

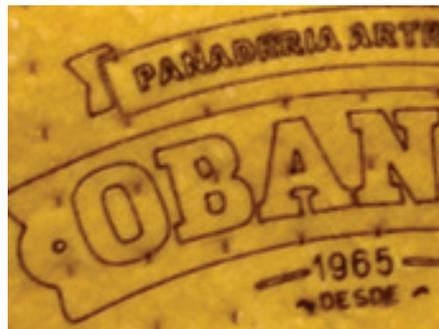
## LASER MARKING DIRECTLY ONTO BREAD

Bradma Laser systems are used to code and mark a wide range of materials including paper, cardboard, plastic (PET, PVC, HDPE), glass, metals and wood. We are able to produce high quality text, barcodes and graphics with very low operating costs and often at high speeds. Application news regularly provides examples of products that Bradma lasers are marking worldwide every day.

Direct laser marking is increasingly present in the world of food. One of the keys to achieving sustainability lies in the elimination of unnecessary packaging and labels that cannot be recycled. **Marking directly onto food with laser technology** saves packaging costs, prevents the generation of consumable waste and does not impact the environment negatively as sustainable technology is used.

Laser coding directly onto food allows for bulk or individual selling without losing traceability. The brand remains identifiable, a particularly useful feature for those who opted for a corporate label before.

In this application, we can see how the SPA CB30 PLUS by Bradma laser achieves a high definition marking on this bread surface. This marking is done without direct contact with the product, therefore preserving the quality and all of the properties of the food itself. Despite their hard yet thin form, breadsticks and crackers remain intact during the marking process. The CO2 laser creates a groove in the food's surface that highlights the marking.



|                  |                          |
|------------------|--------------------------|
| LASER            | Bradma SPA CB 30 PLUS    |
| LENS             | 100 x 100                |
| INDUSTRY         | Food                     |
| APPLICATION TYPE | Marking                  |
| PRODUCT          | Breadsticks and crackers |
| MATERIAL         | Baked dough              |
| MARKING TYPE     | Dynamic                  |
| MARKING TIME     | 150 ms                   |

# LASER MARKING ON RECYCLED POLYMER PIPE

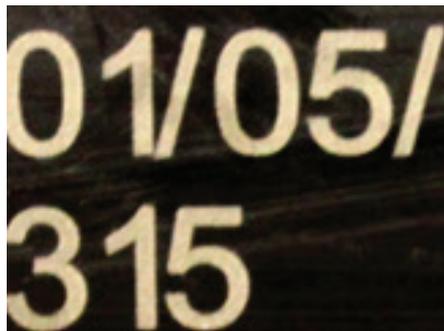
Bradma laser equipment is used to encode and mark products of a wide variety of materials, including paper, cardboard, plastics (PET, PVC, HDPE), glass, metals and wood. The messages and graphics that are achieved are of high quality, at a minimum operating cost at high speeds.

Application News regularly provides a sample of products that are encoded and labelled with Bradma lasers, every day and worldwide.

Recycling is an increasingly present matter in society, and polymer recycling is not exempt from the trend, despite not being easy due to the variety and composition of the materials.

Marking and coding guarantees product traceability in the construction market. In this particular case, it is an established requirement that pipes must be marked according to the manufacturing material used and its main use.

The DPSS laser, in this case the NANO D-6006 DUO from Bradma, with a 1064 nm wavelength, allows high contrast and visible marking on the recycled polymer. The chemical reaction of the DPSS laser on the polymer enhances the logo marking on different coloured backgrounds. On the other hand, if CO2 had been used, the reaction would be totally thermal causing the plastic to melt and generating a small relief.



|                         |                        |
|-------------------------|------------------------|
| <b>LASER</b>            | Bradma Nano D-6006 DUO |
| <b>LENS</b>             | 100 x 100              |
| <b>INDUSTRY</b>         | Building material      |
| <b>APPLICATION TYPE</b> | Marking                |
| <b>PRODUCT</b>          | Pipe joints            |
| <b>MATERIAL</b>         | Recycled polymer       |
| <b>MARKING TYPE</b>     | Static                 |
| <b>MARKING TIME</b>     | 3.5 sec                |