iriotec®
8000 Series

MERCK

CAN LIGHT BE ETERNAL?

Simplifying Identification – Laser marking with **Iriotec® 8000:**
the light may only be visible for seconds, the mark will be eternal

let the light flow

They say that nothing lasts forever. Dreams change, trends come and go, but love and laser markings never die. Eternity is also symbolized by monumental architecture around the world.

Follow the light beam from the Atomium in the center of Europe to the Taj Mahal in India, past the Golden Gate and Lady Liberty in the US, to Mano del Desierto in the Atacama Desert, to the Great Wall of China, Sydney Opera in Australia and then to the pyramids in the Valley of the Kings. Around the world, mankind has immortalized himself by building monumental structures that have lasted to this very day.

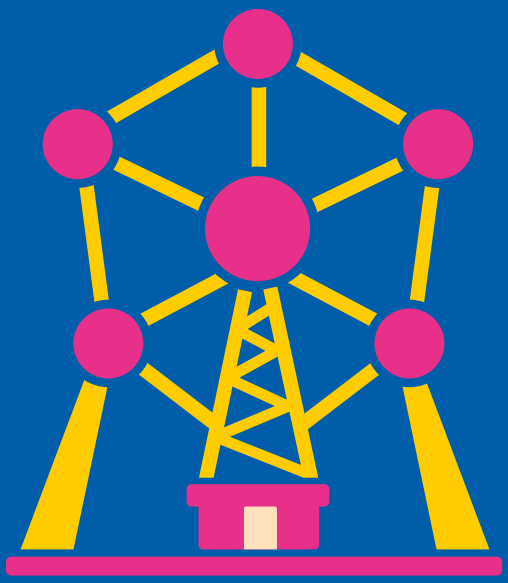
Simplifying Identification – there is more to explore

"More to explore" is our brand promise. That´s because there is far more to discover behind the people, materials and methods than anyone thinks. We are the creative possibility developer. With inventiveness, expertise and specialty chemicals, we develop valuable, functional future-oriented solutions. From durable and razor-sharp laser marking to steadfast brand protection, our Iriotec® 8000 series provides the perfect solution for your needs.

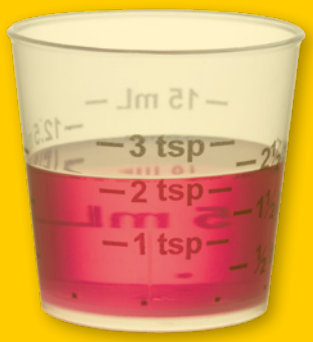
Your DIGITAL PRODUCT FINDER

OVER VIEW

* Heavy metals as defined in RoHS and CONEG (USA)



In the heart of Belgium, the iconic Atomium stands as a symbol of innovation and progress. The combination of Atomium's futuristic design and the innovative applications of PP and PET highlights a commitment to a transparent and sustainable future, where technology and materials work hand in hand to enhance our lives.



inscription with great potential

PP and PET are integral to modern life, offering unparalleled transparency and durability. PP is known for its strength and versatility, used in everything from packaging to technical parts. PET, widely recognized for its clarity and recyclability, is a staple in beverages and food packaging.

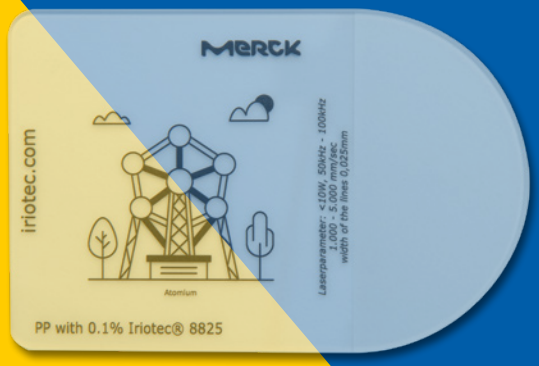
The art of writing with light involves seamlessly incorporating pigment into polymer. This technique ensures that the special properties of the pigment emerge when exposed to a laser. With Iriotec® 8825, these properties include minimal color impact and high effectiveness, making it an ideal choice for precise and efficient laser markings.

