

# Impressive results – nyloprint® for embossing and hot moulding

01-2021

Moulding is one of the most fastidious and effective methods of finishing. In advertising, moulding in the very sense of the word underlines the product and distinguishes it from the peripherals of the print.

In blind moulding the effect of the moulding is achieved by deformation of the material by means of a female die and a male die.

Apart from finishing, blind moulding is an important characteristic with packaging, and thus also in safety marking and information for the visually handicapped.

In hot foil embossing optical and tactile effects are realised by transfer moulding of metallised foil with heat.

## nyloprint® plates for blind embossing:

### *the female die:*

- nyloprint® WS
- nyloprint® WA
- nyloprint® S

### *the male die:*

- nyloprint® WF-H
- nyloprint® WF-Q

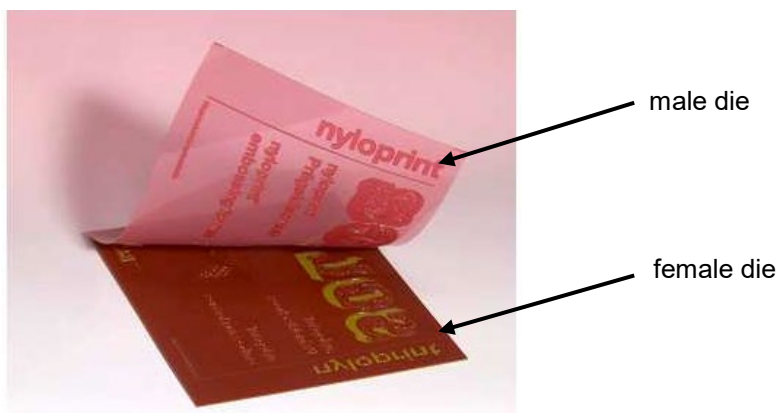
## nyloprint® plates for hot foil stamping:

- nyloprint® WA 210 / WA 240
- nyloprint® WS 152 / WS 175

Thanks to the heat resistance properties (up to 130 °C / 266 °F) of nyloprint® WA 210/240 and WS 152/175 metal based plates, they are ideally suited for hot moulding to produce rubber clichés.

## Blind embossing

In blind embossing with nyloprint® plates, the printing form is called a female die and the counter part is called a male die. These printing forms are produced conventional via film or digital via laser ablation.



blind embossing

During moulding the relief of the male die impresses into the relief of the female die, therefore the data of the moulding form already has to be adjusted in prepress. It is important that the relief of the male die is slightly smaller than the relief of the female die. The difference in the relief width depends on the moulding depth and the material that is to be moulded. Whether the female die has to be opened or the male die has to be constricted depends on the image and size of the finest details. Is there a lot of fine positive elements on the moulding image, the male die should meet the size of the printing image, the female die is to be opened at least the width of the substrate thickness. Is there a lot of fine negative elements to be moulded, the female die should meet the size of the printing image and the male die has to be constricted the value of the substrate thickness.

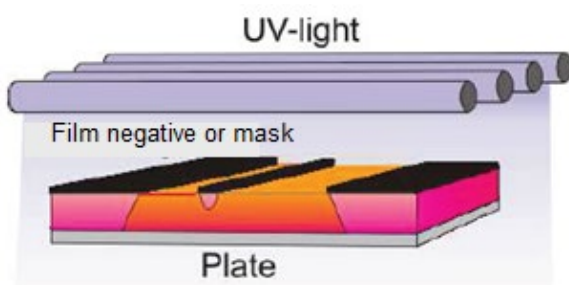
Recommendation: The thicker the substrate to be moulded, the deeper the relief of the moulding forms and the bigger the difference of the male and female size.

In conventional plate processing via film, there is the alternative to adjust the moulding image via diffusion foil during exposure (the elements on the positive film become bigger, the elements of the negative film become smaller). This way of working is possible but less precise than adjusting the image width in prepress.

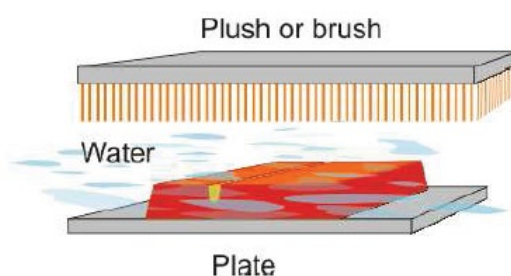
*For processing the male die, a nyloprint® foil based plate is used. The plate is exposed with a matt, reverse contacted negative. In direct imaging via laser ablation, also a reversed file has to be imaged. After exposure the plate needs to be washed out, dried and post exposed.*

*For processing the female die, a nyloprint® metal back plate is used. The plate is exposed with a matt, right reading positive film. In direct imaging via laser ablation, also a right reading file has to be imaged. After exposure the plate needs to be washed out, dried and post exposed.*

