TECHNICAL INFORMATION

SWARCOGLOW 2-C Cold Plastic

swarco

Road Marking Systems

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SWARCOGLOW 2-C Cold Plastic

Art.-No.: 8141111 green-yellow, SWARCOGLOW 2-C Cold Plastic

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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 / fields of application

SWARCOGLOW 2-C Cold Plastic …

- belongs to the group of solvent-free, multi-component, reactive systems
- consists of two components (basic component and hardener) which – through chemical interaction – form a duroplastic compound and cannot be thermally plastified thereafter
- distinguished by excellent durability and abrasion resistance compared to other afterglow systems with 1 - 2 mm layer thickness
- can be incited by UV radiation as well as by white daylight or artificial light; in the dark SWARCOGLOW 2-C Cold Plastic is visible due to its afterglow properties
- excitation and emission can be repeated without limitation
- the special afterglow pigments are free of phosphor, radioactive substances or other toxic chemicals
- especially suitable for near-ground optical emergency guidance systems and identification of emergency exit routes in staircases, parking garages, factories, shopping centres, tunnels etc. when a power blackout or fire with formation of smoke take place
- supplements existing emergency light systems invisible in smoke
- the marking's good luminescence does not only show the direction of evacuation routes, but can also make staircases, obstacles, doors etc. better visible
- SWARCOGLOW 2-C Cold Plastic is trafficable by cars
- If necessary, white 2-C Primer improves adhesive properties and the afterglow effect. Final application of 2-C UV-Clear Varnish reduces dirt pick-up and results in enhanced durability
- developed for indoor rooms (without windows) with intensive lights, where the SWARCOGLOW 2-C Cold Plastic should be applied close to those lights
- Use only in well-ventilated rooms, not suitable for living rooms
- suitable for bituminous surfaces (e. g. mastic asphalt, asphaltic concrete), for concrete pavements (priming required) and for floor coatings
- tested and approved by Federal Institute for Materials Research and Testings (BAM, Berlin) according to DIN 67510 part 1 and 2 (longtime afterglow products)

2 Technical Data

	first layer (on request)	second layer	third layer (on request)
Product	a) SWARCOGLOW 2-C Primer b) 2-C K809 Airless c) 2-C EP Primer d) Primer B71 (for concrete)	SWARCOGLOW 2-C Cold Plastic	SWARCOGLOW 2-C UV-Clear Varnish
Art.-No.	a) 8139016 b) 14809A c) 8609000 d) 8010	8141111	8130000
Standard color	white: a); b) transparent: c); d)	Green-yellow	transparent
Density	a) 1.52 kg/l +/- 0.1 with SWARCODUR hardener b) 1.49 kg/l +/- 0.04 with SWARCODUR hardener c) 0.9 kg /l +/- 0.1 d) 1.01 kg/l +/- 0.1	1.17 kg/l +/- 0.1	1.01 kg/l +/- 0.1