IRIOTEC® 8825

THE FUTURE IS TRANSPARENT

Iriotec® 8825 is our most color-neutral pigment, making it the first choice for transparent polymers. This versatile pigment is also ideally suited for colored polymers where maintaining low color impact is crucial.

The application possibilities are innumerable. Iriotec® 8825 can be used wherever it is essential to have clean and hygienic products that are highly durable and easily readable.



LASER MARKED PP WITH 0.1% IRIOTEC® 8825

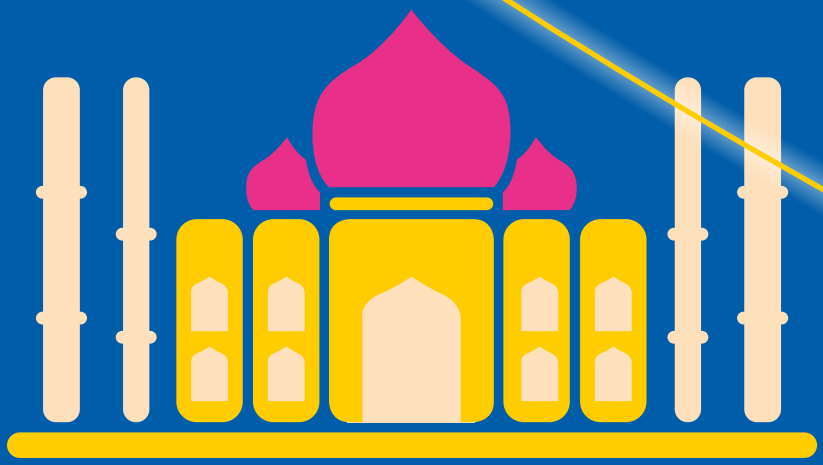
FEATURES AND BENEFITS

Iriotec® 8825

THE MOST COLOR-NEUTRAL PIGMENT FOR TRANSPARENT POLYMERS

- First choice for cost-in-use as it works in various polymers
- High temperature resistance (800°C)
- Suitable for transparent, light and dark colors
- Suitable for all polymers, even for fluoropolymers
- Suitable for food contact materials in accordance with Food Contact Notification (FCN)

Get Info on FOOD CONTACT NOTIFICATION (FCN)



The Taj Mahal stands as a timeless monument to eternal love, a testament to an enduring bond that transcends time. Its majestic beauty and intricate craftsmanship symbolize the permanence of love, capturing the essence of a love story that will never fade, much like the Taj Mahal itself.

IRIOTEC® 8208

Majestic Beauty

We've got everything covered. Unlike the more common method, where the powdered additive is heated by a laser to initiate a color change in the polymer, Iriotec® 8208 already contains everything needed to initiate this color change. This ensures dark markings with the best contrast, independent of the polymer. Ideal for polyolefines and thermoplastic elastomers, this turnkey solution offers fast cycle times and consistent results.

Iriotec® 8208 is based on encapsulation technology and is supplied in the form of granules. When added to polymers, it allows for dark markings on a light background. Like the permanence and eternal beauty of the Taj Mahal, Iriotec® 8208 offers an extremely durable form of marking.

Our technologies transform your ideas into suitable solutions that withstand all types of weather. Whether for animals grazing in meadows day and night for years, or for technical cables and hoses that need to be reliable in the transportation and communication industries, Iriotec® 8208 meets the toughest requirements and delivers superb results.

FEATURES AND BENEFITS

Iriotec® 8208

GRANULES FOR OUTSTANDING FAST AND DARK MARKING

- Main application area: Animal ear tags
- Incorporated directly into the injection molding or extrusion step
- Consistent marking results
- Razor-sharp, dark marking

LASER MARKED YELLOW TPU CHIP WITH IRIOTEC® 8208

Legible Animal Identification

Laser technology plays a crucial role in farming by enabling the identification of grazing animals like sheep and cattle through ear tags. These laser-etched tags serve as identity cards, ensuring compliance with local regulations and allowing for easy identification of each animal.

Statutory hygiene regulations and consumer demands require detailed documentation of farm animals' origins and care. These counterfeit-proof, easily readable ear tags contain permanently lasered identification numbers which allow for comprehensive documentation and offering transparency and assurance to consumers.

