



SWARCO LIMBURGER LACKFABRIK GmbH

Road Marking Systems



## 2-Component Afterglow Plastic

TECHNICAL INFORMATION

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# 2-Component Afterglow Plastic

Art.-No.: 8131111 green-yellow, 2-component afterglow plastic

**Special application – afterglow systems**

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## 2-Component Afterglow Plastic

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# 1 Main characteristics / fields of application

## 2-component afterglow 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 afterglow 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
- specially 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
- 2-component afterglow plastic is trafficable by cars
- If necessary white 2-comp. primer improves adhesive properties and the afterglow effect. Final application of 2-comp. UV clear varnish reduces dirt pick-up and results in enhanced durability
- developed for indoor rooms (without windows) with intensive lights, where the afterglow plastic should be applied close to those lights
- 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)
<b>Product</b>	a) 2-comp. Primer b) 2-comp. K809 Airless c) 2-C EP Primer d) Primer B71 (for concrete)	2-comp. afterglow plastic	2-comp UV clear varnish
<b>Art.-No.</b>	a) 8139016 b) 14809A c) 8609000 d) 8010	8141111	8130000
<b>Standard color</b>	white: a); b) transparent: c); d)	Green-yellow	transparent
<b>Density</b>	a) 1.52 kg/l +/- 0.1 with hardener b) 1.49 kg/l +/- 0.04 with 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

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	first layer (on request)	second layer	third layer (on request)
<b>Mixing ratio</b>	a) 20 : 1 with hard. 8623 b) 20 : 1 with hard. 8623 c) 2 : 1 with hard. 8623 d) 100 : 3 with hardener powder	100 : 1 with hardener powder	2 : 1 with hardener 8620
<b>Thinner</b>	a), b), c) :Thinner for 2-comp EP (Art.-No.: 3130) d) apply without thinner	apply without thinner	Thinner for 2-comp. Acrylic (Art.-No.: 8630)
<b>Thinner for cleaning</b>	a), b), c) Thinner for 2-comp. 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)
<b>Pot life</b>	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
<b>Next layer application after</b>	a) approx. 3 hours b) approx. 30 min. c) approx. 30 min. d) immediately after curing	immediately after curing	/
<b>Curing time / Trafficability</b>	/	/	overnight*
<b>Wet layer thickness to be applied</b>	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
<b>Theoretical consumption</b>	a) + b) approx. 0.30 to 0.61 kg/m <sup>2</sup> c) + d) approx. 0.10 kg/m <sup>2</sup>	approx. 1.2 to 2.4 kg/m <sup>2</sup>	approx. 0.06 kg/m <sup>2</sup> (0.06 l/m <sup>2</sup> ) to approx. 0.1 kg/m <sup>2</sup> (0.1 l/m <sup>2</sup> )
<b>Consumption examples</b>	<b>400 µm</b> 1,0 m <sup>2</sup> 0.4 l 2,5 m <sup>2</sup> 1.0 l 5,0 m <sup>2</sup> 2.0 l	<b>1 mm</b> 1.2 kg/m <sup>2</sup> <b>2 mm</b> 2.4 kg/m <sup>2</sup> 3.0 kg/m <sup>2</sup> 6.0 kg/m <sup>2</sup> 6.0 kg/m <sup>2</sup> 12.0 kg/m <sup>2</sup>	<b>60 µm</b> 0.06 l 0.15 l 0.30 l
<b>Standard packaging</b>	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 hardener is packaged in relation to mixture ratio	1, 5, 15 kg - tin container  hardener powder: PE-bags filling weight corresponds to coldplastic quantity and mixing ratio	5 / 10 ltr. – tin container 2.5/5 ltr. – liquid hardener 8620
<b>Identification</b>	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. <b>Attention:</b> all hardener types are organic peroxides – they must be separately packaged, transported and stored away from the coldplastic in special containers (special cartons and boxes).		
<b>Storage stability</b>	6 months; unmixed in sealed original packaging and sheltered from frost and direct sun exposure!		
<b>Processing temperature</b>	min. + 5°C		
<b>Surface temperature</b>	+ 5°C to + 45°C		
<b>Relative humidity</b>	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

### Influencing factors affecting afterglow properties:

- Effective source of light allows a proper excitation for the whole spectral range
- charging time
- layer thickness
- quality of white primer
- quality of afterglow pigments
- line width

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**Optical properties** BAM\* tested 2-comp. afterglow plastic according to DIN 67510-1:

sample*** wet film thickness mm			luminance mcd / m <sup>2</sup> after				decay time ** min.
1.layer	2.layer		1 min	10 min	30 min	60 min	
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 /m<sup>2</sup>  
 \*\*\* test surface = round surface with 55 mm diameter

## 4 Processing instructions

### 4.1 Preparation of material and application technique

The 2-component afterglow plastic system 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 hardener than is needed for the application (observe pot life).

Coldplastic (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 homepage

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 2-component afterglow 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 2-component afterglow plastic. Use thinner recommended by the manufacture only.

## 5 Surfaces / pre-treatment

### 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.



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**Attention:** 2-component afterglow plastic is not appropriate for large surface applications.

### 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 2-component afterglow plastic on concrete or cement-bound surfaces primers need to be applied:

- a) 2-comp. Primer (Art.-No.: 8139016) or
- b) 2-comp. K809 Airless white (Art.-No.: 14809A) or
- c) 2-comp. EP primer (transparent) (Art.-No.: 8609000) or
- d) manual with 2-comp. 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 coldplastic. Primer consumption may vary depending on the concrete's porosity. The humidity of concrete must not exceed 4% during the application 2-component B71 for concrete primer. Primers based on epoxide resins (see a, b, c) are suitable for residual damp 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 / bonding 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 2-component afterglow 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 2-component afterglow plastic a primer must be applied with a). 2-comp. K809 Airless white (Art.-No.: 14809A). Joints of cobbled pavement remain visible on the surface of 2-component afterglow 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.

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### 5.6 Other surfaces

Inside buildings different surfaces are possible (e.g.: PVC, wood, chipboards). Test markings are mandatory on those surfaces. The 2-comp. afterglow paint could be an option. Metal surfaces are not suitable for 2-component afterglow 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-component K809 Airless white (on request)  
apply evenly
2. 2-component afterglow plastic  
apply evenly
3. 2-component UV clear varnish (on request)  
Protects afterglow plastic against dirt and wear and extends life time

A stronger afterglow effect can be achieved by applying 2-component afterglow plastic thicker and by spraying or rolling the white 2-component EP Primer.

Regarding point 2 the 2-component UV clear varnish needs enough time for curing. Otherwise the varnish's surface may get soiled.

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