

THE SAFEST WAY
INTO THE FUTURE



Road Marking Systems

SWARCO | The Better Way. Every Day.

SHOWING
THE WAY,
WORLDWIDE



”The roads and paths of this world are as varied as our marking systems. The only thing that remains constant everywhere is the objective of ensuring the safety of all road users.“

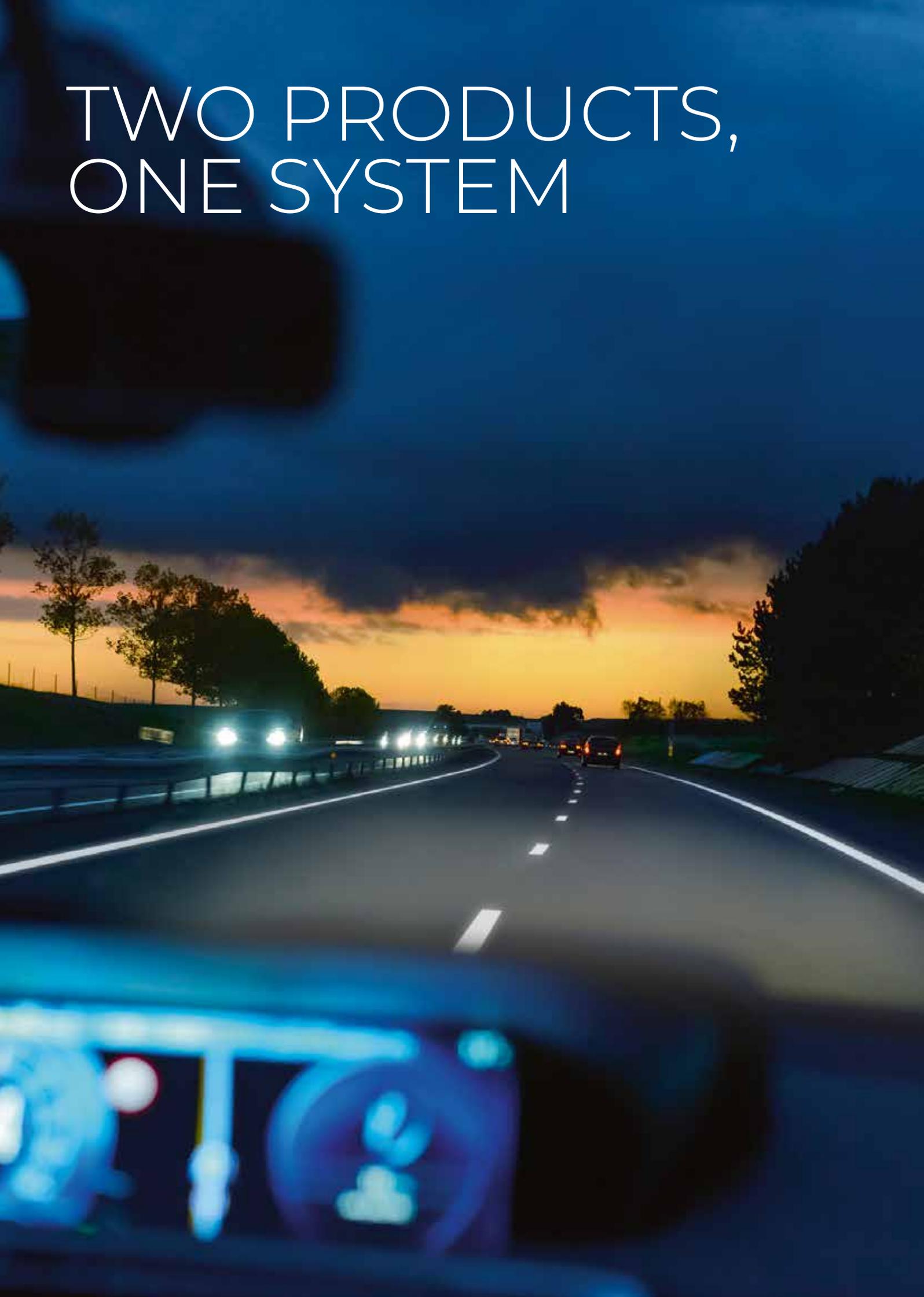
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ROAD MARKING SYSTEMS

The world is more mobile now than ever before. Growing traffic volumes also have increased impact on roadways and road markings.

SWARCO is your competent partner for road marking systems: Our Road Marking Systems Division is one of the world's leading manufacturers and suppliers of reflective glass beads and marking materials. We will happily advise you on which system is best suited to your requirements and needs.

