TECHNICAL INFORMATION

LIMBOPLAST KSP FOR BICYCLE LANES

swarco

Road Marking Systems

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LIMBOPLAST KSP FOR BICYCLE LANES

Art. No. 5174 …RAL…

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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 / Field of applications

LIMBOPLAST KSP for bicycle lanes…

- belongs to the group of solvent-free, multi-component, reactive systems
- consists of two or more components which – through chemical interaction – form a durable compound
- is formulated with particular elasticity and is especially suitable for large area coatings
- in order to get sufficient skid resistance broadcast glass granulate onto the wet KSP layer
- should be applied with priority on roadsides
- is suitable for bicycle lane markings at crossroad areas with frequent traffic impact. For sections with permanent traffic the products Textured Cold plastic for bicycle lanes or Cold plastic D485 for large surface and anti-skid coats are recommended
- use additional drop-on glass granulate to enhance the decorative effect
- is suitable for both bituminous surfaces (e.g. mastic asphalt, asphalt concrete) and concrete
- is suitable for application with all current techniques for KSP (system 98:2, system 1:1, open system – without any spray devices – with reactive glass granulate)
- applicable with airless and atomizing technique or with squeegee, rubber squeegee, trowel or screed box

2 Technical Data

Color	Traffic red approx. RAL 3020; other colors on request
Standard glass granulate as drop-on material	Glass granulate reactive colorless (other colors on request) Glass granulate non-reactive colorless (other colors on request)
Density	approx. 1.51 +/- 0.1 kg/l depends on color
Solvent for cleaning	Special cleaner for marking machines Art. No. 3086
Storage stability	6 months; unmixed in sealed original packaging and protected from frost and direct sun light
Trafficability / curing time	Depends on climate conditions (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	**KSP for bicycle lanes:** tin container of 40 kg filling weight Reactive glass granulate in paper bags with PE-inlay and 25 kg filling weight Container for component A and B: upon request **Hardener powder**: PE- bags, filling weight corresponds to cold spray plastic quantity and mixture ratio **Liquid hardener:** Plastic cans – 20 kg filling weight **Attention**: all hardeners are organic peroxides, which must be packaged separately, transported and stored away from the cold spray plastic in special containers (special cartons and boxes)
Identification	The regulations and instructions concerning appropriate transport, handling, storage, first aid measures, toxicology and ecology are stated in our material safety data sheet! 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)
Sprayed layer thickness	**wet layer thickness = dry layer thickness** approx. 0.3 – 0.8 mm approx. 0.6 – 1.2 mm (KSP with glass granulate reactive / non-reactive)
Theoretical consumption	approx. 0.45 – 1.21 kg/m² KSP for bicycle lanes

	approx. 0.58 – 1.52 kg/m² reactive glass granulate or glass granulate (see point. 3). The actual consumption depends on sprayed layer thickness and type and state of the surface and kind of broadcasted drop-on material.
Thicknesses with roller, trowel or screed box application	**wet layer thickness = dry layer thickness** approx. 1.5 – 2.5 mm approx. 3.0 – 5.0 mm (KSP with glass granulate)
Theoretical consumption	approx. 2.27 – 3.78 kg/m² KSP for bicycle lanes approx. 3.10 – 5.00 kg/m² glass granulate non-reactive The actual consumption depends on the applied layer thickness, application technique (roller, trowel or screed box**)** and type and state of the surface

3 Mixing ratios / application technique / Hardener

Product	Art.-No.	Technique	Hardener type
2-K LIMBOPLAST KSP for bicycle lanes **Traffic red**	**51743020FI**	**Shielded mixture system** Marking machine for system 98 : 2	Liquid hardener
Mixing ratio: reactive component (KSP) **: liquid hardener = 98 : 2**			
2-K LIMBOPLAST KSP for bicycle lanes **Traffic red**	**51743020RG**	**Open mixing system** Conventional application technique for marking products or roller technique only	Glass granulate reactive, red
Mixing ratio: reactive component (KSP) **: glass granulate** (reactive) **= 1 : 1,25**			
2-K LIMBOPLAST KSP for bicycle lanes **Traffic red**	**51743020Pul**	**Open mixing system** for application with roller or rubber squeegee / trowel or screed box only	Hardener powder
Mixing ratio : reactive component (KSP) **: hardener powder** (BPO**) = 100 : 1**			
3-K LIMBOPLAST KSP for bicycle lanes **Reactive component = base component** **non-reactive component ***	**51743020B** **51743020A**	**Shielded mixing system** 3-comp. special marking machine	Hardener powder
Mixing ratio : component * non-reactive + hardener powder (BPO) (2% to 4%) **: component reactive = 1 : 1**			
3-K LIMBOPLAST KSP for bicycle lanes **Reactive component B = base component** **non-reactive component A***	**51743020FIB** **51743020FIA**	**Shielded mixing system** 3-comp. special marking machine	Liquid hardener
Mixing ratio : component * non-reactive + liquid hardener (2% to 4%) **: component reactive = 1 : 1**			

Reactive glass granulate has to be broadcasted (approx. 1 : 1.25) in excess onto the still wet cold spray plastic.
Not embedded glass granulate can be swept off and re-used after the cold plastic has cured.
***** Component A, mixed with hardener gets a limited storage stability / pot life. The remaining quantity has to be removed out of the machine.
Between October and April LIMBOPLAST KSP for bicycle lanes is delivered in winter formulation, due to weather conditions.

