



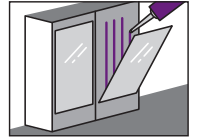
**RAMSAUER®**

# 660

**LASTING  
BONDS.**

# Spiegel Kleber

**1-component hybrid adhesive**



## Technical data sheet

Version: 09-2024

### Tests:

· EMICODE EC1<sup>PLUS</sup> „very low emissions“



## 1. Technical data

Basis	Hybrid adhesive - MS polymer
Skin formation time	~ 12 Min. (23°C/50% relative humidity)
Full curing time	~ 2.6 mm/24 hours (at +23°C/50% relative humidity)
Density	~ 1.5 (EN ISO 1183-1)
Shore A hardness	~ 41 (DIN ISO 7619-1)
Volume shrinkage	~ 2.4% (EN ISO 10563)
Non-sag property	< 3 mm
Tensile stress at break	~ 1,7N/mm <sup>2</sup> (DIN 53504-1 (S2))
Elongation at break	~ 522% (DIN 53504-1 (S2))
Resistance to high and low temperatures	-40°C to +90°C (long-term exposure)
Application temperature (substrate, environment)	+5°C up to +35°C
Colours	White, grey
Packaging	290 ml cartridge
Shelf life of cartridges	12 months in original packaging in cool and dry storage conditions

## 2. Properties / application areas

The 660 Spiegel Kleber is a ready-to-use 1K adhesive based on MS-Hybrid. The material is neutral-curing, odorless and almost free of shrinkage. The adhesive does not contain any solvents, silicone or isocyanate and adheres to all commercially available mirror coverings without additional primer. The 660 Spiegel Kleber does not attack the mirror coating and is characterized by its very good initial adhesion and rapid curing. It can also be used on damp surfaces. The adhesive is suitable for permanently bonding mirrors to ceramics, glass, wood, concrete, as well as many metallic and plastic surfaces. When used on painted or coated glass, preliminary tests must be carried out.



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### 3. Substrate preparation

The adhesion surfaces must be capable of bearing, and free of dust, oil and grease. Pre-cleaning with 828 Grundreiniger is generally recommended on non-absorbent substrates, but compatibility with sensitive surfaces should be checked in advance to avoid surface damage. If required, carefully pretreat the adhesion surfaces using a suitable primer. Sanding with a fine sanding fleece can further improve adhesion on smooth surfaces. Due to the many different coating systems, an adhesion test is recommended before application to painted surfaces.

Substrate	Preparation
Glass	828 Grundreiniger
Tiles	828 Grundreiniger
Pine wood	Dust free
Wet ground concrete	Dust free / Primer 70
Concrete, formwork smoothness	Dust free
Steel DC 04	828 Grundreiniger
Hot-dip galvanised steel	828 Grundreiniger
Stainless steel	828 Grundreiniger
Zinc	828 Grundreiniger
Aluminium	828 Grundreiniger
Aluminium AlMg1	828 Grundreiniger
Aluminium AlCuMg1	828 Grundreiniger
Aluminium 6016	828 Grundreiniger
Anodised aluminium	828 Grundreiniger
Brass MS 63 Hardness F 37	828 Grundreiniger
PVC Kömadur ES	828 Grundreiniger
PVC soft	828 Grundreiniger
PC Makrolon Makroform 099	828 Grundreiniger
Polystyrene PS Iroplast	828 Grundreiniger / Primer 100
ABS Metzoplast ABS 7 H	828 Grundreiniger / Primer 100
PET	828 Grundreiniger
Copper	828 Grundreiniger
PMMA Röhm sanitary quality	828 Grundreiniger
GRP	828 Grundreiniger
Mirror*2	828 Grundreiniger

This table is based on adhesion tests with Rocholl test specimens under laboratory conditions. In practice, the adhesive properties depend on a large number of external influences (weathering, contamination, loads, etc.). Therefore, this table is for guidance only and does not constitute a binding statement. For further information please contact our application engineering department. The tests carried out above only refer to the adhesive properties and have no significance in terms of compatibility with the stated substrates.

\*1: Different PLEXIGLAS® types exhibit certain differences in their chemical resistance. Stresses must be expected in some applications. The resulting stresses, in combination with certain agents, can lead to "stress cracking". The duration, temperature and concentration of the acting substance have a fundamental influence on any "stress cracks". When using our products in combination with PLEXIGLAS®, the suitability must therefore be checked in advance.

\*2: The compatibility with various mirror coatings by different manufacturers is regularly tested in our laboratory. Advance testing is recommended due to production processes of the various manufacturers, into which we have no insights, and as a function of the existing substrate and bonding variants.



