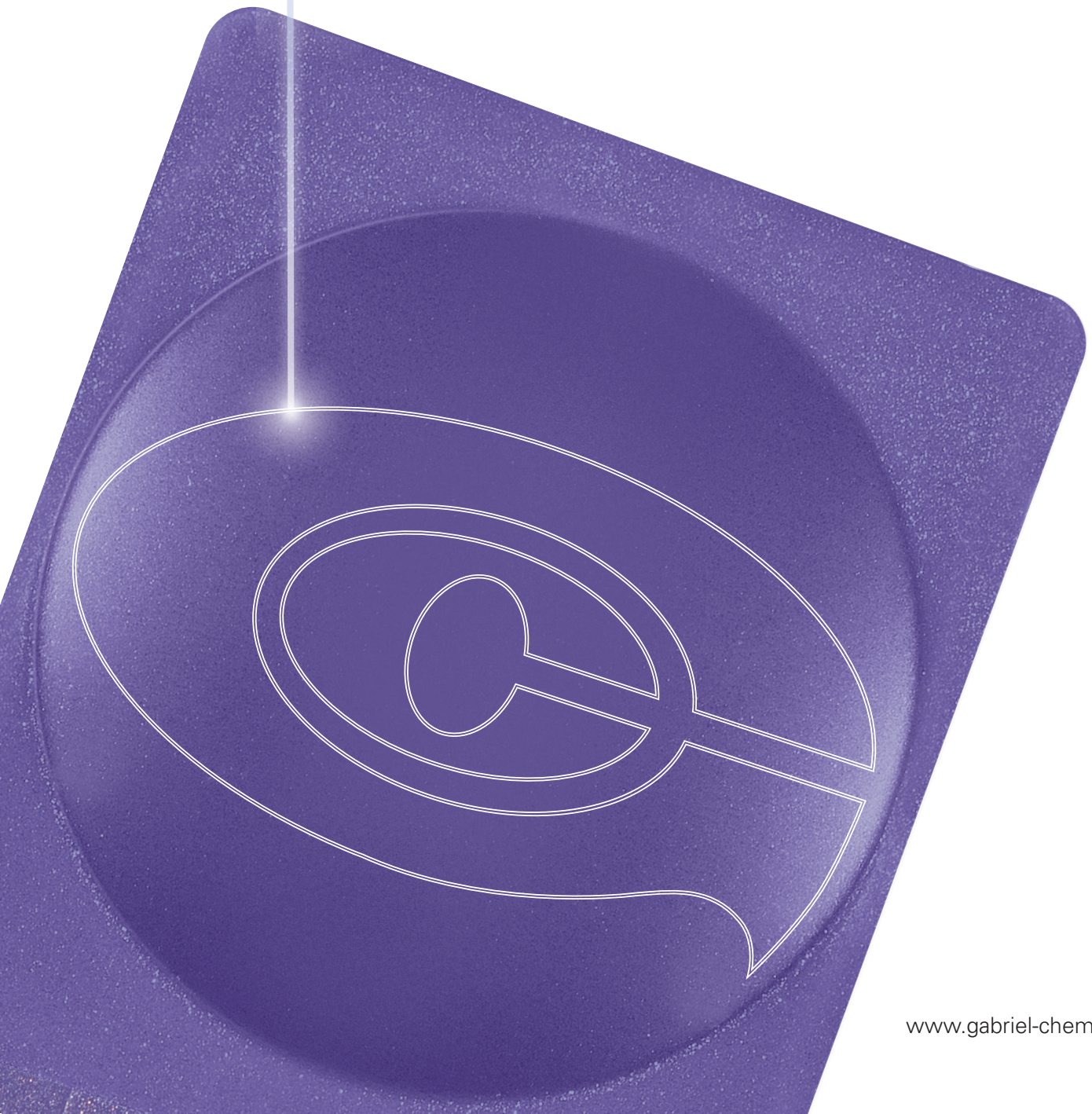


LASER MARKING



MARKING

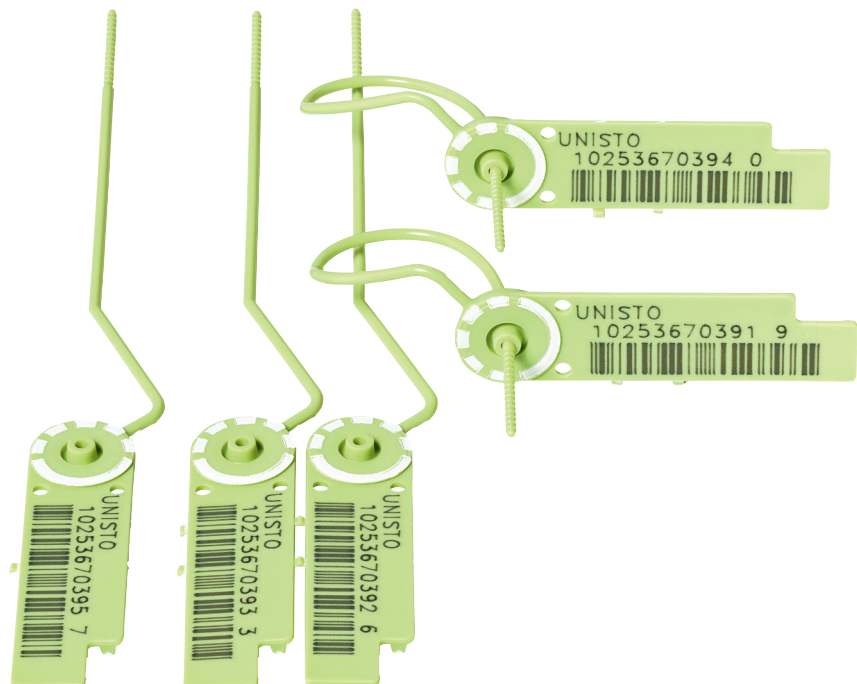
The laser marking procedure enables permanent markings to be made on plastic surfaces with a visually controlled laser beam. Material optimisation with 2% - 3% addition of laser additives is often essential for achieving an optimal marking contrast. The wavelength required for this, around 1064 nm, can be generated by three different light or diode-pumped laser systems, the neodymium YAG laser, the neodymium vanadate laser and the fibre laser.

ADVANTAGES OF LASER MARKING

- Contactless marking of plastic parts
- Suitable for soft, rough, tiered or curved surfaces
- Marking without printing ink and solvents
- No pre-treatment of plastic parts
- Maximum flexibility for complex and fast-changing layouts
- Wear-resistant, chemical-resistant and light-resistant
- Product safety is ensured by lasting and forgery-proof labelling
- Individualisation
- Personalisation

MARKING APPLICATIONS

- Lottery codes in beverage caps
- Barcodes and data matrix codes
- Food and cosmetics packaging with logos, scales, product information, expiry dates or decorative designs
- Animal ear tags
- Safety seals
- Security identification/protection from plagiarism
- Keyboards
- Automobile interior and exterior accessories
- Cables and pipes
- Electronic components
- Medical items and laboratory equipment



RESULTS YOU CAN SEE

Transparency

A completely transparent laser additive has been developed. It offers total transparency in clear plastics and enables dark depth marking that is gentle on surfaces and has an extremely good contrast.

Flame-Retardant Polyamides

A special solution has been devised for the electrical industry. For the first time, it allows a 1064 nm laser to be used for the marking of flame-retardant polyamides.

