

LuminoKrom®

PHOTOLUMINESCENT ROAD MARKING To secure mobilities at night





EDITORIAL

Our society, cities and infrastructures are currently undergoing deep changes, with active mobility becoming ever more prevalent and cars less and less tolerated.

These changes are taking place against a backdrop of geopolitical tensions and electricity production issues that are transforming our relationship with energy. Electricity is becoming a precious resource that must be consumed responsibly. Many cities are questioning the use of public lighting with regard to the economic and ecological issues of light pollution and carbon neutrality.

Since its creation, OliKrom has been a company committed to the ecological transition, sustainable innovation and the development of new disruptive technologies for the cities of the future.

In 2018, this effort is illustrated by the first deployment of LuminoKrom[®] photoluminescent marking on a bicycle path in Pessac in Gironde (France). Today, an entire range of photoluminescent paints is available in France and internationally to make night-time mobility safer for pedestrians and cyclists in cities, but also in the industrial sector.

Our thanks go to the local authorities, applicators, infrastructure managers and partners who trust us and contribute to deploy every day our LuminoKrom[®] photoluminescent marking to improve user safety.

Jean-François LÉTARD, Founding CEO of OliKrom, a French company certified ISO 9001 since 2021

LuminoKrom[®] photoluminescent paint

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LUMINOKROM[®] PHOTOLUMINESCENT PAINT

LuminoKrom[®] paint is charged by natural or artificial light and glows in the dark for 10 hours, with no power supply or CO₂ emissions.

A unique and patented French innovation

LuminoKrom[®] is a **breakthrough innovation** from the research laboratories of OliKrom, based in Pessac, in the New Aquitaine region of France. Supported by the ADEME «Road of the Future» program, it took four years to develop this new technology in collaboration with the Eiffage Group.

This partnership enabled us to address all the technical capabilities required for the deployment on road infrastructures: LuminoKrom[®] is a range of high performance and weather-proof paints.



A high performance technology with multiple uses

LuminoKrom[®] is a solution deployed **both indoors and outdoors since 2018, on bicycle paths, greenways and industrial sites.** Over the years, the paint's performance has led to the emergence of new uses, such as industrial sector marking applications, artistic

creations, maritime safety and more.



A reliable and durable solution over time

LuminoKrom[®] paint has proven resistance: five years after the first application on a bicycle path in Pessac, in France, the results show that **the lighting process is perfectly stable.** Night after night, the path markings light up, even in the undergrowth, whatever the weather, whatever the season...



Visible from a distance of **80 m**

without power supply



Proven technology since 2018



How does photoluminescence work?

Under sun rays, most materials transform the collected energy into heat. However, some materials are capable of emitting a light wave.

We find this property of luminescence in some fish or marine algae. We also use many photoluminescent products in everyday life, such as the glow-in-the-dark stars on the ceiling of a child's bedroom, a newborn's pacifier, or the hands of a watch.



The LuminoKrom[®] range of products exploits this property of luminescence, which allows the paint to recharge indefinitely in daylight or with artificial lighting and releases it at night in the form of diffuse luminosity.

SECURING BICYCLE PATHS

Lighting all the bicycle paths in France with light poles would be an impossible task due to the implementation costs, not to mention the environmental priorities of developing Dark Infrastructure, combating light pollution, promoting energy sobriety, and reducing CO_2 emissions.

The use of luminescent marking is a real alternative that creates a luminous guide without using electricity or generating CO_2 emissions. The paint is recharged during the day and lights up as soon as night falls. This type of signage is quick to deploy, more economical and enhances user safety.

LuminoKrom[®] has now become the reference in photoluminescent road marking with unequalled luminosity performance, with more than 100 new bicycle paths or greenways made safer in 2022.

Prioritizing soft mobility both day and night

All too often, bicycle path users prefer to use the roads at night due to a lack of visibility and the risk of running into cars driving dangerously.

Guiding and reassuring

LuminoKrom[®] markings, applied in axial lines or along the edges, create a luminous guide visible for up to 80 meters. It helps cyclists to find their way around and anticipate bends, making night-time riding safer.

