



# SILIKAL® RM 613

## Cold plastic resin for area road markings

SILIKAL® RM 613 is a liquid, solvent free binder for the production of 1.5 – 3 mm wear-resistant low dirt-pick-up outdoor area markings like cycle paths. SILIKAL® RM 613 is UV-stable and free of softeners and toxic ingredients. The resulting paste-like markings can be applied from +5 °C to +35 °C using rollers or trowels. The rapid curing time of about 30 minutes ensures the road to be quickly reopened for traffic.

### Resin characteristics

SILIKAL® RM 613 is the binder (“the heart”) for various cold plastic formulations. It utilizes non-toxic accelerators that yield a long pot-life. SILIKAL® RM 613 contains pigment-wetting polymers and exhibits a low sedimentation tendency when filled. The resin can be used for low and high temperature applications. The cured resin is permanently semi-flexible in order to minimize cracking due to substrate movements.

### Characteristics as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C (ISO 4 mm cup)	DIN EN ISO 2431	90 – 130 sec.
Density $D_4^{20}$	EN ISO 2811-2	0.95 – 1.01 g/cm <sup>3</sup>
Flash point	DIN 51 755	+10 °C
Packaging	180 kg steel drums or 900 kg IBC container	
Storage time	Minimum of 6 months in original packing, below +25 °C	

### Cold plastic formulations based on Silikal® RM 613

About 1/4 weight parts of SILIKAL® RM 613 are mixed with 3/4 of fillers and pigments. By varying fillers, pigments or additives, properties can be adjusted. Attached are guideline formulations for red area markings like cycle lanes, car charging areas and alike. The formulations work well with Silikal local fillers.

Different fillers need to be checked with respect to induced viscosity, curing without tack, polymerisation or sedimentation during storage, texture and others. Silikal offers its expertise to work with you finding your local fillers and/or adapting the cold plastic formula in order to meet local specifications. For white pigmentation, we recommend using rutile type titanium dioxide. Inorganic pigments such as iron oxides are suitable for coloured paints. Carbon black is not suitable as black pigment. Paint additives, such as silicone oils, dispersing agents or anti-settling agents may lead to a tacky surface, reduce hardness or other curing related issues. The cured road markings have a good resistance to water, salt, grease and mineral oil.

### Cold plastic area marking, red Guideline recipe for trowel application

Item	Component	Guideline recipe (% by weight)	Comments
1	<b>SILIKAL® RM 613</b>	27.2%	SILIKAL® RM 613 is the standard resin for areas
2	BYK Anti Terra 204	0.3%	Dispersing agent, flocculating, increases visc, increases shelf life and transportability
3	Hydrophilic fumed silica – e.g. HDK N20	0.3%	Thixotropic agent, use higher amounts to pronounce surface roughness, respectively lower amounts for better flow and levelling
4	BYK 1790	0.3%	Defoamer, check whether bubbles come out upon addition
5	Colour Pigment	3.0%	Check for settling behaviour on shaker, check for reactivity-changes
6	CaCO <sub>3</sub> <10 µm	15.4%	Fine filler with oil absorption 15 – 20 g/100 g; ≈300 mesh; too high oil absorption leads to too high viscosity; verify usability by observing settling behaviour of final marking on a shaker: 24h at 50 rpm
7	Quartz sand 0.06 – 0.3 mm	15.5%	Slow stirring when adding these coarse fillers at the end, coarse sand may be substituted with glass beads for better flow, check for settling behaviour on shaker
8	Quarz sand 0.1 – 2 mm	38.0%	
9	<b>Total:</b>	<b>100.0%</b>	<b>Average consumption: approx. 1.7 kg/m<sup>2</sup> per mm thickness</b>

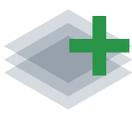
#### Silikal product information

Data sheet L SILIKAL® RM 613  
Page 1 of 3  
July 2021



#### Silikal GmbH

Ostring 23 · 63533 Mainhausen · Germany  
Tel.: +49 (0) 61 82 / 92 35-0  
mail@silikal.de · www.silikal.de



