

THE SAFEST WAY
INTO THE FUTURE.



SHOWING
THE WAY,
WORLDWIDE.

SWARCO Road Marking Systems

Nearly 50 years ago 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.

SWARCO ROAD MARKING SYSTEMS
A division of the SWARCO Group
The Better Way. Every Day.

"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."

Philipp Swarovski
Chief Operating Officer (COO)
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 from SWARCO.



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 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.

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 four 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.

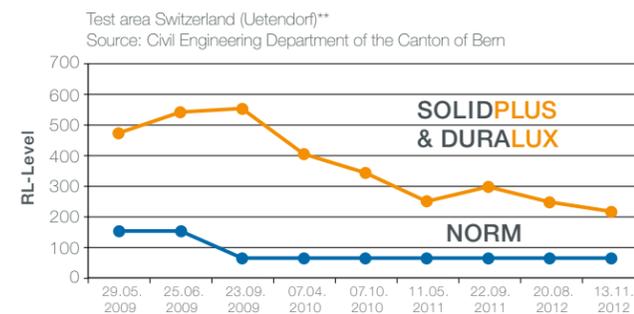
PRODUCT OVERVIEW

	CHARACTERISTICS	RECOMMENDATION FOR USE
SOLIDPLUS & DURALUX	<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 - 1 to 850 µm - Very good retro-reflective values 	For all road marking materials
SWARCOLUX	<ul style="list-style-type: none"> - Glass bead mixtures comprising SWARCOFLEX and MEGALUX-BEADS - 1 to 1400 µm 	Marking systems with increased requirements for visibility in wet conditions (type II markings)
MEGALUX-BEADS	<ul style="list-style-type: none"> - Top reflectors at night and in wet conditions - 600 to 1400 µm 	Marking systems with increased requirements for visibility in wet conditions (type II markings)

SOLIDPLUS & DURALUX

Enhanced road safety. Our high-performance glass bead SOLIDPLUS | DURALUX achieves particularly high retro-reflective values of over 1000 mcd/m²*lx. The values required by the norm are exceeded a number of times over even after several years of exposure to traffic.

** The enhanced road safety is confirmed by the long-time test on visibility at night: With SOLIDPLUS | DURALUX, the retro-reflective values are initially 320% above the required standard. After more than two years, the value of 60 mcd/m²*lx which is required by the standard is even exceeded by 415%. (Source: Civil Engineering Department of the Canton of Bern)



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

3700

Mobility experts.

Our 3,700 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.

VALUES INSTEAD OF WORDS.

Interesting figures from the world of SWARCO.

9

Production sites.

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

53

Countries.

In 2016, our ROAD MARKING SYSTEMS Division delivered its products and systems to 53 different countries – almost a quarter of the countries on earth.

5

Decades.

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

1,001,850

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.

1200

Millicandela.

Our high-performance glass bead, the SWARCO **SOLIDPLUS & DURALUX**, 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

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.



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.



