

TECHNICAL INFORMATION
LIMBOROUTE K835



LIMBOROUTE K835

Art.-No.: 14835, white for sprayer technology
Art.-No.: 14835A, white for airless paint sprayers

Version: 2022-02-10

1	Main characteristics / Fields of application	3
2	Technical Data	3
3	Processing instructions.....	4
3.1	Preparation of material and application technique	4
3.2	Optimizing of application properties	4
4	Surfaces / surface preparation.....	4
4.1	General information	4
4.2	Concrete or cement-bound surfaces	4
4.3	Bituminous surfaces	5
4.4	Cobbled pavement	5
4.5	Floor coatings	5
5	Application techniques	5
6	Test reports	6
6.1	RPA – test reports by BASt (German Road Institute)	6
6.2	Field test reports	6

Important Information:

Please consider our General Terms and Conditions and the general notes of the Technical Information Sheet! No liability is accepted for any errors! The information is provided to our best knowledge and experience. This information is, however, no warranty for any properties of the material. We provide this information without obligation, also regarding the rights of third parties. The user has to make sure that the material is appropriate for the respective application.

1 Main characteristics / Fields of application

LIMBOROUTE K835...

- is a low solvent, aromatic-free, one-component high-solid paint on the basis of acrylate
- is a well-proven, thin layer marking material with outstanding technical properties
- has been tested on the turntable simulator at the German Road Institute (BASt) and is approved as TYPE I and TYPE II marking with different drop-on materials
- is suitable for both bituminous surfaces (e.g. mastic asphalt, asphalt concrete) and concrete surfaces
- is applicable with conventional application machines
- is available for both airless and sprayer technology

2 Technical Data

Colour	white
Density	approx. 1.57 kg/l +/- 0.04
Solid content	min. 75%
Solid body	approx. 55.34%
Solvent content	max. 25%
Thinner	When needed add 2% thinner for high solid paint (Art.-No.: 3080) for optimizing spray properties or add 2% thinner for high temperatures (Art.-No.: 3160) for optimizing bead embedment
Cleaning thinner	Special cleaner for marking machines Art.-No.: 3086
Storage stability	1 year, in sealed original packaging; protect from frost and direct sun light
Drying time / Trafficability	The drying time stated in the BASt test report are laboratory values that may differ from field conditions depending on climate (temperature, humidity, wind) material, layer thickness and road surface. In general, the markings' trafficability must be checked before exposing them to traffic impact.
Standard packaging	tin foil containers of 6 / 15 / 40 kg filling weight container on request Drop-on material: paper bags with PE-inlay – 25 kg filling weight
Identification	The regulations and instructions concerning appropriate transport, handling, storage, first aid measures, toxicology and ecology are stated in our material safety data sheets! The instructions stated on the product label and in the MSDS must be followed.
Processing temperature	min. +5°C
Surface temperature	+ 5°C to + 45°C
Relative humidity	max. 75 % (dew point spreadsheet has to be regarded)
Layer thickness / Theoretical consumption	Wet film thickness = Dry film thickness = Theoretical consumption 300 µm = 166 µm = approx. 0.471 kg/m² (0.3 l/m²) 400 µm = 221 µm = approx. 0.628 kg/m² (0.4 l/m²) 600 µm = 332 µm = approx. 0.942 kg/m² (0.6 l/m²) The actual consumption depends on the applied layer thickness and the type and state of the surface

3 Processing instructions

3.1 Preparation of material and application technique

Before processing LIMBOROUTE K835 must be mixed evenly in the original container. The exact machine adjustments depend on the application conditions, type of machine, requested wet film thickness, type and quantity of drop-on material and need to be made according to the machine manufacturer's instructions.

The uniform of marking material and drop-on material over the entire application surface must be observed. Losses of drop-on material must be considered when adjusting bead pistol or bead dispenser.

Theoretical consumption of paint and drop-on material in kg/m² is listed in the BAST-test report in the table "Theoretical consumption of material and drop-on materials" on our website.

Cleaning of machine (paint tank and hoses) and tools using a special cleaner for marking machines (Art.-No.: 3086) or with thinner for high solid paint (Art.-No.: 3080) must be finished before curing sets in.

3.2 Optimizing of application properties

The paint LIMBOROUTE K835 in its delivery state is ready for processing. In general, it is not necessary to add thinner but for optimizing the material's spray properties approx. 2% thinner for high solid paints (Art.-No.: 3080) can be added. When processing LIMBOROUTE K835 at temperatures exceeding 25°C it is recommended to add approx. 2% thinner for high temperatures (Art.-No.: 3160). Only thinner recommended by the manufacturer must be used.

4 Surfaces / surface preparation

4.1 General information

The surface must be dry, clean, free from grease, oil and loose gravel and other contaminations. The surface and potentially existing old markings must be checked for their carrying capacity and compatibility with the material to be applied. In case of doubt, test applications and adhesion tests are required.

Attention: LIMBOROUTE K835 is not suitable for large scale asphalt markings (bicycle lanes, sports fields, children's playgrounds)

4.2 Concrete or cement-bound surfaces

The pavement components that prevent good bonding, especially on new concrete, e.g. fine mortar layers, concrete slurries, concrete after-treatments as setting retarders, paraffins, impregnations on silicate basis etc. must be properly removed (e.g. with high pressure waterjet, fine millcut or similar). We recommend conducting test applications in case of uncertainty.

On new washed concrete surfaces (with grit) poor bonding properties may occur, not caused by marking paint quality. Therefore, we recommend applying test markings.

