Marabu Effect Inks
Screen and Pad Printing Effects

Nowadays, many printed products draw the customer’s attention not only by means of optical impressions, but with emotional messages. Different visual and haptic effects can spark or strengthen a customer’s interest, while functional effects increase the product safety. Screen Printing is predestined for the realization of these effects, as well as Pad Printing. This TechINFO introduces the various possibilities and provides valuable tips regarding applications and processing.

Content

1.0 Metallic Effects
1.1 Bronze Powders and Pastes
1.2 High Gloss Metallic Pastes
1.3 Metallics, press-ready
1.4 UVGL Hot Stamping Primer

2.0 Mirror Inks

3.0 Glitter Effects

4.0 Pearlescent Inks

5.0 Luminescent Inks
5.1 Glow-in-the-dark Effect
5.2 Fluorescent Inks
5.3 UV-Active Inks

6.0 Thermochrome Effects

7.0 Matt / Structure and Gloss Effects
7.1 Matt
7.2 Structure
7.3 Gloss
7.4 3D Effects

8.0 Writeable Inks

9.0 Scented Inks

1.0 Metallic Effects
Variations of the colour shade, particle size, degree of gloss, adhesion characteristics, the quality of the pigments, and last but not least the price, offer countless effects within the range of bronze printing inks. Furthermore, individual shades and effects of certain effects such as silver, gold, and copper bronzes can be expanded by adding transparent colour shades. Allowing for easy fine-tuning of the ink deposit by choosing the appropriate mesh, Screen Printing is made for such applications. Up to a particle size of 20μm, Pad Printing also allows the realization of these effects.

1.1 Bronze Powders and Bronze Pastes
Available are very „metallic“ Bronze Powders or alternatively Bronze Pastes featuring higher rub resistance.

<table>
<thead>
<tr>
<th>Bronze Powders:</th>
<th>Bronze Pastes, universal use</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 181 Aluminium</td>
<td>S 191 Silver</td>
</tr>
<tr>
<td>S 186 Copper</td>
<td>S 193 Rich Gold</td>
</tr>
<tr>
<td>S 190 Aluminium, rub-resist.</td>
<td>S 183 Rich Gold</td>
</tr>
</tbody>
</table>
INFO

Bronze Pastes for UV-curable inks:
- S-UV 191: Silver
- S-UV 192: Rich Pale Gold
- S-UV 193: Rich Gold

Technical Details
- Addition: 10-25 % by weight
- Pot life: 12-16 hours, S-UV191-193 up to 6 months
- Rub resistance should be tested, application-oriented
- Mesh count between 68-64 and 150-31
- Suitable for solvent-based and UV-curable Ink Systems
- Cliché depth: 25-30 μm (Pad Printing)

1.2 High Gloss Metallic Pastes

High gloss Metallic Pastes feature a very glossy appearance and good rub resistance. The differing qualities are indicated by the degree of gloss and the price level.

High-Gloss Bronze Pastes:
Suitable for Screen and Pad Printing in combination with solvent-based bronze binders or varnishes:
- S 291: High Gloss Silver
- S 292: High Gloss Rich Pale Gold
- S 293: High Gloss Rich Gold

Suitable for Screen Printing in combination with UV-curable bronze binders or varnishes:
- S-UV 291: High Gloss Silver
- S-UV 293: High Gloss Rich Gold
- S-UV 296: High Gloss Silver
- S-UV 297: High Gloss Rich Pale Gold
- S-UV 298: High Gloss Pale Gold

1.3 Metallics, press-ready

A selection of press-ready metallic shades is available as standard shades in certain solvent-based ink systems ending with the number code 191-193; high-gloss versions ending with the number code 291-293. If a standard is not available, press-ready metallics can be offered upon request.
1.4 UVGL Hot Stamping Primer

Precious metals are often used for the decoration of high-end products. Despite continuous improvement, organic gold and silver inks have never been able to reach the look of the expensive precious metal preparations which must be baked at high temperatures. The Ultra Glass UVGL Primers, in combination with hot stamping foils, are now the perfect solution: Equal brilliance at much lower costs.

For further information on UVGL and the Primers please refer to www.marabu-inks.com.