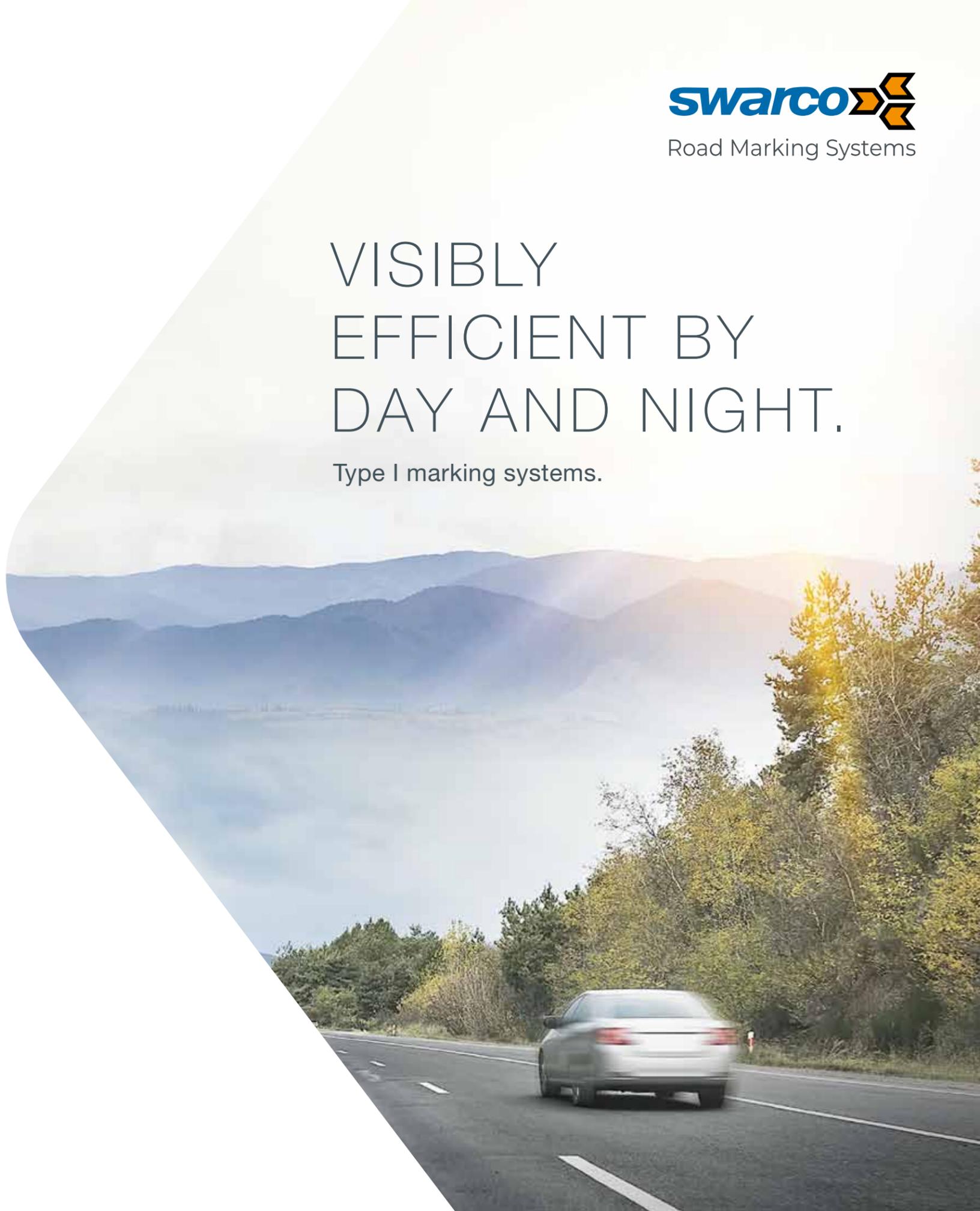
VISIBLY
EFFICIENT BY
DAY AND NIGHT.

Type I marking systems.



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.



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 	SOLIDPLUS DURALUX with cold spray plastic D480 / SOLIDPLUS 50 100-800 T18 Successfully deployed with very high requirements (R5, RW5), e.g. on motorways in Thuringia
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 	SOLIDPLUS DURALUX beads are also available as premix beads

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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.

A CLOSE-UP.
Type II agglomerate markings.

AGGLOMERATE MARKINGS

from reactive materials / thermoplastic materials

PRODUCT OVERVIEW

	CHARACTERISTICS	INNOVATIONS
<p>FROM REACTIVE MATERIALS</p> <p>Limboplast D480 Limboplast friction / structure plastic</p>	<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 SOLIDPLUS DURALUX beads delivering high retro-reflective values of over 500 mcd/m²*lx, e.g.: - 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
<p>FROM THERMOPLASTIC MATERIALS</p> <p>Agglotherm TS Agglotherm 50 Agglotherm Topline</p>	<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 plain-line systems made from thermoplastic materials - More effective drainage 	<p>Use of new, high grade SOLIDPLUS DURALUX beads with a high degree of roundness and a higher refractive index for excellent night-time visibility values</p>

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SYSTEMS:
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YOUR SPECIALIST FOR SPECIAL DEMANDS.

Special markings from SWARCO.



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.

Cycle paths/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.

Car parks/Industrial halls

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.

Roadwork zones

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

Skid surfaces

Our skid surface plastic H 145 G with a smooth surface and the option of additional sealing with 2-C UV clear varnish are perfectly suited to the permanent coating of skid surfaces which simulate aquaplaning and hard-packed snow in driver safety training centers.

Airports

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.

TRAFFIC SAFETY ALL ALONG THE LINE.

SWARCO ROAD MARKING SYSTEMS.

Did you know that virtually every airport in Germany, many in the US and lots more around the world rely on our airport marking systems? Or that the Fédération Internationale de Moto-cyclisme (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?**



Road Marking Systems

SWARCO | The Better Way. Every Day.

SWARCO is a growing international group providing the complete range of products, systems, services and solutions for road safety and intelligent traffic management.

With almost five decades of experience in the industry, the corporation supports the growing mobility needs of society with turnkey systems and solutions in road marking, urban and interurban traffic control, parking, public transport, infomobility and street lighting. Cooperative systems, V2I communication, electromobility, and integrated software solutions for the Smart City are latest, future-oriented fields in the group's portfolio.

Discover the products and solutions from SWARCO ROAD MARKING SYSTEMS.
www.swarco.com/rms