### Cold plastic area marking, red Guideline recipe for wool-roller application

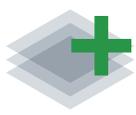
Item	Component	Guideline recipe (% by weight)	Comments
1	SILIKAL® RM 613	30.0%	SILIKAL® RM 613 is the standard resin for areas
2	BYK Anti Terra 204	0.3%	Dispersing agent, flocculating, increases visc, increases shelf life and transportability
3	Hydrophilic fumed silica – e.g. HDK N20	0.4%	Thixotropic agent, use higher amounts to pronounce surface roughness, respectively lower amounts for better flow and levelling
4	BYK 1790	0.3%	Defoamer, check whether bubbles come out upon addition
5	Red Pigment	3.0%	Check for settling behaviour on shaker, check for reactivity-changes
6	CaCO <sub>3</sub> <10 µm	18.5%	Fine filler with oil absorption 15 – 20 g/100 g; ≈300 mesh; too high oil absorption leads to too high viscosity; verify usability by observing settling behaviour of final marking on a shaker: 24h at 50 rpm
7	Quartz sand 0.06 – 0.3 mm	20.0%	Slow stirring when adding these coarse fillers at the end, coarse sand may be substituted with glass beads for better flow, check for settling behaviour on shaker
8	Quarz sand 0.1 – 1,5 mm	27.5%	
9	<b>Total:</b>	<b>100.0%</b>	<b>Average consumption: approx. 1.6 kg/m<sup>2</sup> per mm thickness</b>

### Typical hardener dosages for 2 mm thick cold plastic areas (with respect to complete marking – item 9 from table above)

Temperature	SILIKAL® BPO % pbw.	Pot life min	Hardening time min
+5 °C	2.0	17	50
+20 °C	1.3	10	30
+35 °C	0.6	8	20

### Typical features of line road markings based on Silikal® RM 613

Resin content	25 – 35%
Viscosity at 50 RpM, small spindle	3.5 – 5.0 Pa · s
Density	1.6 – 1.7 g/ml
2K (aka: 98/2) / 3K (aka: 1:1; 50/50; 50/48/2)	yes / no
Flexibility of cured road marking	flexible
Product thickness	1.5 – 3 mm
Pot-life / curing-time of appropriate films at +20 °C	10 min / 30 min with 1.3% BPO-50
Application temperature	+5 °C to +35 °C
Application surface temperature	+5 °C to +45 °C
Application window of relative humidity & dew point	The relative humidity needs to be < 80%, surface temperature needs to be 3 °C above dew point (check a dew point table)
Recommended drop on beads	0.4 – 0.8 mm (Type I) retro reflection only for white and yellow
Contains softener / contains solvent / VOC acc. to ASTM 2369 –10	no / no / < 30 g/litre
Storage stability	6 months in sealed original packaging, stored below +30 °C



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## Application

Cold plastics manufactured using SILIKAL® RM 613 can be applied directly onto asphalt, whereas concrete has to be pretreated (e.g. milling, shot blasting, high-pressure water blasting) and primer needs to be applied (recommendation: SILIKAL® RU 380). The curing procedure is a chemical reaction initiated by mixing approximately 0.6% (high ambient temperature) up to 2% (low ambient temperature) of the hardener into the marking. Powder hardener is mixed in bucket by bucket and the paste-like markings are applied in layers of 1.5 – 3 mm by hand using a trowels or rollers. The pot life is about 10 minutes and curing time is about 30 minutes.

Drop on beads for retroreflection shall be sprinkled onto the fresh marking as soon as possible (within seconds). Glass beads need to have a silanization for MMA/cold-plastics otherwise they will not stick to the marking. Glass beads typically incorporate friction grains for skid resistance.

## Special remarks

Road markings based on our guide formulations do not automatically meet local or national requirements. All formulations must be designed (together with drop on blends, if required) and checked with regard to local requirements. Silikal does not assume any responsibility, which lies beyond the control of the resin itself. Silikal guarantees the product specification of its resins.

## Shelf life

Min. 6 months in original packaging, below +30 °C. Transport and storage may lead to floating of waxes. The material is ready again after mixing back to homogeneous state.

## Safety advise

See section 2 of the safety data sheet for the specific component.



### Other applicable documents

SILIKAL® BPO	Data sheet BPO
General notes	Technical documentation MMA
Safety data sheets	For all Silikal products used

The information in this data sheet replaces all previous information about the product and its application. The application instructions as well as the technical data of the product are only guidelines. The buyer is responsible for the application and claims of third parties.

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Data sheet L SILIKAL® RM 613  
Page 3 of 3  
July 2021



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Ostring 23 · 63533 Mainhausen · Germany  
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