in their state-of-the-art composition that saves users the effort of cumbersome precautions. Silane-modified polymers' broad adhesion range and user-friendly processing contribute to making processes more reliable.

Both Merbenit RV30 and Merbenit RV55 are:

- free from silicone
  - Both products are compatible with paints
  - They are paintable if successfully tested beforehand
  - They will not cause silicone contamination
  - They can be replaced without restrictions during repairs
- Free from phthalates/solvents and isocyanate
  - Easy to use, no particular safety equipment required
  - The available products comply with locally applicable regulations
- and they have a very broad adhesion range
  - Minimal pre-treatment of the substrate
  - May reduce the amount of primers, cleaning agent, activators etc. required
  - Improved process reliability
  - Can be used to bond any combination of construction materials
  - Ideal for repairs because they develop excellent adhesion to almost all common adhesives and sealants (except for silicone)

These SMP-based products sell as a single-component system. They cure through contact with moisture, starting from the outer contact face and working towards the inside. Both products tolerate many different ambient conditions. Although very humid and very dry atmospheres have to be taken into account in project calculations, they merely result in minor process alterations and not in any reduction in the quality of the final product

### **Working with Merbenit RV30**

As a sealant, Merbenit RV30 can be used to create visually appealing joints. Its development focused very much on making the product easy to work with. This adds much value and makes it a feasible alternative to silicone, owing to its unrestricted compatibility with paints.

When handling Merbenit RV30, you will notice the following positive aspects:

- free from silicone
  - Both products are compatible with paints
  - They are paintable if successfully tested beforehand
  - They will not cause silicone contamination
  - They can be replaced without restrictions during repairs
- Processing
  - The product has considerable “body” (resistance), which makes finishing joints by hand a lot easier
  - Enables the rapid reworking of joints
  - Visually appealing and pleasing joints

Faster laying work and simpler reworking of joints shorten the entire application process, resulting in joints that look good, not least because of the low amount of shrinkage.

### **Working with Merbenit RV55**

Elastic adhesives are designed to bond a wide range of different materials reliably. Tooling time is a key factor in ensuring safe and reliable application. Merbenit RV55 offers a whole host of advantages. Apart from the wide adhesion range discussed above, it excels in the following properties:

- Viscosity
  - Merbenit RV55 grouts well, by design, which means that it does not provide much initial tack.
  - A notched trowel or other suitable tool may be used during application to evenly spread it over the substrate surface.
- Tooling time
  - A tooling time of max. 30 minutes is enough to bond even large or complicated geometrical shapes.
  - The processing steps can be coordinated perfectly.
- Substrate and ambient conditions
  - No shock curing, even in very humid conditions
  - Can also be applied to moist substrates
  - Applies reliably even if conditions fluctuate

## Technical data

During and after complete curing, both products have the following technical properties:

Property	Merbenit RV30	Merbenit RV55
Full curing after 24h	≥ 3.0 mm	≥ 2.0 mm
Shore A hardness	approx. 26	approx. 58
Tensile strength	approx. 1.5 MPa	approx. 3.0 Mpa
Elongation at break	approx. 225%	approx. 170%
Module at 100% elongation	approx. 0.9 Mpa	approx. 2.6 Mpa
Change in volume	≤ 3 %	≤ 3 %

Merbenit RV30 is a fairly soft sealant whose flexibility allows it to follow and compensate for movements. Its soft and elastic composition absorbs and dissipates all forces and therefore means that fewer bonded parts will tear or break off.

Since Merbenit RV30 cures comparatively quickly, it will also cure sufficiently and reliably well under adverse conditions.

Merbenit RV55's high final bonding strength and high module value mean it can create a secure bond between two parts. The flexible and sound-absorbing adhesive helps to further reduce noise. Applied in layers about 1 to 6 mm thick, the paste-like product produces stress-free bonds and compensates for dimensional tolerances.

### Temperature resistance of Merbenit RV55

Once completely cured, Merbenit RV55 can withstand a very broad range of temperatures, which allows the adhesive to survive annealing processes easily.

Laboratory tests revealed that finished test specimens did not change under the following loads:

- 24 hrs at +120 °C
- 180 minutes at +180 °C
- 30 minutes at +200 °C

Owing to the large number of varnishes and paints available on the market, we recommend testing the product's response to such media in advance. Ensure that the adhesive has cured fully before exposing it to any temperature loads, otherwise there is a risk of bubbles forming or the polymer eroding.

## Assessment under EN 45545-2

RST Rail System Testing GmbH tested and assessed both Merbenit RV30 and Merbenit RV55 based on the specifications of EN 45545-2.

Part 2 of EN 45545-2 “Railway applications – Fire protection on railway vehicles” sets the requirements for the fire behaviour of materials and components for use in railway vehicles.

Both products were successfully tested against the R22 and R23 requirement sets and were therefore found to be fit for indoor and outdoor use. The tests were carried out on fully cured product boards.

Classification:

Requirement	Hazard level Merbenit RV30	Hazard level Merbenit RV55
R22	HL1, HL2	HL1, HL2, HL3
R23	HL1, HL2	HL1, HL2, HL3

According to their classification, both products have thus been shown to be fit for the following utilisation and construction categories:

Utilisation category	Construction category N: standard vehicles	Construction category A: vehicles for automatic operation without personnel specifically trained for emergencies	Construction category D: Double-deckers	Construction category S: Sleeper and couchette coaches
1	HL1	HL1	HL1	HL2
2	HL2	HL2	HL2	HL2
3	HL2	HL2	HL2	HL3
4	HL3	HL3	HL3	HL3

Note:

In-system testing is likely to yield different results. Please contact us if your application goes beyond the existing classifications.