IRIOTEC® 8210 AND IRIOTEC® 8826

the bridge to perfection

Since Iriotec® 8210 and 8826 laser pigments are classified as being safe in Europe for food contact materials and toys, they can be used securely to laser mark caps, closures and food containers. They are the first additives for high-speed, contrast markings, that are free from intentionally added heavy metal compounds.[1]
Due to the encapsulation-technology Iriotec 8210 has an improved performance compared to Iriotec® 8826.

FEATURES AND BENEFITS

Iriotec® 8826

POWDER PIGMENT FOR DARK MARKING IN POLYOLEFINES

- Incorporated via masterbatch
- Fast and contrasted dark marking

LASER MARKED PP CHIP WITH IRIOTEC® 8210

FEATURES AND BENEFITS

Iriotec® 8210

GRANULES PROVIDING DARK MARKINGS EVEN IN SENSITIVE FOOD PACKAGING APPLICATIONS

- Main application area in Europe: polyolefins and thermoplastic elastomers e.g. Food packaging, films, beverage caps and children's toys (only EU, no FCN)
- Consistent marking results
- Incorporated directly into polymer
- Improved performance[2] and light stability in different polymers[2]

[1] Heavy metals as defined in RoHS and CONEG (USA)
[2] compared to Iriotec® 8826

When it opened in 1937, the Golden Gate Bridge was the longest suspension bridge in the world with a main span of 1,280 meters. Today, it is the landmark of the entire Bay Area and one of San Francisco's most important attractions. It spans the open sea and deep water, and withstands strong tidal currents, fog, storms and earthquakes. All this seemed impossible when it was first planned.

closing the loop

Laser marking allows for a no-ink, no-glue, label-free approach, challenging conventional packaging and creating products made for easier recycling.

Five key-players in the industry have collaborated to demonstrate that the recycling of laser-marked packaging offers significant benefits. This process eliminates the need for label removal and deinking, resulting in higher quality recyclate and enables multiple recycling circles. Furthermore, the laser marking creates a permanent label ensuring that the information remains intact throughout the whole life-cycle. This innovation enhances the sustainability of packaging solutions while improving the overall efficiency of recycling efforts.

ECOFUSION TUBES - LASER MARKED PE TUBES FOR BETTER RECYCABILITY

Find out about the R-CYCLE PROJECT

IRIOTEC® 8212

IMMORTALIZED in Nylons

Introducing Iriotec® 8212, our revolutionary laser marking solution inspired by the Mano del Desierto sculpture in the Atacama Desert. Just as the sculpture stands as a symbol of resilience and endurance, our antimony-trioxide-free product offers indelible dark laser marking.

Iriotec® 8212 is ideal for automotive and e-mobility color applications (including safety orange) due to its legibility and traceability. Through its cutting-edge technology, it not only ensures distinct and lasting marks on nylon and other resins but also provides high CTI (Comparative Tracking Index) features while retaining flame-retardancy properties.

Elevate your production processes with Iriotec® 8212, the new standard for quality and efficiency in automotive and e-mobility manufacturing.

FEATURES AND BENEFITS

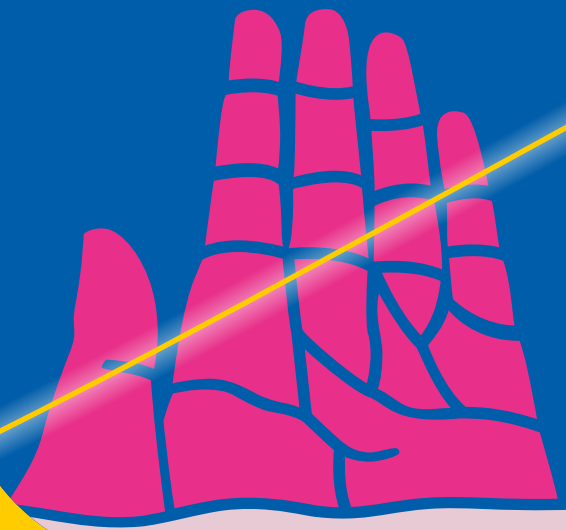
Iriotec® 8212

GRANULE PROVIDING FAST AND DARK MARKINGS ESPECIALLY IN NYLON

- Antimony trioxide-free laser granule
- Polyamide (PA12) carrier
- Enables dark marking in white and colored polyamides
- Keeps flame retardant properties due to PA carrier
- CTI (comparative tracking index) is nearly unchanged