Benefit from our expertise in developing holistic solutions: SWARCO is your single source for the development of customized integrated solutions made up of both core components, reflective glass beads and marking materials. It's good to work together to enhance the safety and comfort of road users. On motorways and around town, at airports and along cycle paths, in tunnels and car parks.

TWO PRODUCTS, ONE SYSTEM





Reflective glass beads and marking materials

Road markings are an important safety factor in today's road transport. We bring their benefits together on the road surface: SWARCO Road Marking Systems not only produces high-grade reflective glass beads and marking materials – it also manufactures integrated systems combining both product lines. As sole full-range supplier worldwide, we provide you with retro-reflective systems from one source and, where necessary, support you on site in all phases of planning and implementation.

Keep on the safe side with us: Every millimeter of road marking boasts the product quality, service strength and solution competence of a global market and innovation leader.

The SWARCO principle

Marking materials
+ Reflective glass beads
+ Competent consultancy

= SWARCO Road Marking Systems

REFLECTIVE GLASS BEADS

A brilliant idea

SWARCO has been a pioneer in reflective glass bead technology since 1969. The principle is as simple as it is brilliant: The micro-glass beads embedded in the marking material retro-reflect the headlight beam of vehicles, causing the road marking to "light up" at night. This is known as retro-reflection and significantly increases safety and visibility at night.

Nowadays, SWARCO Road Marking Systems is the world's second biggest manufacturer of reflective glass beads, with production facilities in four countries. Our glass bead products conform to national and international standards, bearing the CE mark in Europe. The smallest beads are only a few thousandths of a millimeter in size; the maximum diameter is between 1.5 and 2 millimeters.

PRODUCT OVERVIEW

	Characteristics	Recommendation for use
SWARCO SOLIDPLUS	<ul style="list-style-type: none">• High-performance beads• 212 to 1400 µm• Increased service life and excellent retroreflective values• Specially developed glass composition	For all road marking materials
SWARCOFLEX	<ul style="list-style-type: none">• Standard glass beads• 100 to 850 µm• Very good retro-reflective values	For all road marking materials
MEGALUX-BEADS	<ul style="list-style-type: none">• Top reflectors at night and in wet conditions• 600 to 1400 µm• Increased retro-reflective values	Marking systems with increased requirements for visibility in wet conditions (type II markings)
SWARCOLUX	<ul style="list-style-type: none">• Glass bead mixtures comprising SWARCOFLEX and MEGALUX-BEADS• 100 to 1400 µm• Exceptional retroreflection	Marking systems with increased requirements for visibility in wet conditions (type II markings)
PLUS9BEADS	<ul style="list-style-type: none">• High-index glass beads for airports• 200 to 1000 µm• Top-quality reflectors with refractive index ≥ 1.9	Airport markings

MARKING MATERIALS

A colorful spectrum

From liquid and multi-component high-solid-paints through thermo- and cold-spray plastics: Our marking materials are based on proven raw materials and innovative formulations. They guarantee best daytime visibility and perfect embedding of drop-on materials. At our production sites in five countries, we produce a comprehensive range of products with a wide

array of paints for all areas of application. The optimum adhesion and durability, even on surfaces with residual moisture, allows an extensive application window from spring through to late autumn.

PRODUCT OVERVIEW

	Layer thickness	Characteristics	Recommendation for use
1-C High-Solid-Paints			
SWARCOMARK LIMBOROUTE	Wet film thickness 0.3 – 0.6 mm	<ul style="list-style-type: none"> • Cost-efficient marking • Low resistance to wear 	Edgeline marking, on roads with lower volumes of traffic or in poor condition
2-C High-Solid-Paints			
LIMBOROUTE 2-C K809	Wet film thickness 0.3 – 0.6 mm	<ul style="list-style-type: none"> • Good resistance to wear • Good adhesion on wet, mineral surfaces • Longer drying time 	Edgeline marking, in forest areas and alleys, on wet roads, long application window
Dispersion Paints			
SWARCOMARK LIMBOROUTE LW, W	Wet film thickness 0.3 – 0.6 mm	<ul style="list-style-type: none"> • Environmentally friendly • Low emissions • Note the WOT 	On roads with low volumes of traffic and in sunny weather locations
Thermo Spray Plastic			
LIMBOSPRAY HSP	0.6 – 1.2 mm	<ul style="list-style-type: none"> • High cost-efficiency • Higher, but intentional wear 	Longitudinal markings along roads with low volumes of traffic
Thermoplastic			
SWARCOTHERM EUROTHERM (preformed thermoplastic)	2.0 – 3.0 mm applied on top 2.0 – 3.0 mm inlay 3.0 – 8.0 mm	<ul style="list-style-type: none"> • Rapid trafficability • High wear resistance • Low wear resistance when laid by extruder 	On roads with higher volumes of traffic, city roads
Cold Spray Plastic			
LIMBOPLAST KSP	0.3 – 0.6 mm	<ul style="list-style-type: none"> • Cost-efficient marking • Good resistance to wear • Rapid trafficability 	Marking along the edges of roads with high volumes of traffic
Cold Plastic			
LIMBOPLAST	2.0 – 3.0 mm	<ul style="list-style-type: none"> • Very high wear resistance • Longer drying time 	Longitudinal / transverse markings, on roads with very high volumes of traffic

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Our reflective glass beads and marking materials are produced in nine factories in five countries on three continents.

