Decoral System®

TECHNICAL TOOLS

Ideas and applications for Decoral System products

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POWDER-COATING AND HEAT-TRANSFER DECORATION OF GLASS OBJECTS

Technique for the powder-coating of non-conductive materials, and subsequent decoration

Information:

1. *Versatility of powder-coatings*
2. *Technique for the powder-coating of glass*
3. *Heat-transfer decoration*
4. *Test*
5. *Possible applications*

POWDER-COATING AND DECORATION OF GLASS OBJECTS

Technique for the powder-coating of non-conductive materials

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1. Versatility of powder-coatings

Powder-coatings are designed for the application on conductive materials, but with a specific technique it is possible to use them also on non-conductive materials, such as glass, thus expanding the versatility of these products and the results that we can obtain.

Picture 1-2: Some example of glass panel decorated with plotter

2. Technique for the powder-coating of glass

a) Preparation

After preparation and careful cleaning (Picture 5 and 6), the sample is hung with a hook or firmly placed on a metal rod, so that we can move it and put it into the oven without touching it directly (Picture 7).

If possible, when using hooks or similar kinds of supports, we recommend to avoid an oblique positioning of the sample: once it is in the oven, this may cause the asymmetric flowing of the melt powder-coating on the surface of the sample.

We also recommend, if possible, to avoid an asymmetric contact of the metal hook (or rod) on the sample: this may cause, first a higher electrostatic attraction of the powder particles on some spots of the glass object, secondly a faster and easier melting of the powder due to the thermal conductivity of the metal support.
This can be prevented by using supports made of non-conductive materials, and that can *resist at temperatures higher than the curing temperature.*

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Technique for the powder-coating of non-conductive materials

Picture 3: glass sample

Picture 4: protection of the parts to left uncoated

Picture 5: cleaning

Picture 6: preparation on the support for the powder-coating

b) Pre-heating

the sample is put into the oven at 248°F - 120°C (melting temperature): in this way, the powder will stick to the object as it touches the hot glass surface, due to instantaneous melting.
The whole glass sample must be hot: for this reason, the longer the object will remain in the oven, the easier and the better will result the subsequent application of the powder.
Approximately, this time should be at least 5 minutes, but it can vary depending on shape and dimensions of the specific object (large glass bottles may require 20 minutes or more).

c) Application

We take the sample out of the oven and we immediately spray the powder on it.
The application is carried out just as for normal (conductive) objects, but it will result easy and homogeneous as long as the sample is hot; for this reason, it has to be done rapidly.
The voltage can be set at 0 V, since the powder does not stick to the sample for electrostatic attraction.

While spraying the powder, we'll observe its instant melting on the sample: it is normal, but for powder-coatings with special surface effects (Saltlake, Icetouch...) we'll see the characteristic textured finish only at the end of the curing cycle.


Picture 7 and 8: application of the powder-coating on the hot sample

Attention: in case of defects (due for example to dust fallen on the sample, or contact with other objects that spoil the layer of the melt powder) it is not possible to remove the sprayed powder as in the case of "normal" application (on cold conductive objects). Every contact with the melt powder will compromise the perfection of the result.

d) Curing

We put the sample into the oven for the time and temperatures reported on the *TDS* of the product used.

Picture 9: the sample inside the oven on its support, to complete the curing

e) Cooling down and completion

The sample is pulled out of the oven; the high temperature can temporarily increase the fragility of the glass, so it has to be moved carefully. We let it cool down to room temperature.

Picture 10 and 11: the sample powder-coated with *Glass-003*

3. Heat-transfer decoration

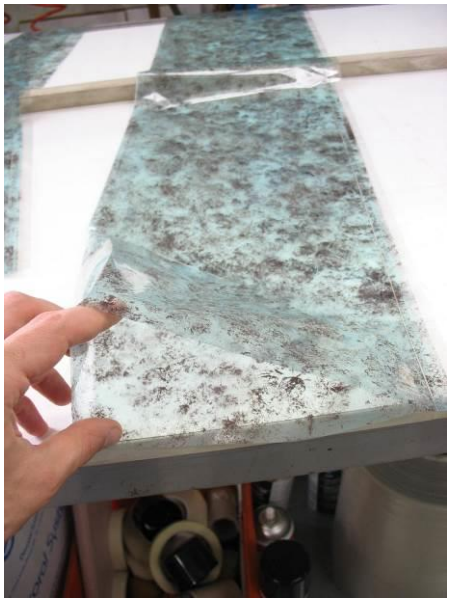
Heat-transfer technology allows to decorate powder-coated objects to obtain wood effect finishes, fancy effects, or different decorative motifs.

Here is shown the procedure for the decoration of glass bottles.