LASER MARKED ORANGE PA CHIP WITH IRIOTEC® 8212

Mano del Desierto is a sculpture in the Atacama desert and is seen as a warning to stop committing environmental sins so that the earth does not become a desert everywhere. The sculpture is an 11 m high iron and cement sculpture created by Mario Irarrázabal in 1992.



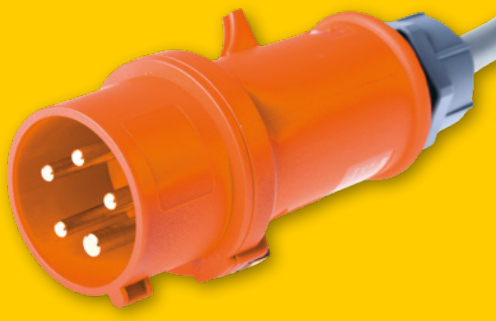
Taking the challenge

Polymers have revolutionized the manufacturing landscape, offering lighter and stronger alternatives to traditional metal parts.

Over the years, polymers have transitioned from toys and jewelry to critical applications in aerospace, automotive, electronics, and energy sectors. In challenging environments where metal was once the sole option, high-performance polymers have steadily gained ground.

In these demanding conditions, the marking technology must also rise to the occasion. Laser marking has emerged as the preferred choice, offering high temperature stability, light fastness, and high contrast. Iriotec® 8212 perfectly meets the demand for a laser pigment that supports the exploration of new territories, where traditional labeling methods fall short.

Learn about CABLE MARKING



IRIOTEC® 8855

ICON OF liberty

Experience the Icon of Innovation with the Statue of Liberty, an enduring symbol of freedom that now represents a new era in laser marking technology. Just as the statue embodies liberty and progress, our revolutionary laser-sensitive pigment, Iriotec® 8855, sets a fresh benchmark for sustainability and safety by being free of heavy metals. Embrace the spirit of innovation and the vision of a cleaner, more radiant future with laser marking pigments that epitomize the principles of freedom and progress.

Our relentless pursuit of discovery draws us closer to the mysteries of everyday life, continually opening new avenues for material combination and processing. While scientific advancements can present challenges for safety and environmental protection, as a leading science and technology company, we wholeheartedly embrace our global responsibility for the environment.

As pioneers in laser marking, we proudly support our pigments that prioritize the well-being of people worldwide. Our commitment to healthier lives is exemplified by Iriotec® 8855, an innovative pigment that is free of intentionally added heavy metal compounds* and excels in producing high-performance dark markings on light-colored polymers.

LASER MARKED PA CHIP WITH IRIOTEC® 8855

FEATURES AND BENEFITS

Iriotec® 8855

PIGMENT, FREE FROM INTENTIONALLY ADDED HEAVY METAL COMPOUNDS* FOR FAST AND DARK MARKING

- **Main application area: Plastic components subjected to high demands with regard to temperature resistance, weather resistance and purity**
- **Suitable for food contact materials in accordance with Food Contact Notification (FCN)**
- **High speed**
- **Bluish-white pigment with little color influence**
- **High temperature resistance (750°C)**
- **Suitable for dark markings on polymers with a tendency towards light markings, e.g. POM, PA and PMMA**

* Heavy metals as defined in RoHS and CONEG (USA)

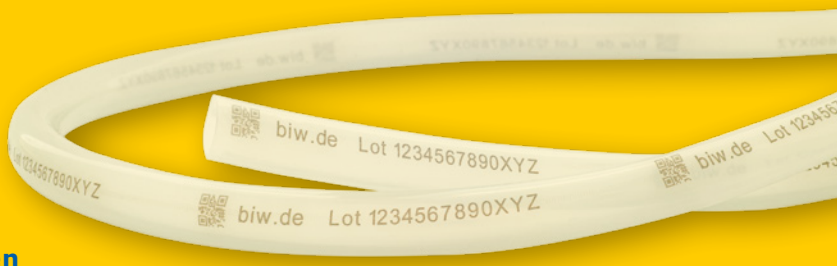
Her full name is "The Statue of Liberty Enlightening the World". For more than 130 years, Lady Liberty has been welcoming guests in New York Harbor. She is symbolic of freedom and the promise of a better future. In 1984, the Statue of Liberty was designated a UNESCO World Heritage Site.