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### 4. Processing

**General instructions:** The expiry date of the material must be observed, otherwise the properties of the product can no longer be guaranteed. If the products are stored and/or transported over a longer period of time at higher temperatures/humidity, the shelf life may be reduced or the material properties may change. Strong environmental influences (e.g. high temperature, UV exposure, chemical influences such as vapours) can affect the properties of the material to varying degrees. Before applying, the user must ascertain that the building materials (solid, liquid or in gaseous form) are compatible with the sealant in the contact area. Pay attention to the ambient and substrate temperature during application because as excessively high or low temperatures can lead to changes in properties. Due to the large number of possible influences during processing, it is always advisable for the processor to carry out a test processing before use. Good ventilation must be ensured during processing and curing.

**Preparation of the adhesion surfaces:** The substrate must be prepared in accordance with the instructions in section 3 of this technical data sheet.

**Application of the sealant:** 660 Spiegel Kleber must never be applied in spots, but in vertical stripes. Do not damage the protective coating of the mirror! In addition, the mirror should be bonded to the substrate immediately after applying the adhesive. Apply at least four beads of adhesive with a maximum width of 10 mm vertically for each m<sup>2</sup> of mirror surface. Additional bonding with mirror tapes is useful and promotes fixation to the substrate. The mirror must be fixed in the desired position until the mirror adhesive has cured. The mirror adhesive reaches its required strength after 24 hours at 20 °C and at approx. 50% relative humidity! It is essential to ensure perfect contact with the adhesive-surfaces or -flanks.

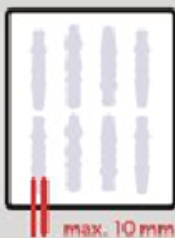
**After-treatment:** For external mirror grouting on ceramics, glass and metal, we recommend our products 130 Alkoxy, 131 Multiflex and 445 Stein & Sanitär.

### Install correctly

Make sure the mirror is processed professionally. For detailed instructions, please note the technical guidelines for the glazier trade no 11, installation of mirrors, from Verlagsanstalt Handwerk GmbH

#### Mirror fixing with adhesive

correct



Spread the glue in strips of max. 10 mm wide on the back of the mirror.

wrong



Don't apply the adhesive along the edges of the mirror.

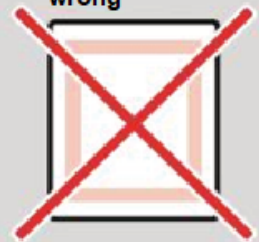
#### Mirror fixing with adhesive tape

correct



Place short pieces of the adhesive tape as shown

wrong



Don't place the adhesive tape along the edges of the mirror

During bonding, always observe the applicable technical guidelines for the glazing trade No. 11 "Installation of mirrors". Additional mechanical fastening is necessary for overhead bonding.

### 5. Meets the requirements of IVD instruction sheet

No. 30 | Assembly adhesive for bonding and sealing



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### 6. Maintenance and care

Ramsauer sealants and adhesives are carefully manufactured using state-of-the-art production processes. This results in high-quality products which, when processed appropriately, enable durable and resistant bonding and jointing. However, in order to guarantee the functionality of the joints and bondings, they need to be checked at regular intervals in accordance with the loads they are exposed to (chemical, mechanical, thermal, UV radiation), to clean them and to renew them if necessary (also see information sheet "Care and maintenance of joint seals").

### 7. Application restrictions

- The above information refers to internal tests on mirrors with a perfect mirror coating. Guaranteed avoidance of blinding for mirrors is only valid if the mirror coating has sufficient thickness (0.05 mm) and is undamaged. Due to the different fields of application and mirror coatings\*, in-house tests must be carried out.
- Antique mirrors require additional mechanical fastening due to the low adhesive strength of the reflective coating.
- 1-K materials are not suitable for surface bonding and joints over 10mm deep. If the 1-component material is used in coating thicknesses of more than 10mm, the curing cannot be guaranteed.
- For use in conjunction with splinter-protection films, or similar, in-house tests must be carried out.
- Not suitable for use with natural stone.
- No adhesion to plastics with low-energy surfaces such as PE, PP or PTFE
- Not approved for use in combination with insulating glass edge composite systems

### 8. Safety instructions

Please refer to the current EC safety data sheets. Data sheets are available at any time from our website at [www.ramsauer.eu](http://www.ramsauer.eu).

### 9. Liability for defects

The information, in particular the suggestions for the processing and use of our products, is based on our knowledge and experience in normal use cases at the time of printing. Depending on the specific circumstances, with regard to the substrate, processing and environmental conditions, the results may differ from our information. No warranty or liability claim for any reason whatsoever arises from these instructions or from any instructions issued verbally. Ramsauer guarantees that its products comply with the technical properties specified in the technical data sheets until the expiry date. Product users must consult the latest technical data sheet, which can be requested from us. Our current General Terms and Conditions apply; you can download these at any time from our homepage at [www.ramsauer.eu](http://www.ramsauer.eu). On publication of a new version/revision of the technical data sheet, all previous versions of the respective product lose their validity.