TECHNICAL INFORMATION

LIMBOROUTE 2-C K809 Y1/Y2

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Road Marking Systems

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LIMBOROUTE 2-C K809 Y1/Y2

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1 Main characteristics / Fields of application

LIMBOROUTE 2-C K809 Y1/Y2…

- is a high quality, low-solvent 2-component high solid paint free from aromatic compounds based on modified epoxy and polyaminoamide hardeners for construction zones
- is a tried and tested, thin-layer marking material with excellent technical properties when applied onto humid surfaces (e. g. fresh concrete and/or residual humidity > 4%, alleys, forest roads)
- has been tested on the turntable simulator of the German Road Institute (BASt) and is approved as TYPE II marking and represents an economical alternative to other temporary construction zone markings
- has been tested at the Institute for Paints and Varnish (ILF) for compliance with Y1 / Y2 chromaticity range in line with DIN 1436 and TL-temporary markings 97
- is suitable for both bituminous surfaces (mastic asphalt, asphalt concrete) and concrete and cement-bound surfaces
- can be applied with airless and airspray (atomizing) techniques
- is generally delivered in airless quality only
- is distinguished from conventional one-component paints for construction zones by its chemical reaction resulting in extended durability, resistance against chemicals and abrasion. Chemical reaction occurs besides physical drying through evaporation of the solvent

2 Technical Data

Color	yellow Y1/Y2 (for construction zones)
Density	approx. 1.43 kg/l +/- 0.04 (with hardener)
Mixing ratio	Base component 2-C K809 Y1/Y2 : Hardener (SWARCODUR EP) = 20 : 1
Pot life	approx. 3 days
Solid content	min. 75%
Volume solid content	approx. 54.24%
Solvent content	max. 25%
Thinner	When needed add max. 2% Thinner for 2-comp. EP, Art. No.: 3130 for viscosity adjustment and for cleaning of machine and tools
Storage stability	6 months (unmixed), 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 marking's trafficability must be checked before exposing it to traffic impact
Standard packaging	**2-C K809 Y1/Y2:** tin foil container of 35 kg filling weight Other tin container / filling weights on request **SWARCODUR EP:** cans of 1.75 kg filling weight (corresponds with mixing ratio) **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
Layer thickness / Theoretical consumption	Wet film thickness = Dry film thickness = Theoretical consumption 300 µm = 163 µm = approx. 0.429 kg/m² (0.3 l/m²) 400 µm = 217 µm = approx. 0.572 kg/m² (0.4 l/m²) 600 µm = 325 µm = approx. 0.858 kg/m² (0.6 l/m²)

3 Processing instructions

3.1 Preparation of material and application technique

Before processing LIMBOROUTE 2-C K809 Y1/Y2 must be homogenously stirred in its original container. Then the hardener must be added und stirred uniformly into the base component at the stated mixing ratio. 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 distribution of marking material and drop-on material over the entire application surface must be observed. Losses of drop-on material must be regarded when adjusting bead pistol or bead dispenser.

The theoretical consumption of paint and drop-on materials is listed in the BASt test report and in the table "Theoretical consumption of material and drop-on materials" on our website in kg/m² as well as in kg/km of line to be marked depending on typical line width.

The cleaning of machines (paint tank and hoses) and tools must be done before the curing is complete – with Thinner for 2-C EP (Art. No. 3130) exclusively. Before longer marking interruptions remove any paint already mixed with hardener.

3.2 Optimizing application properties

The paint is ready for processing upon delivery. In general, it is not necessary to add thinner but for optimizing the material's spray properties add max. 2% Thinner for 2-C EP (Art.-No. 3130). Remaining LIMBOROUTE 2-C K809 Y1/Y2 (from the day before) must be applied completely before new paint is filled into the machine's paint tank.

4 Surfaces / pretreatment

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 recommended. Before applying LIMBOROUTE 2-C K809 Y1/Y2 on **new** bituminous or concrete surfaces it must be verified that the durable 2-component paint is the best solution for the situation at hand. Otherwise, a more easily removable marking system should be used.

Attention: LIMBOROUTE 2-C K809 Y1/Y2 is not appropriate for large area applications on bituminous surfaces (e. g. playground, sportsground, cycle path or similar).

4.2 Concrete and cement-bound surfaces

Pavement components that prevent good bonding, especially on new concrete, including fine mortar layers, concrete slurries, concrete after-treatments as setting retarders, paraffin, impregnations on silicate basis etc. must be appropriately removed (e. g. with high pressure waterjet, fine mill-cut or similar). We recommend conducting test applications. In case of doubt communicate your concerns in written form.

When applying the paint on concrete or cement-bound surfaces, the formation of bubbles is likely to occur. In order to prevent bubble formation the concrete should be pretreated with LIMBOROUTE 2-C K809 Y1 /Y2 blended 1 : 1 with Thinner for 2-C EP (Art.-No.: 3130), with a wet film thickness of approx. 200µm. Once dried, a second, undiluted layer can be applied.

4.3 Bituminous surfaces

Any loose components such as chippings must be removed. On new asphalt surfaces additives (flux oils, adherents etc.) are detrimental to good bonding of markings and can cause discolorations on marking paints. Before application test markings / bonding checks are necessary (compare point 4.1).

4.4 Cobbled surfaces

Natural, artificial and compound stone pavements are non-static surfaces. In general, they are not suitable for the application of LIMBOROUTE 2-C K809 Y1 /Y2. No guarantee is given in case of crack formation, chippings caused by the movement of pavement parts, poor marking bonding (e. g. natural or artificial stones), penetration of moisture, wear of marking.

4.5 Floor coatings

For markings on floor coatings our “SWARCO SAFETY-LINE“ products should be used.

5 Application techniques

With conventional marking machines (airless or atomizing technique), manually with brush or roller.
Attention: when applying with brush, roller, or spray gun (e. g. jobs with stencils) consider the paint’s fast drying time.
An immediate broadcasting of drop-on materials is absolutely necessary. Otherwise, the drop-on material will not be embedded properly, which leads to poor traffic technological properties.
Two-layer applications are an option (first layer + drop-on material, second layer + drop-on material). Well embedded drop-on beads from the first layer become visible when the second layer is worn.

6 Test reports / Field test reports

6.1 Table 1: Test report by BASt (German Road Institute)

Test report – No.	Thick-ness	Consumption		Drop-on material (DOM)	Traffic technological properties	
	mm	Material	Drop-on	Identification (divergent identification possible - see relevant test report)	New condition	Used condition
		kg/m²	kg/m²			
Type II marking						
2005 1VS 05.13	0.6	0.858	0.60	MEGALUX-BEADS 600-1400 T14 K25	P6,S2,R5,RW6,Q3,T3, Y2	P6,S1,R4,RW5,Q3

6.2 Table 2: Field test reports

Report – No.	German Road Marking Society	stretch	Traffic exposure	Layer thickness	Bead type	Traffic technological properties / used condition
6350	DSGS	A7	new	2 x 0,3 mm guideline	Megalux 0,6-1,5 KT14	Q3, RW4, B3
6540	DSGS	A7	17 months	2 x 0,3 mm guideline	Megalux 0,6-1,5 KT14	Q3, R2