Immortalized in plastic

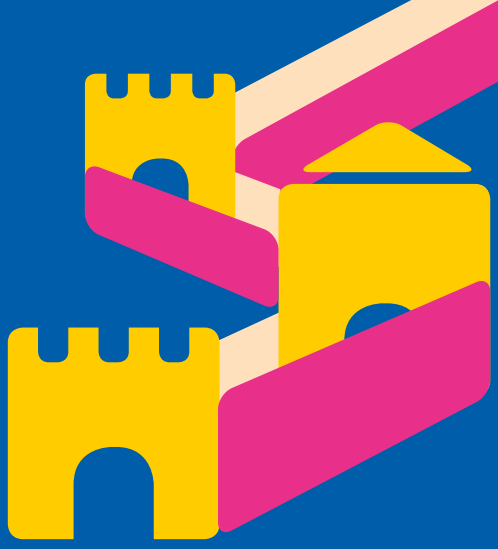
It's probably happened to you before: You take some delicious food out of your fridge and on closer inspection can no longer read the best-before date on the packaging. This is because moisture and oils or other factors have made the printed date illegible.

Due to shaking, bending and abrasion, food packaging is subject to high mechanical stress and is often defenseless against external factors. It is therefore highly possible that the required information such as the sell-by date, weight and lot number are no longer legible. The only way to avoid this problem is by using a completely safe method of applying the information: laser marking.

Writing the data onto products using a laser and Iriotec® 8855 leaves markings that in comparison with other technologies are highly durable, razor-sharp and thus permanently readable.



With Iriotec® 8855 even SILICONES are laser markable.



Initially constructed as a fortification, this monument has evolved into a symbol steeped in legend. The Great Wall of China is not only extremely lengthy but also remarkably ancient. The first fortifications date back to the 7th century B.C. Surprisingly, the Great Wall of China is not a single continuous wall. Instead, it comprises a series of individual walls that are often not interconnected.

IRIOTEC® 8850

The speed OF LIGHT

Our insatiable curiosity and dedication to research drives us to reach greater heights, venture farther, and move faster. With Iriotec® 8850, we're once again pioneering new frontiers. This product is designed to reliably laser mark thin-layer applications, such as films or powder-coated materials, creating rapid and precise dark markings in polymers, powder coatings, and silicones.

When no laser pigments are used, thermal influences from laser beams might be too high, thermal influences from laser beams must be avoided, particularly when immediate adjacent areas need to be protected. This is crucial for safety components in the transportation industry, delicate films, and powder-coated metallic materials. Iriotec® 8850 not only enables laser marking on plastics but also facilitates markings on powder-coated metal parts without the need for labels or printing. The process occurs at lightning speed, with the laser in use for only a fraction of a second. The material's surface remains virtually untouched, and the marking is so fine that it is nearly undetectable to the touch.

FEATURES AND BENEFITS

Iriotec® 8850

THE FASTEST PIGMENT FOR DIVERSE MATERIALS

- Very universal laser pigment for all polymers and applications
- Used in automotive industry, wire and cable, packaging and silicones; especially suitable for thin materials like film, fibre and powder coating
- High marking speed
- High contrast
- High temperature resistance (750°C)
- Suitable for food contact materials in accordance with Food Contact Notification (FCN)

LASER MARKED PP CHIP WITH IRIOTEC® 8850

Magic number

Laser markings are fast, programmable, contact-free and durable, something that should make car companies in particular quite happy. Just think of the possibilities for precise markings for order numbers and information data requirements for labels in the transportation industries. Mechanics working in car repair shops or in their garages at home stand to gain a lot from our products as well.