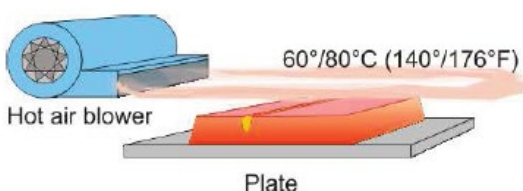
### The process steps for a moulding form:



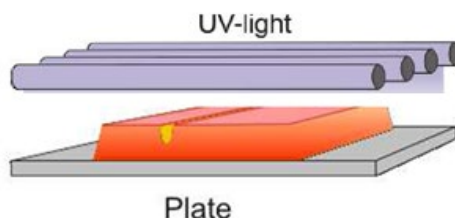
1. Exposure



2. Washout



3. Drying



4. Post-exposure

Platen presses and flat-bed die-cutters are especially suitable for blind embossing. The female die plate is fitted into the designated base. Fastening of the female die form can be made by adhesion or by magnetic bases which are fitted into the chase. The register-true mounting of the male die plate onto the back pressure form is achieved by mounting the male die on top of the female die (relief into relief) by means of small strips of double-sided adhesive tape. Afterwards the back pressure form or the rear side of the male die is completely furnished with double-sided adhesive tape. Alternatively spray adhesive can be used. The transmission of the male die to the back pressure is made by impression throw-on of the platen press unit or die-cutting press respectively. The higher tackiness of the adhesion foil or spray adhesive on the complete rear side of the male die draws the male die off the female die and holds it register-true on the back pressure form.

Transmission of the male die to the cylinder of automatic cylinder presses is made analogically. However, attention should be paid to the fact that by transmitting the male die to the impression cylinder an extension of the relief will occur. It is therefore advisable to round expose the male die or to distort the male die negative if the moulding picture exceeds 150 mm.

If a rotary press is used for blind moulding, a further issue arises. The male die – in exceptional cases maybe the female die as well – has to be mounted to the impression cylinder. The resulting enlargement of the cylinder causes a faulty cylinder rolling. To avoid possible damage to the machine, the manufacturer of the machine should be consulted before moulding jobs are done in a rotary press.

#### **Blind moulding in lithographic printing presses from impression cylinder to blanket cylinder**

For this kind of moulding only a male die is needed which is fixed on the impression cylinder by means of double-sided adhesive tape. Thus large-image structures can be moulded, e.g. for finishing of packaging or labels. It is advisable to employ older, already used blankets as after moulding these cannot be used for normal print jobs. To avoid cylinder rolling problems, the under blankets beneath the rubber blanket have to be reduced proportionately to the moulding form (nyloprint® plate + adhesive tape).

#### **Hot foil stamping with nyloprint® plates**

In hot foil stamping colours, gold, silver, copper, aluminium and other metal colours can be transmitted to the printing material by means of a carrier foil. This foil is coated with the inking and a hot melting adhesive (undercoating). Under pressure and heat the picture can be transmitted via a heated plate (letterpress printing form). Suitable machines are printing presses for letterpress and flat-bed die-cutters with heater. In long grain flexographic and letterpress machines (e.g. label printing) moulding is often made by inline rotary printing. Hot foil stamping is mainly used for packaging products like cosmetics, confectionary and beverage labels as well as binders of brochures.



hot foil stamping

**Product portfolio nyloprint® for blind embossing:**

Application	Substrate	Plate type	
		Water washable	Alcohol washable
Female die for thin material	Paper, carton	nyloprint® WS 73* nyloprint® WS 58*	nyloprint® S 58
Female die for thick material		nyloprint® WA 175 nyloprint® WS 94* nyloprint® WS 83*	-
Male die for thin material		nyloprint® WF 80 H* nyloprint® WF 80 Q	-
Male die for thick material		nyloprint® WF 95 H* nyloprint® WF 95 Q	-
Male die for moulding impression- / blanket cylinder		nyloprint® WF 70 H* nyloprint® WF 70 Q	-

\*) also available as digital version

**Product portfolio nyloprint® for hot foil stamping:**

Plate type	Thickness [mm]	Relief depth [mm]	Washout time and - temperature	Drying time and - temperature
nyloprint® WA 210	2,10	1,05	ca. 5 min. 28°C [82°F]	60 min. 80°C [176°F]
nyloprint® WA 240	2,40	1,40	ca. 7 min. 28°C [82°F]	180 min. 80°C [176°F]
nyloprint® WS 152	1,52	1,2	ca. 6 min. 28°C [82°F]	120 min. 80°C [176°F]
nyloprint® WS 175	1,75	1,45	ca. 7 min. 28°C [82°F]	180 min. 80°C [176°F]