

## Cold plastic resin for line road markings

SILIKAL® RM 610 is a liquid, solvent free binder for the production of 1.5 – 3 mm wear-resistant low dirt-pick-up outdoor line markings. SILIKAL® RM 610 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 manual or machine driven draw-boxes. The rapid curing time of about 25 minutes ensures the road to be quickly reopened for traffic.

### Resin characteristics

SILIKAL® RM 610 is the binder ("the heart") for various cold plastic formulations. It utilizes non-toxic accelerators that yield a long pot-life. SILIKAL® RM 610 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	70 – 100 sec.
Density D <sub>4</sub> <sup>20</sup>	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 610

About 1/5 weight parts of SILIKAL® RM 610 are mixed with 4/5 of fillers and pigments. By varying fillers, pigments or additives, properties can be adjusted. Attached is a guideline formulation for a white line marking that works 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. Cold plastic for 1.5 – 3 mm line-markings compared to dots-markings or safety rumble-ribs differ only in a higher content of thixotropic agent, see table. The cured road markings are permanently semi-flexible and have good resistance to water, salt, grease and mineral oil.

### Cold plastic line marking, white

#### Guideline recipe for trowel application or 2K machine application

Item	Component	Guideline recipe (% by weight)	Comments
1	<b>SILIKAL® RM 610</b>	22.0%	SILIKAL® RM 610 is the standard resin for lines
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	0.1%	<b>Thixotropic agent, use 0.3% for agglomerates or rumble lines to increase visc at 50 rpm from 4.5 – 6 to 6 – 9 Pa·s</b>
4	BYK 1790	0.3%	Defoamer, check whether bubbles come out upon addition
5	TiO <sub>2</sub> Rutile-Type	7.0%	White pigment, verify usability by observing settling behaviour of final marking on a shaker: 24h at 50 rpm
6	CaCO <sub>3</sub> <10 µm	16.8%	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	23.5%	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 – 0.5 mm	30.0%	
9	<b>Total:</b>	<b>100.0%</b>	<b>Average consumption: approx. 1.9 kg/m<sup>2</sup> per mm thickness</b>

#### Silikal product information

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

Temperature	SILIKAL® BPO % pbw.	Pot life min	Hardening time min
+5 °C	2.0	14	40
+20 °C	1.3	8	24
+35 °C	0.6	6	15

**Typical features of line road markings based on Silikal® RM 610**

Resin content	20 – 25%
Viscosity at 50 RpM, small spindle	4.5 – 6.0 Pa · s (agglomerates: with extra thixotropic agent: 6.0 – 8.0 Pa · s)
Density	1.9 g/ml
2K (aka: 98/2) / 3K (aka: 1:1; 50/50; 50/48/2)	yes / yes
Flexibility of cured road marking	semi-flexible
Product thickness	1.5 – 3 mm
Pot-life / curing-time of appropriate films at +20 °C	8 min / 24 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)
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

## Application

Cold plastics manufactured using SILIKAL® RM 610 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. For hand application powder hardener is mixed in bucket by bucket and a trowel or draw box is used in order to distribute the paste-like marking. Automatically driven machines use liquid hardener in order to continually draw flat lines respectively shoot doted heaps onto the ground. The pot life is about 8 minutes and curing time is about 24 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.



# SILIKAL® RM 610

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## 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

General notes

Safety data sheets

Data sheet BPO

Technical documentation MMA

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.

## Silikal product information

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