Warning of approaching danger

LuminoKrom[®] paint makes accident-prone areas visible: intersections, dangerous banks, bridge kerbs, barriers, concrete dividers, etc. Visible from a long distance, the paint raises cyclists' awareness, enabling them to adapt their speed and avoid obstacles.



IN 2022 LUMINOKROM® WAS USED FOR A MARKING PROJECT IN FRANCE EVERY 2 DAYS!

REASSURING USERS OF PEDESTRIAN PATHWAYS

A **luminescent guide strip on the sidewalk** is a quick and easy way for a territorial community **to improve night-time orientation and safet**y of pedestrians and people with reduced mobility and/or visual impairments.

This type of luminous guide is particularly suited to places without public lighting or in cities where public lighting is switched off part of the night in an effort to reduce energy consumption.

Some neighborhoods also have a more active nightlife than others. Luminescent markings are an easy solution for these districts to implement.



ANIMATION MARKING IN PUBLIC SPACES

The objective of "meeting zones" and "pedestrian areas" is to give the city back to pedestrians, to make them want to travel by foot and take back ownership of public spaces. The time has come to revolutionize what was once a "cars-first" public domain by sharing the roadway, giving priority to pedestrians before cyclists, and to cyclists before motorists!

Some cities are going further still by covering roadways with **fun and colorful decors** that support the identity of these areas and help pedestrians make the space their own. It is dubbed **animation marking**, now a legalized concept in French urban areas since September 2015.

What if animation marking also allowed pedestrians to reclaim the night, to learn how to get around in the dark again? This is the approach taken by the City of Prévost in Canada, which chose LuminoKrom[®] paint to mark the path between a parking lot and a kindergarten. Local children's drawings were used by the applicator to create the templates, making the project even more meaningful to the community!

What if animation marking allowed users to reclaim pedestrian paths at night?

THINKING DIFFERENTLY ABOUT URBAN DEVELOPMENT

Safer and more functional

Switching off public lighting at night, an increasingly widespread phenomenon, has little overall impact on car travel. However, cyclists' and pedestrians' mobility (less dense but very present) is clearly impacted, even on the sidewalk where bollards, antiparking devices and counter-attack concrete blocks become pedestrian hazards!

Making obstacles and urban furniture visible at night

Using LuminoKrom[®] on singular points or to signal obstacles such as chicanes, intrusion barriers, bollards or signs, enhances the visibility of urban furniture and reduces the risks of darkness-related accidents.

URBAN AND ROAD MARKINGS

LuminoKrom® awaiting certification for urban and road use

Since 2019, OliKrom has been applying markings on the RN2 road experimental site under the aegis of CEREMA in order to obtain the NF058 certification for urban and road use.

While awaiting the right of use issued by Ascquer, LuminoKrom[®] markings are strictly reserved for securing soft mobility on cycle paths, greenways, pedestrian walkways and facilities on private sites.

Several experiments underway in non-urban areas



White LuminoKrom® marking applied on a particularly accident-prone portion of the RD29.

A test run by the French Ministry of Ecological and Solidarity Transition in the town of Saint-Pandelon in the Nouvelle Aquitaine region.



Experiments are being carried out on roads in agreement with the public authorities, in accident-prone areas such as intersections, bends and slow-down zones.

These test sites are supervised by experimentation protocols. The objective is to validate and quantify the contribution of LuminoKrom[®] photoluminescent markings to road safety in areas without public lighting.

WHAT LOCAL AUTHORITIES ARE SAYING

"The objective has been attained with high quality results. We have had very positive feedback from users, cycling groups and the Environmental Protection Department. We will definitely apply this marking in future projects."

M. Clef, Infrastructure Department, Saint-Paul de la Réunion City Hall

"Some people refused to use this bike path and **local residents demanded the installation of street lighting, but it was too expensive!** To light this path, we would have had to dig trenches, disturb tree roots and install low light poles. Pessac was also the first town of more than 50,000 inhabitants in France to have tested switching off public lighting at night."

Eric Martin, Deputy Mayor of Pessac. La Tribune.