2.0 Mirror Inks

Formerly, creating mirror effects was only possible by using expensive processes like the silvering of glass. Mara® Chrome MC Screen Printing Mirror Ink enables you to simply print this effect. Attractive Gold, Bronze, or coloured metallic effects can be created by pre-printing the front or back with transparent Marabu inks like Mara® Star SR.

3.0 Glitter Effects

Glitters are coated polyester pigments and owing to this have a very particular and flashy glitter effect. Typical fields of application include graphical effects within the packaging or credit card industry. On request, glitter effects are available with many UV-curable or solvent-based printing inks.

Technical Details
- available shades of Glitter: Silver, Gold, or coloured
- Particle size 50 - 100 μm
- Mesh count depends on the particle size
  (Rough guide: mesh count = triple the particle size)
4.0 Pearlescent Effects

Many different pigments are offered in this typical effect range, and they can be divided into the following four groups:

- Silver White
- High Brilliance (col.)
- Flop Effects
- Sparkling

Pearlescent pigments are very transparent by nature, and according to the colour of the substrate there can be a significant change in shade. These pigments are most effective on black substrates, but they achieve unrivalled effects on bright substrates as well.

Silver White pigments are available in different colour shades and sizes.

The pigments of the so-called „flop effect“ seem to change their colour, depending on the angle of view and the incidence of light.

Highly brilliant pearlescent pigments are vividly coloured, glossy, and transparent. They are available in different colours.

Creating a brilliant sparkle, pearlescent glitter pigments are available in many different colours.

Chosen correctly, pearlescent pigments are suited for solvent-based screen and pad printing inks as well as for UV curable screen printing inks. Due to the great variety of pigments and necessary fine-tunings, however, they can only be offered upon request.

5.0 Luminescent Inks

5.1 Glow-in-the-Dark

Glow-in-the-Dark products can absorb and store short-wave UV-light returning it once the exposure to light has stopped (visible in the dark). This effect is well-known from the safety technology, i.e. emergency exit signs or watch dials. The length of the glow depends on the amount of absorbed energy and the quality of the pigments used.

Our current product range includes three variations of solvent-based inks:

- **Mara® Glow GW**
  - GW 760 High Quality (whitish)
  - GW 761 High Quality (yellow/greenish)
  - GW 361 Standard Quality (yellow/greenish)

Due to the geometry of the pigment, the best possible glow-in-the-dark effect in screen printing will be achieved using a very coarse mesh. Since the opacity of the pigments is rather low, they will only be effective on white substrates. For more details, please read our separate TechINFO „Phosphorescent Inks“.
5.2 Fluorescent Inks
This effect, generally known as „neon“, creates very intensive and bright impressions. Due to the low opacity of these pigments, best results will be achieved on white substrates. Fluorescent inks are suitable for short-term outdoor exposure because the inherent nature of the pigment chemistry (effect emitted as the pigment fades) offers low UV stability.

Mara® Gloss GO
GO 320  Fluorescent Yellow
GO 323  Fluorescent Orange
GO 331  Fluorescent Red
GO 333  Fluorescent Pink
GO 364  Fluorescent Green

Fluorescent shades are available as standard with the ink series Mara® Gloss GO, a solvent-based system. On request, fluorescent shades can be made available in other solvent-based or UV-curable ink series. Typical application fields of fluorescent inks in screen and pad printing are give-aways, sporting goods, and toys.

5.3 UV-Active
UV-Active pigments appear invisible in daylight. Under the influence of a strong UV-light source (black light) a colour becomes visible. Owing to this, these effects are mainly used for product safety codifications (e.g. Pharmaceutical Industry). There are pigments on the market offering effects which go from transparent to yellow or blue. Upon request, they can be offered for Screen printing in either solvent-based or UV-curable systems, or in Pad printing.

Technical Details
• Mesh count between 100-34 and 150-31
• Cliché depth 25 – 30 µm (multiple printing)
6.0 Thermochromatic Effects
These pigments change colour under the influence of temperature, typically as a reversible, but also obtainable as an irreversible effect. Variations are offered by selecting specific temperature ranges and by differing colour shades. It is possible, for example, that a wine label indicates a specific colour when the desired drinking temperature has been reached. This class of pigment can be offered upon request for solvent based and UV-curable Screen and Pad Printing ink series.

7.0 Matt, Structure, and Gloss Effects
Matt, structure, and gloss effects are a domain of Screen Printing, e.g. for labels or membrane switches. For a large number of applications Marabu offers various effects. Gloss, matt, and structure varnishes can be printed alone, combined for contrasting effects, or even mixed to create customised levels.

