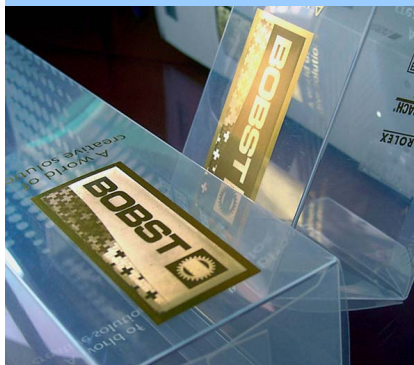
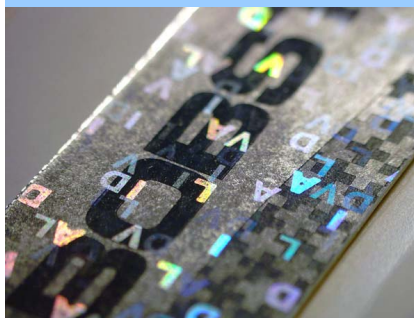




Lithoguard: Roll-embossed markings on a Polycarbonate web-fed substrate.



Lithoguard : Stamped markings on sheet-fed OPP substrate for a folding box.



Lithoguard : Hot-stamped marking on sheet-fed carton, rendered with diffractive hot-foil.

1. What is *Lithoguard* ?

Lithoguard is a novel, low-cost marking technique based on cutting-edge micro and nanotechnologies. It can be used both as a **decorative** element and as a first-line, overt **anti-counterfeiting** feature (see photos at left).

Lithoguard renders a given motif, such as a logo with a precision one hundred times finer than a human hair. Compatible with a wide range of application techniques, it provides a unique solution for the high-quality application of intricate **decorative** motifs on a wide variety of carton, paper and plastic materials.

Our technology also incorporates a reflective optically variable **anti-counterfeiting** feature clear to the consumer and hard on the counterfeiter. Indeed, *Lithoguard* technology exploits the same security principle as hologram labels to defeat copying attempts by digital scanning or photocopying. Our solution is unique and consists of exactly identical and cost-effective markings on all levels of packaging.

2. Who should use *Lithoguard* ?

Lithoguard is a competitive and integrated brand visibility and brand protection solution. The end-users are **brand-owners** concerned by the negative impact of counterfeiting on their image within the consuming public. It is also destined for **converters** seeking an added value to their semi-converted products. *Lithoguard* :

- ❖ Adds value to packaging and increases perceived value of branded goods.
- ❖ Authenticates product at point-of-transit for customs officials.
- ❖ Authenticates quality of product at point-of-sale for the end user.



Stamping dies for hot-foil stamping on carton and plastic sheets



Roll-embossing shim for foil embossing and label conversion. DOVID structures by 3D AG.



Injection moulded marking, directly to-object using a standard injection process.

3. Anti-counterfeiting functionality

Lithoguard protects branded goods effectively against fraud and counterfeiting because it is an Optically Variable Device (OVD) technology. Optical variability means that the marking image changes depending on the viewing angle of the observer. OVDs are therefore impossible to reproduce using commonplace fixed-angle techniques such as digital scanning and photocopying. A *Lithoguard* marking – on packaging or directly to-object – features the following security mechanisms:

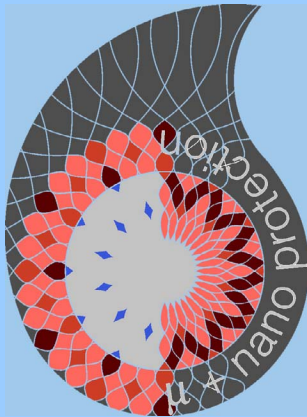
- ❖ **Dissuasion:** by greatly raising the technology barrier against copying.
- ❖ **Authentication:** unambiguous optical features for easy visual recognition.
- ❖ **Communication:** Focuses attention on marking motif and not just on a “rainbow” or metallic effect.

4. The *Lithoguard* product line

The **key advantage** of *Lithoguard* for the end-user is flexibility. Designed for total compatibility with existing industrial processes, *Lithoguard* is furnished in the form of production tooling (see photos at left) as described below:

- ❖ **Stamping dies** : For hot-stamping (with or without hot-foil), on carton and plastic sheets.
- ❖ **Roll-embossing shims** : For roll embossing on a wide variety of plastic films, including metallic foil and labels.
- ❖ **Mould-inserts** : For *direct* application of a *Lithoguard* marking on a plastic object during the same injection step.

The ultra-smooth surface relief obtained through our proprietary fabrication process means that *Lithoguard* tooling is used within standard processes at standard production rates.



From **graphic proposal** ...



... To industry **standard tooling**
In this case, a stamping die ...



... To a stamped **OVD marking**.
Lithoguard is as easy as 1, 2, 3.

5. How a typical project works...

As illustrated **at left**, a typical *Lithoguard* project is based on a client design such as a logo and follows three easy steps :

1. **Graphic proposal** from Karmic which can be fine-tuned until client approval.
2. **Client approval** and order.
3. **Origination and assembly** onto production tooling using our proprietary nanotechnology process.

The lead-time for tool delivery after final approval of the graphic design depends upon the form of tooling required by the client. However, the following indicative lead times apply:

- ❖ **2 – 3 weeks** for roll-embossing shims
- ❖ **3 – 4 weeks** for hot stamping dies.
- ❖ **4 – 6 weeks** for mould-inserts and converted labels.

6. Tool lifetime and marking cost

Typical tool lifetime will be between 100'000 to 1'000'000 markings depending upon your application and the substrate material to be marked. Our prices are highly competitive and **all-inclusive** with no extra setup or royalty charges.

7. For samples and further info

Simply contact us at the following address: info@karmic.ch. Your query will be answered within 24 hours. Alternatively you may call or write us at the address below.

If you are a converter, demonstration tools are available, simply contact us for more details.