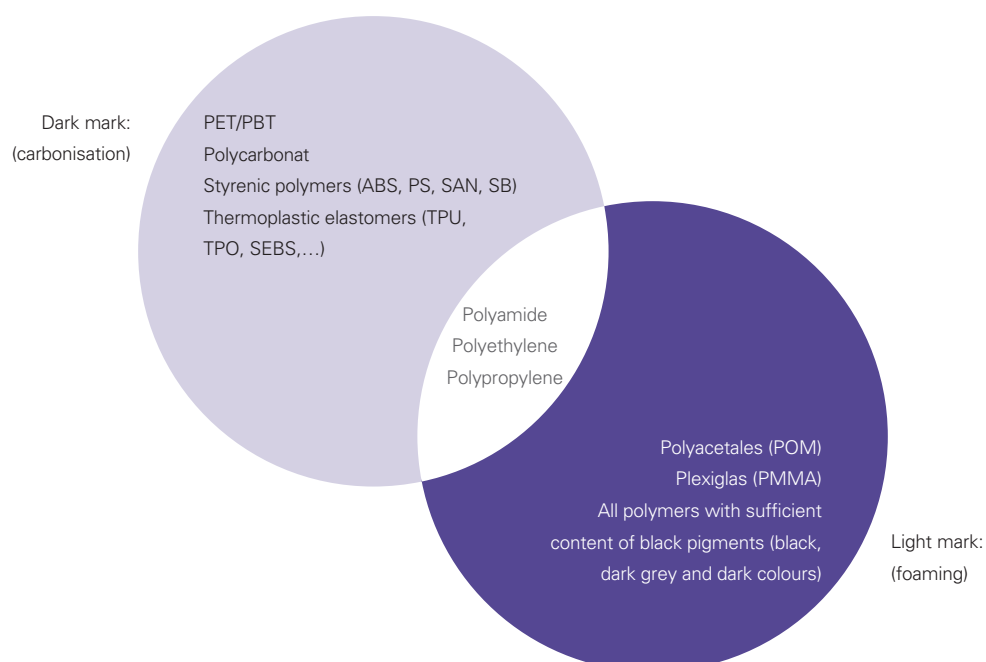
Three kinds of marking colours are possible:

- Dark marking
- Bright marking
- Coloured laser marking



ACHIEVABLE MARKING OF COLOURS IN POLYMERS WITH LASER ADDITIVES

The following diagram shows the how the type of polymer used influences light or dark contrast marks at 1064nm wavelength.



EXPERTISE IS OUR STRENGTH

The Gabriel-Chemie Group produces colour and additive master batches at 6 locations in Europe. Our German branch has been involved with laser marking technology in the plastics industry ever since it was first introduced. These days, we offer laser additives suitable for all thermoplastics or combination master batches for colours and additives.

Of particular note are transparent additives for transparent polymers and polyamide laser additives for use in the electrical industry.



WE ARE CHARACTERISED BY INNOVATION

In the Gabriel-Chemie Deutschland GmbH technical workshop, there are two neodymium YAG lasers for development and practice experiments. The optimal settings for contrast and marking speed, tailored to the customer's polymer, are determined in preliminary tests here. All products are BfR [German Federal Institute for Risk Assessment] and in most cases FDA-compliant adjustable and meet Plastic Regulation (EC) No.10/2011. We cooperate with all leading laser device manufacturers and offer you specifically tailored solutions for your new projects.

We're there for you.

We offer you a comprehensive service programme from development to implementation. Our laboratory and technical workshop are available if you wish to carry out tests. Colour shade and laser marking quality can be optimised on the spot. If you want, we can also cooperate with one of your partners or our associates to meet your requirements as quickly as possible.



LASER TRANSMISSION WELDING

This application is the most recent family in our laser technology, but will become increasingly important in coming years. Developing this product range further is a high priority for us.

Procedure

A permeable plastic part for the wavelength being used is placed on a laser light-absorbing join partner at the site to be welded. This is fused onto the contact surface with laser radiation and connected to the overlying join partner. For this, laser wavelengths of 808 nm, 940 nm, 980 nm and, most recently, 1064 nm are used.

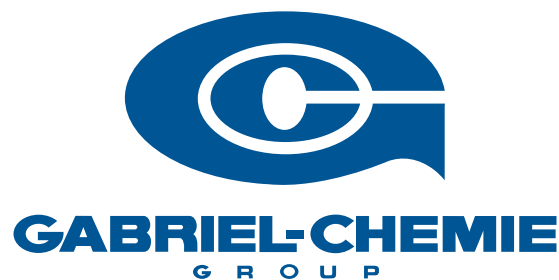
Advantages

- Invisible weld seams
- Local energy input enables welding of sensitive components
- No generation of abrasion particles or adhesive residue
- Weld seams are possible near electronic components
- Vibration-free welding method

Application Examples

- Various housings of small sizes (remote control keys, pumps ...)
- Window frames with an integrated pane
- Bumpers and vehicle lights
- Microflow reactors for gases and liquids
- Liquid containers inside engine bays





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