"It means we have lighting in unlit areas without needing to undertake major civil engineering work. It is very discreet lighting, not invasive at all. **This fits with the city's ambition to combat light pollution.**"

Bernard Grégoire, elected official in charge of works in Millau.

"Our initial **assessment is very positive;** [the markings] are effective at night. Cyclists feel secure in a poorly lit area given that we cannot put up vertical lighting poles on the Pâquier promenade."

Gilles Bernard, Deputy Mayor in charge of mobility. Le Dauphiné.

Plouzané (29)



WHAT USERS ARE SAYING

"The bike path goes through the forest and it's very dark at night. Until now, I avoided using it in the winter on the way home from work. Since the path was painted, I use it far more often; I feel safe. It's amazing to see this luminescent strip in the middle of the night!" Marie, daily commuter cyclist in Pessac

"It really makes a difference where there is no street lighting between two areas! Even with a light on your bike, **it really helps." Cécilia**, Comité Pro Vélo Chablais

"It's more reassuring, especially when you cycle home quite late. It stands out clearly from the ground, guiding you well on the bike path. **The** *quality of the paint is really impressive.*" **Sinah and Frédéric,** residents of Vionnaz



THE ONLY PAINT ON THE MARKET WITH A IO-HOUR VISIBILITY TIME

LuminoKrom[®], the only certified Class G product on the market

The international standard ISO 17398 evaluates and ranks the performance of a luminescent product. In this classification, a class A material is visible for a few minutes. A class C object will reach one to two hours of luminescence.

OliKrom's scientific research team, made up of photochemists and chemists who are experts in phase transition phenomena, worked to optimize the relaxation processes to obtain **a level of luminescence never before achieved. This innovation has been patented internationally.**

Up to 10 hours of visibility

The LuminoKrom[®] range of products has a luminescence that reaches Class G, i.e. the capacity to last up to 10 hours in the dark. This performance have been confirmed by a COFRAC-accredited independent laboratory specialized in optical metrology.

Certified Class G

LUMINESCENCE CLASSES ISO 17398

Classification	Measure	ed lumineso	VISIBILITY				
	2 min	10 min	30 min	60 min	human eye of 8 mcd/m ²		
Class A	108	23	7	3	30 min		
Class B	210	50	15	7	1 hour		
Class C	690	140	45	20	2,5 hours		
Class D	1100	260	85	35	4 hours		
Class E	1800	400	120	55	6 hours		
Class F	2300	520	155	70	8 hours		
LuminoKrom® Class G	3000	650	190	80	Visibility 10 hours		

Warning: there are many products that claim to equal the luminescence time of LuminoKrom[®] paints!



AN ECO-RESPONSIBLE AND ECONOMICAL SOLUTION

Luminescent road markings, responding to the challenges of energy sobriety

At a time of accelerating climate change and hyperinflation of energy prices, switching off public lighting at night helps to reduce our cities' energy bills. In view of this rapidly growing trend, **do we really have to leave all users completely in the dark?** LuminoKrom[®] photoluminescent marking can bring them light!

Reducing light pollution and contributing to the development of Dark Infrastructure

All night lighting sources generate light pollution that is harmful to biodiversity. Restoring an ecological network that is conducive to night-time wildlife is essential, this concept is called Dark Infrastructure. LuminoKrom[®] road marking is now deployed in several of these areas but also **on many bicycle and pedestrian paths in order to reduce light pollution in our communities.**

ZERO CO₂ EMISSION



Limiting greenhouse gases with a low-carbon solution

In France, achieving carbon neutrality by 2050 means dividing greenhouse gas emissions by six. LuminoKrom[®] paints do not generate CO₂ emissions. The technology uses the renewable energy of solar radiation which is an inexhaustible, clean energy source with no impact on greenhouse gases. Using this type of light marking is a solution **for reducing our cities' carbon footprints.**

Easy and low-cost application

With no structural work or specific maintenance, LuminoKrom[®] paint is as quickly and easily applied as standard road markings.

Compared with the high cost of installing public lighting (equipment, trenches, cabling, etc.), equipping a kilometer of bicycle path or pedestrian walkway with LuminoKrom[®] paint implies supply costs starting from €3,500 per km. It offers a smaller investment solution which makes it easy to secure accident-prone areas that are not connected to an electricity grid, such as rural areas.