4 Processing Instructions

4.1 Preparation of material and application techniques

LIMBOPLAST KSP for bicycle lanes must be homogenously stirred in its original container before processing. Use the quantity only needed for the next marking job. Then the needed hardener type is added while stirring homogenously.

It is important for 2-component marking machines with shielded mixture procedure (98:2) to ensure the machine is adjusted with the correct mixture ratio inside the mixing tube. Even during short standstill times of the machine it is necessary to rinse the mixing and spray device with Special cleaner for marking machines (Art. No. 3086).

For 3-component marking machines (mixture ratio 1:1) also consider:

- When preparing the non-reactive component, add hardener while stirring homogenously, then fill it into the dedicated container. Container must be sealed. After this stir the reactive component homogenously and pour into the dedicated machine container

- Extremely clean working conditions are essential when processing the components. Smallest contaminations / intermixtures of the components can lead to premature curing. Therefor it is advisable to use different stirring devices and auxiliaries for different components.
- Even after short standstill times of the machine it is necessary to rinse the mixing and spray device with Special cleaner for marking machines (Art. No. 3086).
- Non-reactive component has a limited storage stability / pot life when mixed with hardener. Therefore, it is necessary to remove residuals of the non-applied, premixed material from the machine. Otherwise machine damage can occur as a result of polymerization.

Cold spray plastic (reactive system) is solvent-free and must be applied without adding solvent (for optimizing material processability, see chapter 4.2).

The exact machine adjustment has to be made according to the manufacturer's instructions. The cleaning must occur before the curing of the material is complete, using Special cleaner for marking machines (Art. No.: 3086). Layer thickness and quantity of drop-on material (glass granulate) need to be evenly distributed.

The theoretical consumption of paint and drop-on material (glass granulate) is listed in the table "Theoretical consumption of material and drop-on materials" on our website (kg/m²).

4.2 Optimizing application properties

The application properties and reactivity of the material depend on the temperature of KSP, air and surface. Proper storage conditions may partly improve application conditions.
For optimizing application properties, e.g. the reduction of viscosity, 1 % Condenser for Cold plastic / Cold spray plastic (Art. No. 3044) can be added when temperatures of material, air and surface are low.

Attention: Limit the material mixed with Condenser to the needed quantity, otherwise viscosity or settle properties may change.

5 Surfaces / pretreatment

5.1 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 material to be applied. In case of doubt, test applications and adhesion tests are required. Ideally old markings should be removed with appropriate mechanical procedures.

5.2 Concrete or cement-bound surfaces

The 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 millcut or similar). We recommend conducting test applications. In case of doubt communicate your concerns in written form.

Before applying LIMBOPLAST KSP for bicycle lanes on concrete or cement-bound surfaces should be pretreated with primers:

a) Using spray technique (paint spray machine): 2-component EP-primer (Art. No. 8609000) or
b) Manually (roller): 2-component B71 for concrete (Art. No. 8010)

It is essential to have a sufficient and uniform coverage with primer in order to obtain an optimum bonding of the KSP for bicycle lanes and the concrete. Primer consumption may vary depending on concrete's porosity. The humidity of concrete must not exceed 4% when applying 2-component B71 concrete primer. Primers based on epoxy resins are suitable for residual damp surfaces.

Primers diminish the formation of bubbles which is likely to occur when concrete surfaces are not pre-treated with a primer.

5.3 Bituminous surfaces

Any loose components such as chippings must be removed. Special agents used in new pavement asphalt (e.g. flux oils, adherents) are detrimental to good bonding of markings or cause discoloration. Since these components are hardly removable mechanically, the surface should be exposed to traffic for 4 – 6 weeks. Before application takes place bonding checks are required.

5.4 Cobbled pavement

Natural, artificial and compound stone pavements are non-static surfaces. Basically they are no suitable surfaces for bicycle lane markings. No guarantee is given in cases of crack formation, chippings caused by the movement of pavement parts, poor marking bonding (e.g. natural or artificial stones), penetration of moisture and wear of marking. It is assumed that marking bonding is sufficient. Therefore, cobbled pavements are no suitable surfaces for LIMBOROUTE KSP for bicycle lanes markings. In cases of doubt test applications are necessary.

5.5 Floor coatings

For markings on floor coatings our indoor marking products should be used.

6 Application techniques

Manually with scraper, rubber squeegee, trowel or screed box. When using reactive glass granulate as hardener, the glass granulate has to be broadcasted immediately onto the wet KSP-layer with a ratio of 1:1.25.

Attention: A uniform layer thickness and an abundant and evenly distributed covering of the marked surface with the reactive glass granulate is essential in order to avoid curing problems. The drop-on devices must be adjusted to ensure that the required quantity of reactive glass granulate is able to react chemically with the applied LIMBOPLAST KSP for bicycle lanes and is not partly blown away or dispersed off the striping.

When using liquid hardener or hardener powder, non-reactive glass granulate is broadcasted immediately and uniformly in excess into the wet marking.

Glass granulate (reactive / non-reactive) not embedded should be swept off after the curing of LIMBOPLAST KSP for bicycle lanes and can be re-used.

It is an option to use colorless glass granulate (reactive / non-reactive) as drop-on material, particularly since the hue of cold plastic and the hue of colored glass granulate is never identical. Other hues of colored glass granulate are available on request.