Anyone who has ever checked the level of brake fluid, coolant or oil in their vehicle in poor lighting conditions knows what we're talking about. When it comes to laser marking on the fly, Iriotec® 8850 delivers highly precise and unique high-contrast results. Another application field is the reliable, permanent marking of OEM parts. Counterfeit automotive parts are a nightmare for every automobile manufacturer. By marking powder-coated safety parts during the production process, you can accurately identify counterfeits and literally keep them off the streets. The beauty of Iriotec® 8850 is that the marking is imperceptible. As a result, zero surface damage occurs despite absolutely durable marking. And the list of applications certainly doesn't end there. With Iriotec® 8850, architects and designers can look forward to creating new, fascinating finishes and furniture with unique decorative elements.

IRIOTEC® 8817

symphony of brightness

When using light to create markings, it may seem like they materialize out of thin air, but they stem from pure energy and the drive to innovate. This is where Iriotec® 8817 excels, producing precise, light markings that offer excellent contrast, especially on colored plastics.

Laser-sensitive Iriotec® 8817 offers the benefits of being easy, quick, and cost-effective for marking cables. It enables the creation of high-contrast, high-definition marks on various dark-colored plastics, including red, blue, and green, even in challenging locations and on curved surfaces without additional preparation. Additionally, Iriotec® 8817 is suitable for marking seals, lids, ballpoint pens, tubes, technical containers, and other objects requiring light-colored, high-contrast markings.

FEATURES AND BENEFITS

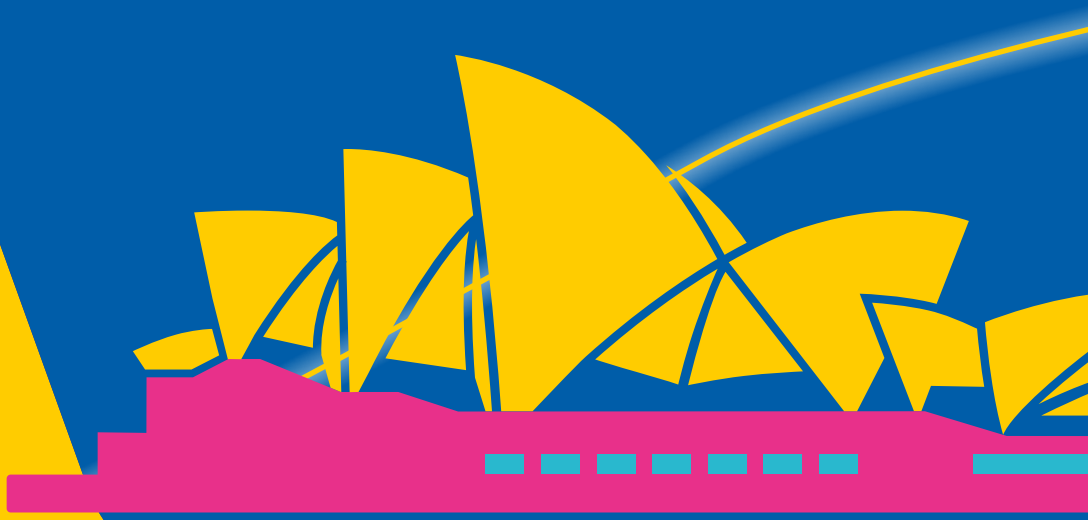
Iriotec® 8817

THE PIGMENT FOR LIGHT OR DARK, HIGH-CONTRAST MARKING OF COLORED POLYMERS

- General solution for bright markings in colored polymers
- Low color influence

LASER MARKED PBT CHIP WITH IRIOTEC® 8817

The Sydney Opera House is an iconic architectural masterpiece located in Sydney, Australia. Its distinctive sail-like design and stunning waterfront location make it a symbol of the city. The opera house is a vibrant cultural hub, hosting a wide range of performing arts events and attracting visitors from around the world.



we connect the world

We live in a world that is deeply interconnected, and the internet has become an indispensable part of our lives.

