

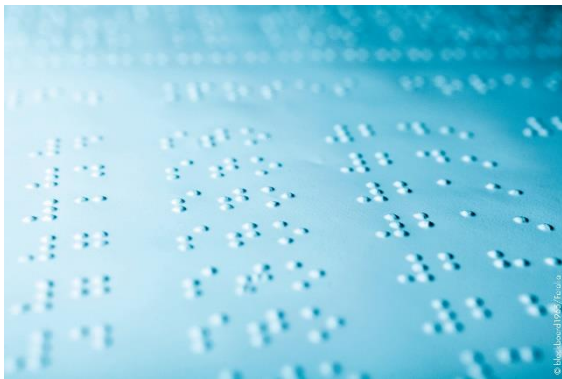
Tactile Effects with Braille & Relief Varnishes

Information, and Applications

Screen

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UV-curable special textured varnishes come into play when considerable tactile or 'high build' visual features are required.

Such effects can be effectively achieved through the screen printing process in combination with UV-curable special varnishes. Printed, touch-readable symbols or tactile warnings can be produced easily nowadays. The use of this technique complies with the new guidelines for pharmaceutical packaging.

This TechINFO sets out the standards in this area based on our current understanding of the requirements.

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1. Mesh choice

Among other parameters, the thickness of the printed ink film will depend upon the correct choice of mesh and geometry.

When Braille or tactile warnings are printed, the following mesh types have proved to deliver best results:

Rotary screen printing

- Gallus Screeny BZ 200µm screen thickness
- Stork RotaMesh 75 150µm screen thickness

Flatbed screen printing

- Mesh 32-70 (Polyester), 117µm screen thickness
- Mesh 40-80 (Polyester), 133µm screen thickness
- Mesh 43-80 (Polyester), 130µm screen thickness

1.1 Stencil making

A further important factor in obtaining the required coating thickness is the print production method. The choice of the coating material, the coating technique as well as the exposure, processing and drying of the thick film stencil determine in considerable measure the thickness of deposit, definition of the outline and print run, and stability of the impressions. Through the production of a so-called, 'thick film stencil', screen emulsions with a high solid content (also suitable are certain recommended capillary films 150 - 300µm thick) can be used. Following tests, we have been successful in proving the reliability of the impressions, subsequent coating layers over the material (EOM - Emulsion Over Mesh) and the whole stencil thickness:

Print standards for Braille text

Braille or Moon text, or tactile warning symbols:

Flatbed: Mesh: for example 32 – 70
15° angle
EOM 160 to 190 µm
stencil thickness 260 – 300 µm

Rotary: 380 µm stencil thickness
mesh: Screeny BZ
350 µm stencil thickness
mesh: RotaMesh 75

Print standards for tactile symbols

For print features and tactile symbols such as water drops, ripples, brush strokes, raised patterns, script and shapes, (often printed as a large surface area), the most important thing is the thickness of varnish. The effect of the thick film emulsion is nullified except at the edges of the stencil, and it is the mesh thickness and opening that determines the lay-down of ink.

Print standards for 'high build'

Flat bed: Mesh 24 – 140
250 µm screen thickness
Mesh 18 – 180
330 µm screen thickness

Rotary: Gallus Screeny BY
190 µm stencil thickness
Stork RotaMesh 75
350 µm stencil thickness

2.0 UV varnish requirements

The following rheological and optical standards were set for UV cured varnishes:

- highest possible application thickness
- very good flow and release properties
- high edge definition
- good surface coverage
- high transparency of the varnish

Furthermore, the varnishes were rated according to adhesion and scratch resistance to the substrate, colour reactivity, flexibility of the ink film as well as resistance to chemicals.

The wide range of suitable substrates includes:

- corona pre-treated label materials (PP/PE)
- varnished PET films
- PVC and paper self-adhesive films
- paper, cardboard, and cartons
- offset pre-printed materials

For screen printing tactile effects on glass, please refer to the special products offered within the Ultra Glass UVGL ink range. For further information please go to www.marabu-inks.com.

2.1 Marabu varnish recommendations

Marabu currently offers the following varnishes (among others):

Rotary screen printing

- UVRS 912 for tactile warnings, tactile symbols and raised features
- UVLB 1 for Braille dots

Flatbed screen printing

- UVLB 2 for Braille and tactile warning symbols
- UVLG 7 for tactile symbols and raised features (also for roll-to-roll printing)

2.2 Tactile print finishing

Here in particular screen printing brings its strengths to bear regarding high build ink application and is well received in various trade sectors.

The varnishes specified above increase the impact of bright colours, glitter, sparkling or iriodine pigments, and so provide interesting new tactile and colourful effects.

Particularly in combination with offset or digital printing, this results in a wide choice of new and interesting application possibilities.

3. Touch-read text for pharmaceutical packaging

Since the middle of the 80's there have been efforts to establish touch-readable text for pharmaceutical packaging. With the coming into effect of the 12th amendment of the pharmaceutical law of 6 August 2004 (Policy 2004/27/EG), since 1 September 2006 it has been compulsory to show the description of medicines in touch-readable text on the packaging. The product name and active substance concentration must be shown.

Although screen printing is one of the most important methods for producing touch-read text, it is also possible using embossing, hot-melt spray method, or labelling, are all practical alternatives.

As a guide, there are currently two standards available: The National Standard DIN 32976; 2007-08 "Braille - Requirements and dimensions" and the European Standard DIN EN 15823; 2010-11 "Braille on pharmaceutical packaging". In order to obtain the benefits of a standardized Braille production, the packaging industry is planning to convert the European standard into a worldwide ISO Standard in a next step.

At the moment legibility of touch-readable text is based on an application thickness of 150 µm to 250 µm produced by screen printing.

Further information can be obtained from the German Institute „Deutsche Blindenstudienanstalt e.V.“, www.Blista.de

3.1 Tactile warning symbols for compulsory markings on containers

Up till now legislative authorities Europe-wide have ruled that it is compulsory to mark containers with tactile warning symbols for the blind and partially sighted.

The definition and standard for tactile warning symbols are recorded in DIN EN ISO 11683 'Packaging - tactile warning symbol standards' of November 1997. The coating depth called for here is set at 250 µm.

3.2 Machine parameters

The (recommended) machine settings are geared to the choice of squeegee, squeegee angle, squeegee hardness, pressure of the squeegee, and flood-blade settings (not applicable in rotary screen printing where the speed influences the release properties of the varnish from the image areas). The greater the release from the image areas, the higher the varnish concentration.

4.0 Remarks

All data in this TechINFO is to the best of our knowledge and is the current information and data available in this field. Before beginning a print run, the data and recommendations given must be tested and cleared for technical, (production, ink, stability, further treatment etc) and substrate conditions, on each job.

For further information, please refer to the Technical Data Sheets and ProductINFOs on www.marabu-inks.com