When applying the paint to concrete or cement-bound surfaces, the formation of bubbles is likely to occur. In order to prevent formation of bubbles the concrete should be pretreated with LIMBOROUTE K835, blended 1 : 1 with thinner for high-solid-paints (Art.-No.: 3080) and sprayed with approx. 200µm wet film thickness. Once dried, a second, undiluted layer can be applied. The humidity of concrete must not exceed 4% during the marking job.

When applying a temporary marking instead of a pretreatment, the carrying capacity of the surface has to be checked. If necessary, pretreatment has to be conducted and/or the temporary marking has to be removed.

4.3 Bituminous surfaces

Any loose components such as chippings must be removed. On new asphalt surfaces additives (fluxoils, adherents etc.) are detrimental to good bonding of markings and can cause discolorations on marking paints. Before application test markings / bonding checks are necessary.

4.4 Cobbled pavement

Natural, artificial and compound stone pavements are loose surfaces that move. Basically, they are no suitable surfaces for LIMBOROUTE K835. No guarantee is given in cases of crack formation, chippings caused by the movement of pavement parts, poor marking bonding (e.g. on natural or artificial stones), penetration of moisture, wear of marking. It is assumed that marking bonding is sufficient. In case of doubt test markings / bonding checks are necessary.

4.5 Floor coatings

For markings on floor coatings resp. special indoor- and industrial floors our indoor marking products should be used. LIMBOROUTE K835 is not suitable therefor.

5 Application techniques

With conventional marking machines (airless or atomising technique); manually with brush or roller. The marking paint must be homogeneously stirred in the original container before processing! The exact machine adjustments depend on the application conditions and the machine type and should be made according to the machine manufacturer's instructions. The uniform spread of marking material and drop-on material over the entire application surface must be observed. Layer thickness and drop-on material quantities must be respected. Use airless LIMBOROUTE K835 quality for airless machines only. Two-layer application (both with drop-on material) can be an advantage.

6 Test reports

6.1 RPA – test reports by BAST (German Road Institute)

Test report –no.	Layer thick-ness	Consumption		Drop-on material (DOM)	Traffic technological properties	
	mm	Material	DOM	Identification (divergent identification possible – see relevant test report)	New condition	Used condition
		kg/m²	kg/m²			
Type I marking						
2004 1DS 03.05	0.3	0.47	0.20	SWARCOLUX P21 T14 M25	P5, S1, R5, Q5, T2	P5, S1, R4, Q5
2010 1DS 07.01	0.3	0.47	0.22	SWARCOFLEX 100-600 T14 M25	P5, S3, R5, Q5, T2	P5, S2, R5, Q5
2017 1DS 03.10	0.3	0.47	0.24	SWARCOLUX P21 T14 M25	P5, S1, R5, Q5, T2	P5, S1, R4, Q5
2017 1DS 03.13	0.3	0.47	0.24	SWARCO SOLIDPLUS 10 P21 T14 M25	P5, S1, R5, Q5, T2	P5, S1, R5, Q5
2004 1DS 03.06	0.4	0.63	0.22	SWARCOLUX P21 T14 M25	P5, S1, R4, Q5, T2	P5, S1, R5, Q5
2010 1DS 07.02	0.4	0.63	0.24	SWARCOFLEX 100-600 T14 M25	P5, S3, R4, Q5, T2	P5, S2, R4, Q5
2016 1DS 02.10	0.4	0.63	0.32	SWARCOLUX P21 T14 M25	P5, S1, R5, Q5, T2	P5, S1, R5, Q5
2017 1DS 03.12	0.4	0.63	0.32	SWARCO SOLIDPLUS 10 P21 T14 M25	P5, S1, R5, Q5, T3	P5, S1, R5, Q5
2016 1DS 02.11	0.6	0.94	0.48	SWARCOLUX P21 T14 M25	P5, S1, R5, Q5, T3	P5, S1, R5 ,Q5
2017 1DS 03.11	0.6	0.94	0.48	SWARCO SOLIDPLUS 10 P21 T14 M25	P5, S1, R5, Q5, T3	P5, S1, R5, Q5
Type II marking						
2020 1DS 04.05	0.6	0.94	0.60	SWARCOLUX 50 425-1400 T14 MK30	P6,S1, R5, RW6, Q5, T2	P6,S1, R5, RW5, Q5
2020 1DS 04.06	0,6	0,94	0,60	SWARCO SOLIDPLUS 10 425-1400 T14 MK30	P6,S1, R5, RW6, Q5, T2	P6,S1, R5, RW5, Q5
2021 1DS 05.13	0,6	0,94	0,45	SWARCO SOLIDPLUS 10 425-1400 T14 MK30	P6*	

*only confirmation by BAST according to European standards (EN 1436)

6.2 Field test reports

Report No.	Testing institute	stretch	Traffic exposure	Layer thickness	Bead type	Traffic technological properties / used condition
7311	DSGS	B299	12 months	600 µm	SWARCOLUX P21 T14 M25	Q4, R3, S2
7312	DSGS	K6927	12 months	2 x 300 µm	SWARCOLUX P21 T14 M25	Q3, R4, S5
7313	DSGS	K6927 K6940	12 months	400 µm	SWARCOLUX P21 T14 M25	Q3-Q4, R3-R4, S1
4.B80	PBS	B80	13 months	600 µm	SWARCO SOLIDPLUS 10 425-1400 T14 MK30	Q3, RW2, R4, S5