The reliable transmission of data across continents depends on robust submarine cables, which far surpass the data capacity of satellites. With Iriotec® 8817, lasers can inscribe markings on these cables, enabling engineers to swiftly identify and repair connections, reuniting people across the globe. Cable manufacturers can create durable, high-quality markings resistant to wear, chemicals, and harsh conditions, offering a clear advantage over conventional inkjet printer markings.

See CABLE MARKING in action

IRIOTEC® 8835

KING of light Marks

Challenges spark our curiosity, and black formulations present a specific obstacle for laser marking. In some cases, the absorption of light is so intense that it leads to excessive heat generation and polymer decomposition. Iriotec® 8835, a black pigment, excels at light absorption without causing complete polymer destruction.

This pigment addresses the issue of carbon black content in the polymer, ensuring that the result is akin to engraving rather than a simple color change. With Iriotec® 8835, the challenge of achieving high contrast in laser marking thermoplastics is effectively addressed.

FEATURES AND BENEFITS

Iriotec® 8835

THE BLACK PIGMENT FOR WHITE MARKINGS

- Main applications: electronics and automotive
- Suitable for all black polymers with < 0.2% carbon black content
- High temperature resistance (800°C)
- Suitable for food contact materials (GRASE)

LASER MARKED PA CHIP WITH IRIOTEC® 8835

The Pyramids of Giza, also known as the Giza pyramid complex, consist of three 4th-dynasty pyramids located in Egypt. These pyramids, including the Great Pyramid, are a testament to ancient Egyptian architectural and engineering prowess. The complex is a significant historical and archaeological site, attracting visitors from around the world to marvel at its grandeur and historical significance.

Markings for regulations

A functional pigment like Iriotec® 8835 goes beyond simply enhancing surface properties. From vehicle buttons and panels to machinery valves and pumps, there are numerous compelling reasons to mark polymers. However, the demands for medical devices, such as tubes, disposable syringes, and insulin injectors, are even more stringent.

Medical device markings must be permanent, traceable, clear, legible, high contrast, counterfeit-proof, resistant to sterilization and purification processes, as well as hygienic and clean—a significant challenge. Laser marking is particularly well-suited for sensitive medical products like pain control pumps and insulin injectors, ensuring permanently legible and precise markings. While our product is not specifically designed for the medical device market, it has been effectively utilized in medical device applications. Our goal is to assist you in finding the ideal solution for your needs, providing support, and leveraging our data to help you obtain approval for your final laser-marked product.

LASER PORTAL with detailed explanation for laser marking

add value and boost performance

Laser marking is the modern way to individually label your products. A contact-free process. All you need is the right pigment and a pulsed IR laser.

The laser sensitive pigments are easy to incorporate into plastic formulations. If you decide to use a pigment, we generally recommend that it is incorporated into a master-batch or compound before adding it to the final product. If you still need more detailed information or would like to receive advice on a technical issue, simply get in touch with our laser specialists.

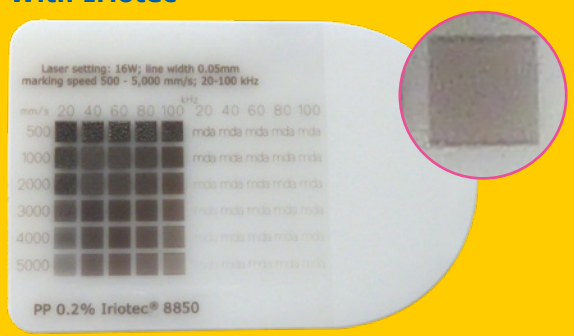
Pigment **Masterbatch** **Extrusion & Molding** **Marking process**

Why would you use laser pigments?