7.1 Matt
Matt surfaces have a very noble appearance due to their optical irregularity, offering diffuse light scatter. Furthermore, they are usually less sensitive to fingerprints than glossy surfaces.
Marabu’s universal matt varnish is UVLM 2, as well as products in several other ink systems ending with the number code “913”.

Technical Details
- Mesh count for UV: 150-31
- Mesh count for solvent-based: 120-34

7.2 Structure
Anti-glare images whilst improving the haptic can be achieved with structure varnish. The effects range from coarse/transparent to fine/milky.

Typical Screen Printing applications for structured layers are membrane switches or automotive speedometers. Due to their hard and therefore almost scratch-free surface, UV-curable varnishes are predestined for these applications.

Marabu’s universal structure varnishes are UVLS 1 and UVLS 2; as well as products ending with the
number codes “914”, “915”, or “916” in several other ink systems.

**Technical Details**
- Mesh count for UV: 150-31
- Mesh count for solvent-based: 120-34

**7.3 Gloss Effects**
In the modern packaging and give-away markets, a very noble effect is attained via “spot-varnishing” which combines high-gloss coatings with matt surfaces. To achieve this effect, the resulting gloss level of an ink or an overprint varnish will be determined by the transparency of the binder, the additives used for the formulation, as well as by the printed ink film thickness and roughness of the substrate surface.

High-gloss effects are a typical domain of screen printing. The best effect can be achieved with UV-curable ink systems.

Marabu’s universal gloss varnishes are UVLG 1, UVLG 5 and UVLG 6; as well as products ending with the number code “910” in several other ink systems.

**Technical Details**
- Mesh count for UV: 150-31
- Mesh count for solvent-based: 120-34

**7.4 3D Effect**
3D effects are well-known from dome-coating. Screen printing is used to achieve symbols or graphic characters with a thickness of 30 - 250μm. The resulting character is clearly perceptible and usually transparent as known with the triangular product safety symbol, Braille printing, or other graphical effects. By adding very little of a basic shade, the transparent Braille varnishes may also be coloured, as our example shows:

Best results can be achieved by choosing the correct combinations of mesh, stencil technique, and viscosity of the varnish. Marabu’s universal Braille varnishes are UVLB 1 and UVLB 2. UVLG 7 and UVRS 912 are recommended for relief printing.

UVLB 1 : UVRS 180 (30:1)

Marabu GmbH & Co. KG · Phone: +49 7141 6910 · info@marabu-inks.com · www.marabu-inks.com
**8.0 Writeable Inks**

Writeable Inks (only realisable with Screen Printing) usually have a matte and quite rough surface, are very resistant, and can be used for different applications. Examples for Standards:

- **Chalk Board Ink**
- **Libra Speed LIS 773**
- **Chalk Board Ink, Black**

For signature fields (Identity Cards):

- **Libra Matt LIM 170**
- **Opaque White**

Further requirements like laser writeable, e.g. for the Pharmaceutical Industry, can be fulfilled by Marabu’s Special Colour department.

**Technical Details**
- Due to the countless variations of 3D effects it is impossible to suggest guidelines; for further details please see the TechINFO „Tactile Special Textured Varnishes“

**9.0 Scent Effects**

Everyone has seen and probably smelled test perfume strips included in magazines. A fragrance is released when rubbing the surface. The resulting friction causes the extremely tiny scent capsules to burst and liberate their fragrance. The manufacturers of such raw materials offer varying scents which can in some cases be used in screen printing, as long as the compatibility has been confirmed. During printing, it is particularly important to ensure, however, that the ink is not exposed to high pressure or abrasion from the squeegee as the scent capsules would then prematurely burst and cover the printing room instead of the intended product.

**Technical Details**
- Various particle sizes depending upon the technique used for encapsulation
- Mesh count depends on the particle size
  (Rough guide: mesh count = triple the particle size)
- a minimum order quantity of 5 kg is required
  (production-related)

**Note**

Extensive test series under individual print conditions must be carried out prior to a production run concerning all aforementioned effects. Please also refer to the Technical Data Sheets.

**Contact**

Technical Hotline, Phone: +49 7141 691140
technical.hotline@marabu.de