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## Flexography

The strength of Flexography has always been its flexibility, particularly the adaptability of the process components concerning the various substrates and ink types.

Thanks to the development of the printing presses, the printing form materials and the implementation of new systems for the imaging, Flexo printing does not need to fear comparisons with other printing methods.

Beside the traditional photopolymer printing plates, a constantly rising number of rubber sleeves and rubber plates imaged by Direct Laser Engraving (DLE) are used in flexo presses.

Böttcher has served the printing industry as a reliable partner for decades. Systematic development in the field of elastomer flexo printing forms is one major contribution to the positive progress of DLE technology. To achieve this, we are closely cooperating with laser machine manufacturers, repro companies and printing shops.

This cooperation as well as the own development - starting with the fiberglass base for the sleeves up to the elastomeric coverings - are elementary components for the balancing of our product to your requirements - actual and in future

- ▶ **BöttcherFlex Sleeves**
- ▶ **BöttcherFlex DLE Sleeves**
- ▶ **BöttcherFlex DLE plates**
- ▶ **BöttcherFlex plate mounting sleeve**
- ▶ **BöttcherFlex Cleaning agents**

▶ **BöttcherFlex Sleeves**  
The base sleeves, which consist of fiber reinforced plastic (GRP), are also produced by Böttcher. Depending on the individual technical demands, the

base sleeves are manufactured on our cylindrical or conical mandrels and are either electrical conductive or non-conductive as a base for thin or for standard sleeves.

Flexo sleeves can be modified reading the construction of the fiberglass base sleeve, the elastomeric covering as well as the entire build-up and wall thickness in a very flexible way related to the individual environment in the printing stop. Nearly all sleeve constructions can be combined with the various flexo compounds for the covering. In most print shops elastomer covered flexo sleeves are used as flood coating sleeves. The reason for this fact is in some cases the need of an endless printing plate, the high ink transfer rate and the high chemical resistance.

Böttcher offer flood coating sleeves „ready to print“. For the production a large stock of air mandrels according to the common mandrel systems (e.g. Stork, BCD,..) is available. If requested, we can cut-back the sleeve surface related to the web with and we can implement notches for the register pin.

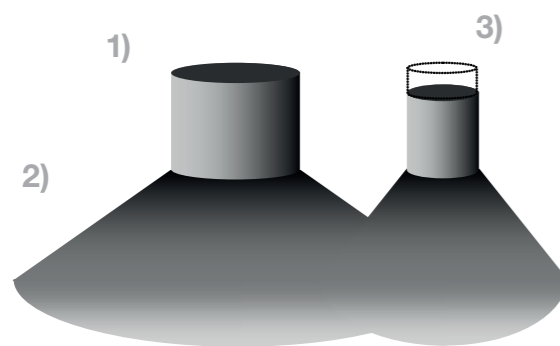
### Technology of Direct Laser Engraving



For the Direct Laser Engraving of sleeves and plates with elastomeric covering CO2 Laser, Diode Laser as well as high power fibre laser are used.

Within this technology for the imaging of flexo printing forms, the laser beam removes the material directly down to the relief depth.

In comparison to the two-dimensional removal of the thin back layer of the Laser Ablation Mask System of photopolymer by low energy lasers, the Direct Laser Engraving method provides the opportunity for a three-dimensional modulation of the dot relief.



### 3 x 3D effect – The advantage of Direct Laser Engraving, if dot accuracy matters

The three-dimensional modeling of the screen dot shape of directly engraved elastomer compounds offers the flexo printer the ability to increase print quality as well as to increase the service life of the printing form.

#### 1) First step

The shape area below the surface of the screen dot can be realized as a cylinder. This avoids a “geometrical dot gain” even during long printing runs in comparison to the simple cone shape of photopolymer printing forms

#### 2) Shoulder profile

Due to the engraving of a defined shoulder profile, an optimal stabilization of the smallest dots in high light can be achieved.

#### 3) Under Cut

A further advantage of Direct Laser Engraving technology is the opportunity to program an electronic adjustment, referred to as an “Undercut”. With this option, the top of the highlight dots is slightly reduced by the laser. Even at higher print pressure, the small dots resting beside the solid areas will not be over-squeezed.

Only the DLE technology uses the digital data of the repro file directly to design the three-dimensional shapes of the screen dots. This is simply and purely „true digital“.