Without Iriotec®

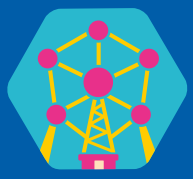
Test grid 500 – 5000 mm/s and 20 – 100 kHz

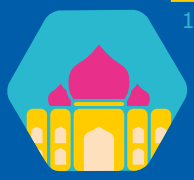
With Iriotec®

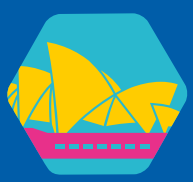


Test grid 500 – 5000 mm/s and 20 – 100 kHz

ordering information







Cat.No.	Name	Product Details	Pack Sizes
104783	Iriotec® 8825	pigment powder: particle size < 25 µm	250 g sample 1 kg 20 kg
141083	Iriotec® 8208	laser granule; PE carrier	1 kg 20 kg
141412	Iriotec® 8210	Sb-free laser granule; PE-carrier	1 kg 20 kg
141467	Iritoec® 8826	pigment powder particle size < 10 µm	250 g sample 1 kg 20 kg
141549	Iriotec® 8212	laser granule; PA12 carrier	1 kg 20 kg
141520	Iriotec® 8855	pigment powder: particle size < 10 µm	250 g sample 1 kg 25 kg
141414	Iriotec® 8850	pigment powder particle size < 1 µm	250 g sample 1 kg 25 kg
141428	Iriotec® 8817	pigment powder: particle size < 10 µm	250 g sample 1 kg 25 kg
104786	Iriotec® 8835	black pigment powder: particle size < 15 µm	1 kg 20 kg

* Heavy metal as defined in RoHS and CONEG (USA)

For more information have a look at our website: www.iriotec.com

technical choice chart

PIGMENT	ART. NO.	PROCESSING LIMITS	CARRIER	RECOMMENDED DOSAGE	COLOR OF MARKING
powders					
Iriotec® 8817	141535		none	0.2%	●
Iriotec® 8820	104782		none	0.3%	● ●
Iriotec® 8825	104783		none	0.3%	● ●
Iriotec® 8826	141467	<250°C; moisture sensitive	none	0.3%	●
Iriotec® 8850	141414		none	0.1 – 0.3%	●
Iriotec® 8855	141520		none	0.1 – 0.3%	●
Iritoec® 8830	104779		none	0.4% + 0.1% carbon black	●
Iriotec® 8835	104786		none	0.4% + 0.1% carbon black	●
granules					
Iriotec® 8208	141083	140°C < T < 280°C	LLDPE	3%	●
Iriotec® 8210	141412	140°C < T < 250°C	LLDPE	1.2%	●
Iriotec® 8212	141549	140°C < T < 280°C	PA12	2%	●

✔ approval **✖ not recommended**

* **Food Contact Regulations:** please refer to the official customer statements. Regulations are subject to regular changes; our colleagues from Regulatory Affairs/Product Compliance monitor the regulations around the globe regularly and update statements. Regulation status 2024-06-10.

iriotec®
8000 Series

US FDA*	EU*	CHINA	MAIN POLYMER AND USES
✔	✔	✔	suitable for all polymers; best results for light marking for colored polymers
✔	✔	✔	very similar to Iriotec® 8825; particle size Iriotec® 8820: < 15 µm; mica-based pigment
✔	✔	✔	Light marking is supported for aliphatic polymers like POM, PA, PBT. Dark marking is supported for aromatic polymers like PC, PS, ABS but can be used for all polymers including PE,PP chosen for its cost in use best choice for transparent applications; particle size Iriotec® 8825 < 25 µm; mica-based pigment
	✔		powder version of Iriotec® 8210, but limited for polymers; may need technical advice to use; improves contrast and marking speed in combination with Iriotec® 8850
✔	✔	✔	suitable for all polymer including silicones, smallest particle size; very fast laser response; recommended for Cable + film marking
✔	✔	✔	suitable for all polymers; positive results in silicones; Sb-free alternative for Iriotec® 8825 for dark marking; good results in PA
✔	✔	✔	black pigment very similar to Iriotec® 8835; particle size Iriotec® 8830: < 60 µm; mica-based pigment
✔	✔	✔	black pigment suitable for all polymers; particle size Iriotec® 8835 < 15 µm; mica-based pigment
✖	✖	✖	best performance in polyolefines, TPU, POM, TPV, TPE if T < 280°C and lower shear also good for PA 6 and PBT
	✔		Sb-free alternative to Iriotec® 8208 especially for polyolefines and TPUs
			Best in class for dark marking in polyamides. Nylon carrier. Please use via compounding or masterbatch for better homogenization and laser marking results

W.50117.6 11/2024

Merck Electronics KGaA
Surface Solutions | Industrials
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