Reduce light pollution with luminescent marking: LuminoKrom[®] emits 10 000 times less light than public lighting

A VIRTUOUS LIFE CYCLE ASSESSMENT

Since its creation, OliKrom has paid the utmost attention to developing **environmentally friendly materials.** LuminoKrom[®] photoluminescent paints meet this commitment with their ability to store light during the day and light up at night without consuming energy or releasing CO₂.

APESA* was commissioned to conduct a comparative study and determine the environmental impact of LuminoKrom[®] products. This expert conducted a Life Cycle Assessment (LCA), a method governed by the international standards ISO 14040 and 14044.



*APESA is a technology center serving transition processes, companies and regions. Created in 1995 in the New Aquitaine region of France, APESA offers personalized support on various CSR topics (creating societal value, eco-innovation, environmental assessment, prevention, HSE regulations, biomass waste recovery, etc.). In order to evaluate the impact of LuminoKrom[®] paints, APESA was given access to all the raw materials, their origins, compositions, safety data sheets, and modes of transportation.

All synthesis and industrialization protocols were studied to measure the environmental footprint of LuminoKrom[®] paint in terms of **three impact indicators:**



LuminoKrom[®] is the most environmentally friendly lighting solution

If we compare the global environmental impact of existing lighting solutions on the market, 1 km of public lighting with light poles is equivalent to 184 km of lighting with LuminoKrom[®].



Contact us for more information on this study

A MADE-IN-FRANCE PRODUCTION

It took four years of research and development to create LuminoKrom[®]. The first photoluminescent paint that lights up for 10 hours, suitable for all uses (road, maritime, industrial, etc.) and can be recharged indefinitely using natural or artificial light.

OliKrom, industrial leader in color intelligence

OliKrom is a company born from scientific research. Founded in 2014, **OliKrom designs and produces luminescent or smart inks and paints which change color** according to temperature, light, pressure, or a solvent/gas.

This unique expertise allows OliKrom to market high-performance products with a strong commitment to quality, compliant with certification.

An innovative and committed company

Each year, more than 30% of our investment budget is devoted to R&D. Eco-innovation is an integral part of the company's DNA, with the constant desire to **create innovative solutions that are useful and respectful of the environment.**

15 years of experience Produced in France

From kg to ton/day













OliKrom expands: the plant is being expanded

OliKrom is an ambassador for Bpifrance's Coq Vert community, alongside other companies committed to the fight against global warming and the environmental transition.



A TECHNOLOGY SEDUCING MARKETS WORLDWIDE



Dubai, United Arab Emirates

LuminoKrom[®] photoluminescent paint secured more than 100 greenways or bicycle paths throughout France in 2022.

The technology has also been used outside France, in Belgium, Burundi, Cameroon, Canada, Dubai, United Arab Emirates, Japan, Luxembourg, Nigeria, Qatar, Senegal, Switzerland, and Thailand... for a variety of different – and sometimes surprising – applications!

Burundi's experience: LuminoKrom® improves road safety







The international airport and the city of Bujumbura are connected by the RN5, a road with little or no lighting and a median strip separating the two lanes.

The many motorcyclists using this road tended not to see the median strip, causing frequent accidents. Road lighting and luminescent arrows were added to make it easier for vehicles to identify the crossing areas. **This has significantly reduced the number of accidents on this busy road.**





A look back at the first applications of LuminoKrom[®] in Canada

In August 2021, the City of Prévost innovated to improve the safety of its citizens, cyclists and pedestrians by concluding a tripartite partnership with LuminoKrom[®] and the Quebec road marking company T.R.A.

The road markings were applied at three different locations in the city: a tourist site, a parking area and a busy pathway used by families and young people.

One year on and the paint has lost none of its performance, it still provides 10 hours of luminescence. This achievement once again demonstrates the paint's resistance to bad weather.



"We are very proud to be the first municipality in Quebec to implement a project to test this photoluminescent paint in our weather conditions. This system allows us to reinforce the safety of users, while providing luminous guidance in areas with little or no lighting, without disturbing the neighborhood."

