

## Antimony-free high speed marking

Laser marking is widely recognized as one of the most effective technologies for the marking and coding of plastics and offers a multitude of solutions for a wide range of markets.

Laser technology stands out due to:

- High flexibility and indelibility of marking
- Eco-friendliness
- Clean and contactless marking
- High velocity on suitable materials

Budenheim has developed a range of laser-sensitive ingredients that enables advanced high-contrast laser marking for a wide range of thermoplastics. The BUDIT® L Series is easy to add and process, offering the following advantages:

- Permanent marking, resistant to solvents, humidity and abrasion
- Easy dosage by single pigment concentrated master batch for compounds and direct use
- Excellent visual performance at low loadings due to high selective response in the near infrared
- Antimony-free and safe for food and medical applications

BUDIT® L Series ensures high speed and eco-friendly laser marking inside your plastics.



## Black and bright marking

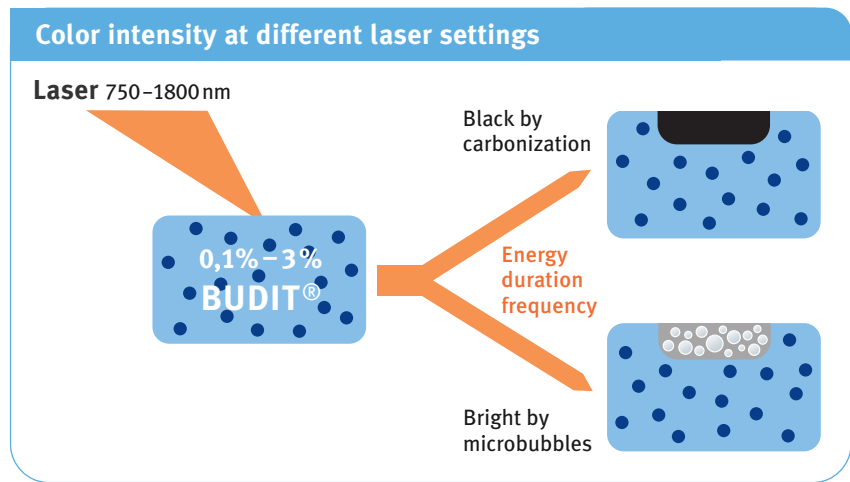
### High efficient NIR absorber

The BUDIT® L Series offers an innovative laser marking pigment with extraordinary selective absorption in the NIR. This is accompanied by a high transparency in the visible range. The product is designed for Nd:YAG lasers at a wavelength of 1064 nm.

Depending on the energy level, different visual marks, from bright to dark, can be generated on the polymer surface. Due to low dosages, BUDIT® makes the marking of transparent polymers possible.



Color intensity at different laser settings



Contrast			
	PP/PE	PC	PA
Black	●	●	●
Bright	◐	●	●
Metal	◑	◐	●

### The marking process

Using typical concentration with 0,1% – 5% of BUDIT® L, the energy of the laser beam creates marks within 10 µm underneath the plastic surface. Depending on the laser parameter the absorption causes two processes:

- The laser causes a degradation of the pigment and the polymer creates the dark marking color. For high thermostable polymers, the degradation of the pigment can be controlled till the conductive surface is built up.
- Conversion of the beam energy into heat, combined with little gas release, creates microbubbles. Depending on the process parameters, the visual appearance can be tuned to bright instead of black.
- The table “Contrast” indicates what polymers are preferred to create contrast from black to bright and even metallized markings are possible.



## Safe for medical and food

The chemical basis of Budenheim laser active pigments is purely inorganic. The material is eco-friendly and complies with the strictest standards. Employing neither antimony nor other critical substances, BUDIT® is safe for medical and food contact applications.

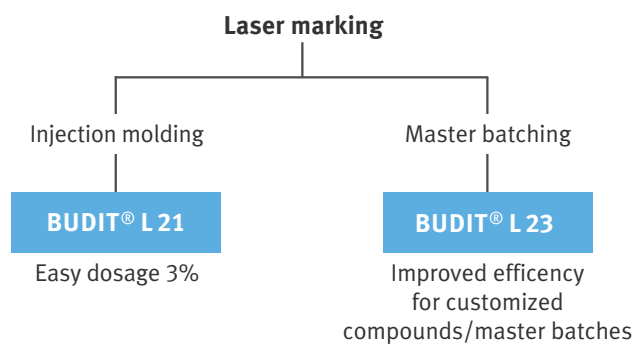
## BUDIT® made for plastics

Powder product can be difficult in processing especially in small dosages. Therefore, BUDIT® L is designed as a single pigment concentrate with a high amount of the functional pigment based on a universal carrier.

For a master batcher as well as compounders, it is easy to carry over a pigment and to produce a final master batch with specific target color and additives.

## Easy to dose and process

### Product recommendation



Laser printed QR code on a bottle cap

## Application

Codes on packaging or bottle caps, serial numbers on technical parts or electronical components, durable livestock tags.

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