	first layer (on request)	second layer	third layer (on request)
Mixing ratio	a) 20 : 1 with SWARCODUR EP b) 20 : 1 with SWARCODUR EP c) 2 : 1 with SWARCODUR EP d) 100 : 3 with SWARCODUR hardener powder	100 : 1 with SWARCODUR hardener powder	2 : 1 with SWARCODUR PU/ACRYL
Thinner	a), b), c) Thinner EP (Art.-No.: 3130) d) apply without thinner	apply without thinner	Thinner PU/ACRYL (Art.-No.: 8630)
Thinner for cleaning	a), b), c) Thinner EP (Art.-No.: 3130) d) Special cleaner for marking machines (Art.-No.: 3086)	Special cleaner for marking machines (Art.-No.: 3086)	Special cleaner for marking machines (Art.-No.: 3086)
Pot life	a) approx. 1 day b) approx. 3 days c) approx. 1 day d) approx. 5 – 10 min.	approx. 5 - 10 min.	approx. 1.5 hours
Next layer application after	a) approx. 3 hours b) approx. 30 min. c) approx. 30 min. d) immediately after curing	immediately after curing	/
Curing time / Trafficability	/	/	overnight*
Wet layer thickness to be applied	a) + b) approx. 200 µm - 400 µm c) + d) approx. 100 µm	1 – 2 mm	min. 60 µm - max. 100 µm two-layer application is recommended
Theoretical consumption	a) + b) approx. 0.30 to 0.61 kg/m² c) + d) approx. 0.10 kg/m²	approx. 1.2 to 2.4 kg/m²	approx. 0.06 kg/m² (0.06 l/m²) to approx. 0.1 kg/m² (0.1 l/m²)
Consumption examples 1,0 m² 2,5 m² 5,0 m²	**400 µm** 0.4 l 1.0 l 2.0 l	**1 mm 2 mm** 1.2 kg/m² 2.4 kg/m² 3.0 kg/m² 6.0 kg/m² 6.0 kg/m² 12.0 kg/m²	**60 µm** 0.06 l 0.15 l 0.30 l
Standard packaging	a) 5.0 l tin container b) 6/10/35 kg tin container c) 5/10 l. tin container d) 5/10/25 kg tin container SWARCODUR hardener is packaged in relation to mixture ratio	1, 5, 15 kg - tin container SWARCODUR hardener powder: PE-bags filling weight corresponds to cold plastic quantity and mixing ratio	5 / 10 ltr. – tin container 2.5/5 ltr. – SWARCODUR PU/ACRYL
Identification	The regulations and instructions concerning appropriate transport, handling, storage, first aid and measures, toxicology and ecology are stated in detail in our material safety data sheets! The instructions stated on the product label and in the MSDS must be followed. **Attention:** all hardener types are organic peroxides – they must be separately packaged, transported and stored away from the cold plastic in special containers (special cartons and boxes).		
Storage stability	6 months (unmixed), in sealed original packaging; protect from frost and direct sun light		
Processing temperature	min. + 5°C		
Surface temperature	+ 5°C to + 45°C		
Relative humidity	max. 75% (dew point spreadsheet has to be regarded)		
* In general, the markings' trafficability must be checked before exposing them to traffic impact			

3 Efficacy of afterglow markings

The effectiveness of photoluminescent markings is influenced by the following factors:

- effective and sufficiently strong light sources that ensure good charging (excitation) of the photoluminescent system by their spectral range and illuminance level
- by the charging time
- the applied layer thickness of the afterglow product
- the quality of the primer as a contrast for the afterglow product

- by the quality / intensity of the afterglow pigment itself

Optical properties BAM* tested SWARCOGLOW 2-C Cold Plastic according to DIN 67510-1:

sample*** wet film thickness mm			luminance mcd / m² after 1 min	10 min	30 min	60 min	decay time ** min.
	1.layer	2.layer					
BAM VIII.1E2149	2.0	0.060	3758	506	149	67	3870
BAM S1E1650	2.0	0.060	1135	159	51	23	2190

* BAM – Bundesanstalt für Materialforschung und -prüfung (Berlin) or: Federal Institute for Materials Research and Testing
** decay time until luminance amounts to 0,3 mcd /m²
*** test surface = round surface with 55 mm diameter

4 Processing instructions

4.1 Preparation of material and application technique

The SWARCOGLOW 2-C Cold Plastic must be homogeneously stirred in its original container before processing by using an appropriate stirring device, regarding different mixture ratios of the product (see spreadsheet above).
Never prepare more material with SWARCODUR hardener than is needed for the application (observe pot life).

Cold plastic (reactive system) is solvent-free and must be applied without adding solvent.
The cleaning must occur before the curing of the material is complete place by using special cleaner for marking machines (Art.-No.: 3086) see spreadsheet above.
The application properties and reactivity of the material depends on temperatures of cold-plastic, air- and surface. Proper storage conditions improve application conditions partly.

Theoretical material consumption is stated in:

- Table “Theoretical material- and drop-on consumption” on our website

The exact machine adjustments have to be done according to the manufacturer’s instructions. Layer thickness has to be evenly distributed to get consistent afterglow properties.

4.2 Optimizing of application properties

The SWARCOGLOW 2-C Cold Plastic is ready for processing out of the box. In general, it is not necessary to optimize viscosity. Adding 1 - 2 % condenser (Art.-No.: 3044) reduces the viscosity of SWARCOGLOW 2-C Cold Plastic. Use thinner recommended by the manufacture only.