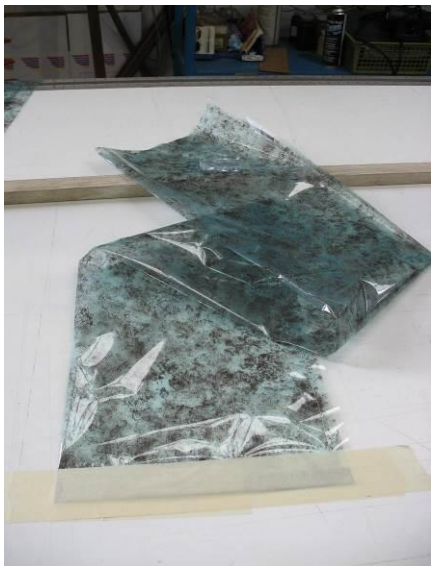
a) Preparation

With the heat-transfer film that we have chosen for the decoration, we make a bag large enough to contain the object to decorate: we cut a square portion of the film and join two opposite sides of it (Picture 13); then we close one remaining side with tape (Picture 14), thus leaving one side open to insert the bottle.

Picture 12: powder-coated sample



Picture 13: film closed on the right side

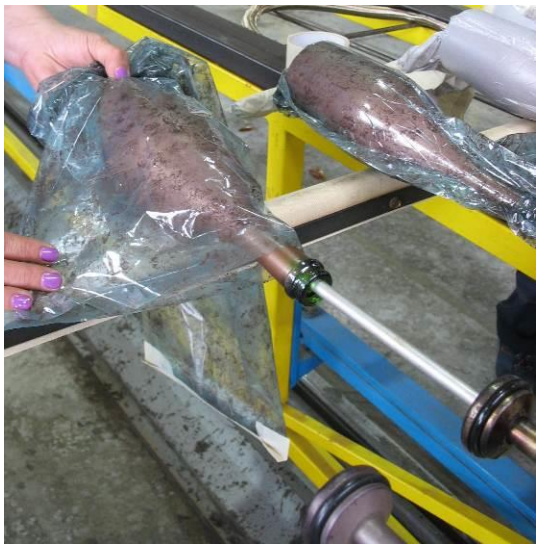


Picture 14: bag, closed on the third side

Picture 15: sample ready to be put into the bag

b) Bagging and vacuuming

The bag containing the object is closed on “suction heads” (picture 17); these heads will make the vacuum inside the bag, so the film will strictly adhere on the whole surface of the sample: this will allow the correct transfer of the inks into the layer of powder-coating.



Picture 16: Preparation of the samples on the support

Picture 17: sample in its bag, closed on the “suction heads”

c) Oven and heat-transfer process

The sample prepared is put into the oven at 446°F - 230°C for 12 minutes. After this time, the exhausted film can be removed and the decoration is completed.

Picture 18: glass bottles just after the sublimation in the oven

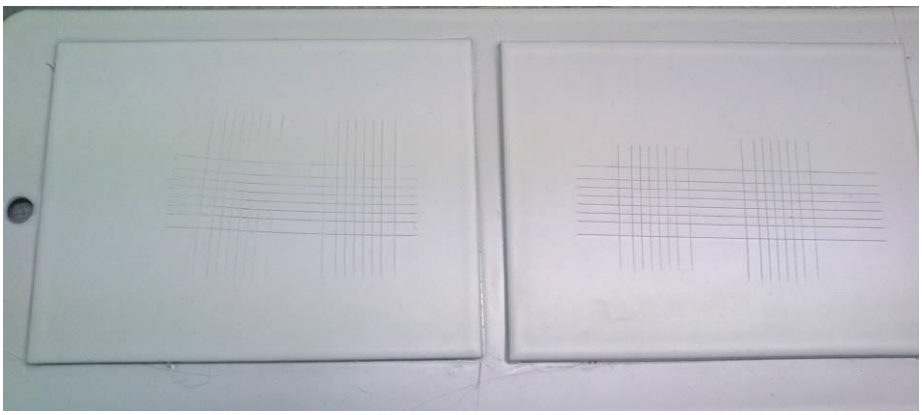
Picture 19: the sample decorated.

4. Test

A cross-cut test (*EN ISO 2409*) was carried out on standard powder-coating products applied on glass:

- Smooth glossy finish (DS 804): gt = 0; no loss of adhesion.
- Smooth matt finish (DS 408): gt = 0; no loss of adhesion.

The adhesion of the powder-coatings is regular and compliant to the standards also on this kind of material.



Picture 20: Cross-cut test carried out on a glass slide coated with DS 408

Picture 21: Cross-cut test carried out on a glass slide coated with DS 804

5. Possible applications

Using the technique illustrated in this technical document it's possible to decorated a huge range of glass object. Amazing results can be achieved with bottles and round shapes, that may valorize the metallization and the reflection of light of many powder-coatings.


Picture 22-23: Glass bottles, coated with Goldlook-001, Titanlook-001, Silverlook-001 and Steelook-001.

Amazing effect can be obtained by matching the transparency of the glass with products characterized by low hiding power, thus conferring to the glass object a special colour or a special reflection of the light but keeping at the same time the translucency that is typical of this material.

Picture 24: Glass jars coated with Glass-001 and Glass-003.

Ours powder-coating products can be decorated with plotter paper to obtain astonishing effects, as we can see in the following images.


Picture 25-26: Glass panel coated and then decorated with plotter paper

Marchi di qualità registrati di Decoral System:

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