Production sites

3,800

Mobility experts

Our 3,800 employees around the world are on a joint mission. As experts in road marking and traffic management, they support the customers in facilitating modern, safe mobility on the road.

65

Countries

Our Road Marking Systems Division delivers its products and systems to more than 65 different countries – almost a third of the countries on earth.

1200

Millicandela

Our high-performance glass bead, the SWARCO SOLIDPLUS, achieves unrivaled retro-reflective values of up to 1200 mcd/m²*lx. As a comparison: This equates to about 5 to 6 times the value of standard products.

1,001,8

VALUES INSTEAD OF WORDS

swarco 
Road Marking Systems

Interesting figures from the world
of SWARCO Road Marking Systems

since **1969**

The first chapter in the SWARCO history was written in 1969 with the production of microscopically small reflective glass beads. SWARCO is now among the world leaders in the markets for road markings and traffic management.

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Full-service provider

SWARCO Road Marking Systems is one of the world's leading manufacturers of marking materials and reflective glass beads. We are your one-stop shop for system competence.

50 Kilometers of road

The annual production of SWARCO Road Marking Systems, increasing every year, is sufficient to equip over a million road kilometers, which corresponds to some 25 journeys around the globe.

VISIBLY EFFICIENT BY DAY AND NIGHT

Type I marking systems





The standard system for secondary road networks: So-called type-I markings are a widespread and very cost-effective form of marking in many European countries.

Special characteristics: This type of marking is very visible in the daylight and – depending on the glass bead – offers adequate to good visibility at night in dry road conditions.

Disadvantage: In darkness and poor weather (fog, rain), a film of water on the glass beads prevents retro-reflection of the headlight beam. In that case, the marking offers poor visibility and is hard to spot. The film of water causes a mirror reflection that creates a glare for oncoming traffic.

Good to know: Type-I markings can be created with all approved, sprayable marking materials as well as thermo and cold-spray plastics as a plain marking. Glass bead blends sized between 100 and 850 μm are especially adjusted for this.



SWARCO Road Marking Systems:
Tailor-made for your needs.

Each marking system is a tailor-made combination of marking materials and reflective glass beads. We will happily advise you on which system is best suited to your specific requirements.

VISIBLY BETTER AT NIGHT AND IN WET CONDITIONS

Type II marking systems



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State of the art in modern marking systems: So-called type-II markings also demonstrate their visible strength at night on wet roads. Compared to type I, this means ever greater traffic safety, particularly on motorways.



The principle: Type-II systems optimize the retro-reflection of the headlight beam. This is because the glass beads are embedded in such a way that they protrude from the film of water. This can be achieved in three ways:

- Agglomerate marking systems with a structured surface
- Profiled marking systems with haptic and warning effects
- Plain line systems with coarse drop-on materials

Even more visible, even safer: Thanks to their open structures, agglomerate marking systems are characterized by excellent drainage properties. This guarantees the utmost safety in wet conditions.

PLAIN LINE SYSTEMS

with coarse drop-on materials

PRODUCT OVERVIEW

	Characteristics	Innovations
Thin-Layered Type II		
1-C high-solid-paints 2-C high-solid-paints Dispersion paints Thermo spray plastic Cold spray plastic	<ul style="list-style-type: none"> • Minimum layer thickness of 0.6 mm • Glass beads are directly exposed to traffic and wear • High wear when snowploughs are deployed 	SWARCO SOLIDPLUS with cold spray plastic
Thick-Layered Type II		
Cold plastic applied on top Thermoplastic applied on top or inlay	<ul style="list-style-type: none"> • Layer thickness: Cold plastic applied on top 2.0 – 3.0 mm, Thermoplastic applied on top 2.0 – 3.0 mm, inlay 3.0 – 8.0 mm • Glass beads are directly exposed to traffic and wear • Thermoplastic wear more quickly than cold plastic • With the increasing abrasion of the thermoplastic, premix beads appear on the surface, ensuring that good night-time visibility is maintained longer, even in wet conditions • Cold plastic are easy to refurbish with cold spray plastic over-markings • Less effective drainage 	<ul style="list-style-type: none"> • For example: D480/SWARCO SOLIDPLUS 50 100–800 T18 Successfully deployed with very high requirements (R5, RW5), e.g. on motorways in Thuringia • SWARCO SOLIDPLUS beads are also available as premix beads.