Mr Paul Germain, Mayor of Prévost.

INDUSTRIAL AND PRIVATE SIGNAGE

Improving security on industrial sites

In the industrial environment, the use of photoluminescent marking addresses many safety issues. **Standalone luminous marking** does not require power supply and recharges itself using a natural and/or artificial light source.

For example, it is a good solution **to ensure the evacuation of the personnel** in the event of a power cut, particularly in underground parking lots, staircases or large production halls where just an illuminated sign above the exit doors is far from adequate.

In the case of manufacturers, the objective may be **to ensure continuity of activity** in the event of prolonged power cuts. LuminoKrom[®] marking offers many possibilities, such as identifying the location of valves and motors, or even marking out walls in long corridors to create a luminescent strip that helps guide operators in the premises.

BEFORE





Facilitating night-time industrial activity

In the industrial environment, the recent evolution of regulations, the shared commitment to reducing the ecological footprint, and even the economic constraints have led to changing behaviours and reducing the use of lighting.

LuminoKrom[®] photoluminescent paint is a standalone solution that can meet these challenges. It promotes night-time mobility on industrial sites, such as marking the patrol path for surveillance agents.

LuminoKrom[®] photoluminescent paint has also been used to secure footbridges, staircases, and the surroundings of a pit.

We have a wide variety of photoluminescent marking products for use on both horizontal and vertical cement and metal surfaces. Our range is presented at the end of this brochure.

Providing backup in case of power failure with standalone light markings

PHOTOLUMINESCENCE FOR MARITIME SAFETY

After several years of deployment to secure greenways and bicycle paths throughout France, LuminoKrom® photoluminescent paint is now also distributed by Seaview Progress to meet the needs of commercial vessels and pleasure or race boats. **A totally new concept in the maritime world!**

Facilitating rescue operations at sea

With the development of nautical activities, sea rescue is a major challenge that requires constant innovation.

Throughout the year, SNSM rescuers provide assistance to boats in distress at sea. With its luminescence visible from up to 80 meters away, LuminoKrom[®] is an innovative solution that helps them in their work and facilitates rescue operations at sea. It enables helicopters to spot boats in the open sea at night. This is of great help to the rescuers, especially in bad weather conditions such as rough sea, fog and rain.



We Explore, Roland Jourdain's flax fiber catamaran, at the start of the Route du Rhum 2022. LuminoKrom[®] paint was applied to the six aft-section steps and the tops of the two folding daggerboards to visualize the settings.



Photoluminescent paint can also be used **to mark a** "hazardous" area on the deck, in the entrance of an engine hold, to indicate a step or a low ceiling... LuminoKrom[®] is a guarantee of safety for the seagoing world.

DAY





NIGHT

A proven technological solution

After a year of testing in real-life situations, exposed to the sun of the French Riviera and weathered by sea spray and the waterline, LuminoKrom[®] paint has never lost intensity or duration in its photoluminescent power.

LuminoKrom[®], luminescent marking that resists even the marine environment

LUMINOKROM® PAINT USED FOR ARTISTIC AND CULTURAL CREATIONS

The example of Terra Botanica, the first botanical adventure park in Europe

At nightfall, visitors to Parc Terra Botanica can extend their visit with the unique Terra Nocta night show.

It is an **original light-filled experience** in which visitors of all ages can discover a magical and sensory world.

Among the five immersive paintings presented in the exhibition, the Green Odyssey offers a unique **light display** using LuminoKrom[®] photoluminescent paint.



Created by the decor design workshop Atelier Jean GRÉGOIRE.



Night show never before seen in France, a light display using LuminoKrom® LuminoKrom®

SOLVENT-BASED OUTDOOR APPLICATION

Photoluminescent urban paint for urban marking (bicycle paths, pedestrian paths, greenways, sidewalks, dangerous curbs, etc.)

COLORS





ALMOND GREEN 10h of visibility Class G

6h of visibility Class E YELLOW 6h of visibility Class E

APPLICATION

- Ready to use
- Minimum dosage of 900 g/m²
- Recommended application by airless machine
- Can be applied on bitumen, asphalt, concrete, etc.