5 Surfaces / pretreatment

5.1 General information

The surface must be dry, clean and free from grease, oil and loose gravel and other contaminations. The surface and potential 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. Ideally, old markings should be removed with appropriate mechanical procedures. Dark surfaces need a white primer for improving the effectiveness of the afterglow properties.

Attention: SWARCOGLOW 2-C Cold Plastic is not appropriate for large area applications on bituminous surfaces (e. g. playground, sportsground, cycle path or similar).

5.2 Concrete and cement-bound surfaces

The pavement components in new road surfaces that prevent good bonding (fine mortar layer, concrete slurries) must be appropriately removed (e. g. with high pressure waterjet, fine millcut or similar). We recommend conducting test applications.

Before applying SWARCOGLOW 2-C Cold Plastic on concrete or cement-bound surfaces primers need to be applied:

a) SWARCOGLOW 2-C Primer (Art.-No.: 8139016) or
b) 2-C K809 Airless white (Art.-No.: 14809A) or
c) 2-C EP primer (transparent) (Art.-No.: 8609000) or
d) manual with 2-C Primer B71 for concrete (Art.-No.: 8010)

It is essential to have a sufficient and uniform coverage with primer in order to obtain optimum adhesion of the cold plastic. Primer consumption may vary depending on the concrete's porosity. The moisture of concrete must not exceed 4% during the application 2-C Primer B71 for concrete. Primers based on epoxide resins (see a, b, c) are suitable for residual moisture surfaces.

5.3 Bituminous surfaces

Any loose components such as chippings must be removed. On new asphalt surfaces additives (fluxoils, etc.) are detrimental to good bonding of markings and can cause discolorations. Before application test markings / bounding checks are necessary. Since a mechanical removal of old markings or problematic asphalt is often hardly possible, apply the white primers a) or b) for testing adhesion and discoloration. In case of discoloration a second thin primer layer is recommended.
A bonding check (after 3 days waiting time) is required before applying the final marking.

Bituminous layers for car parks or factories do not have the same asphalt compaction as road asphalt. Therefore, marking materials may cause crack formation on such asphalt layers.

5.4 Cobbled pavement

Natural, artificial and compound block paving are non-static surfaces and are critical surfaces for SWARCOGLOW 2-C Cold Plastic. 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 stone), penetration of moisture and wear of the marking.

Concrete blocks are a common surface for car parks and industrial facilities. Before applying SWARCOGLOW 2-C Cold Plastic a primer must be applied with a). 2-C K809 Airless white (Art.-No.: 14809A). Joints of cobbled pavement remain visible on the surface of SWARCOGLOW 2-C Cold Plastic.

5.5 Floor coating

Synthetic resin floor products usually consist of epoxy resins or polyurethane. They are categorized into sanded and non-sanded coatings. Such coatings must be considered as critical surfaces. Due to the variety of different coatings we recommend conducting test applications and adhesive checks and look up the coating's Technical Information Data Sheets.

5.6 Other surfaces

Inside buildings different surfaces are possible (e. g.: PVC, wood, chipboards). Test markings are mandatory on those surfaces. The SWARCOGLOW 2-C Paint could be an option. Metal surfaces are not suitable for SWARCOGLOW 2-C Cold Plastic.

6 Application techniques

Manually with screed box, trowel etc. Use stencils or tapes to ensure sharp marking edges. The following marking sequence is to be regarded:

1. **2-C K809 Airless white (on request)**

   apply evenly

2. **SWARCOGLOW 2-C Cold Plastic**

   apply evenly

3. **SWARCOGLOW 2-C UV-Clear Varnish (on request)**

   Protects SWARCOGLOW 2-C Cold Plastic against dirt and wear and extends lifetime

A stronger afterglow effect can be achieved by applying SWARCOGLOW 2-C Cold Plastic thicker and by spraying or rolling the white 2-C EP Primer.
Regard point 2 the SWARCOGLOW 2-C UV-Clear Varnish needs enough time for curing. Otherwise, the varnish's surface may get soiled.