#### ► **BöttcherFlex DLE Sleeves**

##### Construction of DLE Sleeves

The build-up and the wall thickness can be adjusted to the individual requirements in the print shops. Related to the existing air mandrels of the presses and the repeat length of the print jobs, the sleeves can be produced with the necessary wall thickness. Sleeves with a higher wall thickness (> 3,2 mm) allows the print of jobs with larger repeat length (repeat steps) without investment in bridge sleeves.

Depending on the build-up (single layer) sleeves with elastomer covering offer the option to reground them to a smaller circumference (smaller diameter). In this case, the same sleeve can be used for various jobs with shorter print repeat length!

Beside the sleeves with higher wall thickness, also Thin elastomer covered sleeves (wall thickness 1,5 mm) and Classic elastomer covered sleeves (wall thickness 3.1 mm) are common.

Beside this, sleeves can be build with different functional under layer. Underneath the 1-3 mm top layer, a soft (40 ShoreA), hard (80 ShoreA) or compressible layer can be build.



Sleeve with compressible under layer

An additional advantage of sleeves with elastomeric covering is the opportunity to create each print repeat length. Especially in case of modern gearless presses with servo drive this is a benefit, because these presses are also not fixed to the gear-wheel based repeat steps.

**Compounds for the covering of flexo sleeves**  
EPDM or SBR-based rubber compounds are mainly used for sleeves and plate coverings for the laser engraving process. This type of base polymer leads to specific chemical and physical properties. But also the type and quantity of the other ingredients influence the properties of the covering in a significant manner, e.g. regarding engraving speed or ink transfer. We offer an actual list of Böttcher Flexo compounds and will be pleased to advise you.

#### ► **BöttcherFlex DLE plates**

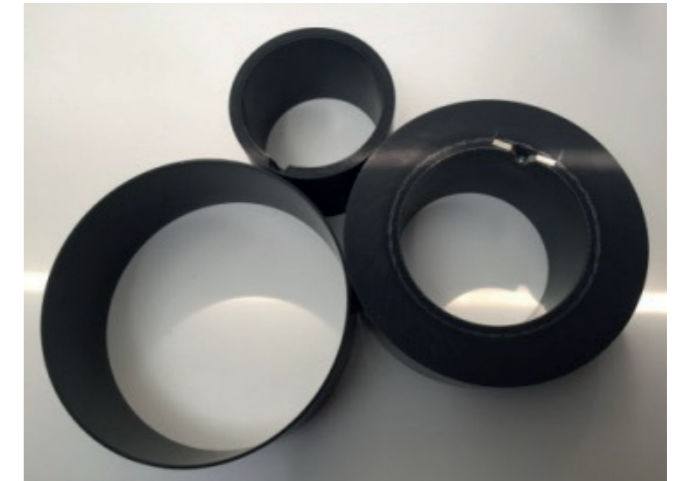
For the top layer of the Böttcher plates for Direct Laser Engraving, special rubber compounds from our approved Flexo sleeve portfolio are used. At present, they are available with the common thickness of 1.14 and 1.70 mm. BöttcherFlex plates are supplied with a polycarrier on the back side as pre-cut parts or as a roll. The mounting of the plates can be done in a similar way to photopolymer plates.

#### ► **BöttcherFlex plate mounting sleeve**

For the use of elastomer or photopolymer plates as flexo printing plates, in most cases plate mounting sleeves are required. Based on the long term experience in sleeve production, Böttcher now has developed plate mounting sleeves with a special material combination. A highly wear-resistant surface in combination with a rigid build-up characterized the new BöttcherFlex plate mounting sleeves.

Significant properties of these plate mounting sleeves:

- very fine tolerances in diameter and run-out
- long lasting stability in geometry
- excellent cutresistance of surface
- low weight



Available also as an antistatic sleeve.  
Available also with axial und radial mooring lines and pinholes in different sizes and finishing.

In case of further questions please contact Böttcher!

#### ► **BöttcherFlex Cleaning agents**

The cleaning of the elastomer printing form after the engraving as well as after the printing process contributes significantly to the print quality and the service life of the printing form. As a result, Böttcher has developed premium cleaning agents for flexographic also. Formulations are harmonized with our compounds and provide an optimal combination of cleaning efficiency and maximum chemical compatibility.

#### ► **Böttcher Service**

Customer focused R&D, technical support and nearly a worldwide assistance by own staff are important factors of Böttcher's philosophy. In our chemical laboratories we can test the resistance of our Flexo compounds against inks, coatings and wash-ups you are using.