😸 OliKion

PACKAGING

- 10 kg
- 20 kg



WATER-BASED INDOOR OR OUTDOOR APPLICATION

Photoluminescent paint for vertical/horizontal industrial signage or road marking

COLORS





WHITE

6h of visibility

Class E



ALMOND GREEN 10h of visibility Class G

YELLOW 6h of visibility Class E

APPLICATION

- Ready to use
- Minimum dosage of 900 g/m²
- Recommended application by roller and brush
- Can be applied on bitumen, asphalt, concrete, etc.

PACKAGING

- 5 kg
- 10 kg
- 20 kg



ROAD AND INDUSTRY

Photo credit: Eiffage

BI-COMPONENT OUTDOOR APPLICATION

Photoluminescent urban white cold coating for private areas. Ideal solution for crosswalks, parking lots, etc.

COLORS



APPLICATION

- Ready to use
- Dosage de 3.5 kg/m²
- Apply with a serrated or smooth coating spatula, depending on the desired final appearance
- Can be applied on bitumen, asphalt, concrete, etc.

PACKAGING

• 7,5 kg





SOLVENT-BASED INDOOR OR OUTDOOR APPLICATION

Photoluminescent paint for metal surfaces, ideal for bollards or street furniture

COLORS



10h of visibility Class G



YELLOW 6h of visibility Class E

APPLICATION

- Ready to use
- Minimum dosage of 900 g/m²
- Recommended application by spray gun, roller and brush

Class E

• Can be applied on all types of metal surfaces

PACKAGING

- 5 kg
- 10 kg
- 20 kg



METAL LuminoKrom® LuminoKrom®

SOLVENT-BASED INDOOR OR OUTDOOR APPLICATION

Photoluminescent paint for all surfaces

COLORS



ALMOND GREEN 10h of visibility Class G

TECHNICAL CHARACTERISTICS

- Paint resistant to abrasion and general wear
- Good resistance to freeze/thaw cycles

APPLICATION

- Ready to use
- Apply on an undercoat of white paint
- Can be applied on all types of surfaces

PACKAGING

• 400 ml



THE ENTIRE LUMINOKROM® RANGE

TECHNICAL CHARACTERISTICS

- Paints to be applied on a white undercoat
- Strong anti-slip (Standard NF EN1436): SRT > 0.50 (0.70 with the addition of aggregate)
- Paints resistant to abrasion, repeated traffic and general wear
- Good resistance to freeze/thaw cycles

									Packaging					
	Duration of luminescence	Class of Iuminescence ISO 17398	Outdoor	Indoor	Airless spray	Spatula	Spray gun	Roller and brush	400 ML	5 KG	7,5 Kg	10 Kg	20 Kg	Reference
Solvent-based marking														
LuminoKrom® Paint Road ALMOND GREEN	10 h	G	٠		٠							•	•	AG1000S
LuminoKrom® Paint Road WHITE	6 h	E	•		•							•	•	AW1000S
LuminoKrom® Paint Road YELLOW	6 h	E	٠		٠							•	•	AY1000S
LuminoKrom® Cold coating Bi-Component WHITE	6 h	E	•			•					•			AW3500B
LuminoKrom® Spray can All types of surfaces ALMOND GREEN	10 h	G	٠	•					•					SG1000S
LuminoKrom [®] Paint Metal ALMOND GREEN	10 h	G	•	•			•	٠		•		•	•	MG1000S
LuminoKrom [®] Paint Metal WHITE	6 h	E	•	•			•	•		•		•	•	MW1000S
LuminoKrom [®] Paint Metal YELLOW	6 h	E	•	•			•	•		٠		•	•	MY1000S
Water-based marking														
LuminoKrom® Paint Road and Industry ALMOND GREEN	10 h	G	٠	•				٠		•		•	•	AG1000W
LuminoKrom [®] Paint Road and Industry WHITE	6 h	E	•	•				•		•		•	•	AW1000W
LuminoKrom® Paint Road and Industry YELLOW	6 h	E	•	•				٠		٠		•	•	AY1000W

Shipping Vithin 7 days*