A CLOSE-UP

Type II agglomerate markings

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The structure makes the difference:
Type II agglomerate markings with a structured surface deflect the wet better than any other system.

This results in an unbeatable combination of road safety, economic efficiency and sustainability. After our many years of research and development, these innovative markings are among the most sought after Type II systems in Germany today.

Good to know: Depending on the application technique, a distinction is made between a regular and a stochastic structure. We will be happy to advise.

AGGLOMERATE MARKINGS

from reactive materials / thermoplastic materials

PRODUCT OVERVIEW

	Characteristics	Innovations
From Reactive Materials		
LIMBOPLAST D480 LIMBOPLAST TEXTURED/ STRUCTURED	<ul style="list-style-type: none"> • Low material usage: 2.2 – 2.8 kg/m² • Good resistance to wear and ability to withstand winter road services • More effective drainage 	<ul style="list-style-type: none"> • Trials with new structures that reduce noise emissions from agglomerate markings • Combination of two high-grade, proven and tested products (D480 with cold spray plastic or 2-C K809) to create a marking system in combination with SWARCO SOLIDPLUS beads delivering high retro-reflective values of over 500 mcd/m²*lx, e.g.: <ul style="list-style-type: none"> • for preliminary traffic release markings with 2-C K809 on mineral surfaces with residual moisture • for refurbishing or refreshing worn, weathered agglomerates by spraying them over with cold spray plastic
From Thermoplastic Materials		
AGGLOTHERM TS AGGLOTHERM 50 AGGLOTHERM TOPLINE	<ul style="list-style-type: none"> • Material usage of approx. 3.5 – 4.5 kg/m² • With the increasing abrasion of the thermoplastic, premix beads appear on the surface and ensure good, longer-term day-time and night-time visibility • Lower wear resistance against winter road services, particularly with irregular agglomerates compared to agglomerates from reactive materials • Higher application temperature compared to plainline systems made from thermoplastic materials • More effective drainage 	<p>Use of new, high grade SWARCO SOLIDPLUS beads with a high degree of roundness and a higher refractive index for excellent night-time visibility values</p>

YOUR SPECIALIST FOR SPECIAL DEMANDS

Cycle path markings / large surface markings

We offer large surface marking materials for a wide range of traffic loads. Depending on requirements, these materials can be highly elastic and flexible to compensate for surface expansion caused by changes in temperature. Further criteria: Good grip and skid resistance as well as color intensity.

From cycle paths to racetracks, from car parks to airports: SWARCO Road Marking Systems is your specialist for special markings in all areas of use. Ask us for the appropriate solution for your specific application.



Aiport markings

Our 1-C and 2-C high-solid-paints, dispersion paints and cold spray plastic are tested by official institutes. Their resistance to fuels, oils and de-icers is also assessed. Airport beads with high refractive indices ensure outstanding retro-reflection. Colored glass granulate increases the grip of non-white markings.



Construction zone markings

Our 1-C and 2-C high-solid-paints, cold spray plastic and structured plastic are ideal for creating temporary yellow markings in construction zones. A cost-effective alternative to pavement marking tapes.



Indoor Markings

Our high-quality markings for industrial halls have been successfully proven in practice for many years now. They significantly increase indoor safety when combined with certified phosphorescent indoor safety lane marking systems for marking ground-level escape routes.



Playground and schoolyard markings



Sports grounds



Tactile markings

TRAFFIC SAFETY ALL ALONG THE LINE

SWARCO Road Marking Systems



Did you know that the Fédération Internationale de Motocyclisme (FIM) has approved our special LIMBOROUTE Circuitline WBP dispersion paint to mark racetracks? Traffic safety all along the line.

From standard to special: We will find the best marking solution for every application. Which one is yours?

SWARCO | The Better Way. Every Day.

SHOWING THE WAY, WORLDWIDE

In 1969 we started out with the manufacture of tiny reflective glass beads. Today we have grown into the world's largest systems provider for road markings. Making roads safer and saving lives on a daily basis. Our high quality products and services, safely direct traffic flow from A to B, every day and night. On all roads, in any weather, and all from SWARCO.

We prepare for the future, by fusing knowledge with innovation at our Competence Center for Glass Technology and Marking Systems. So, even with smart and autonomous driving, we continue to blaze the trail of premium road markings to the world. Jump in and drive with us; we will be happy to help you find your ideal road marking solutions.

www.swarco.com/rms

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www.kommhaus.com | Photos: SWARCO Road Marking Systems, Wolfgang
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