

THERMO-XXX

Thermochromics powder coatings



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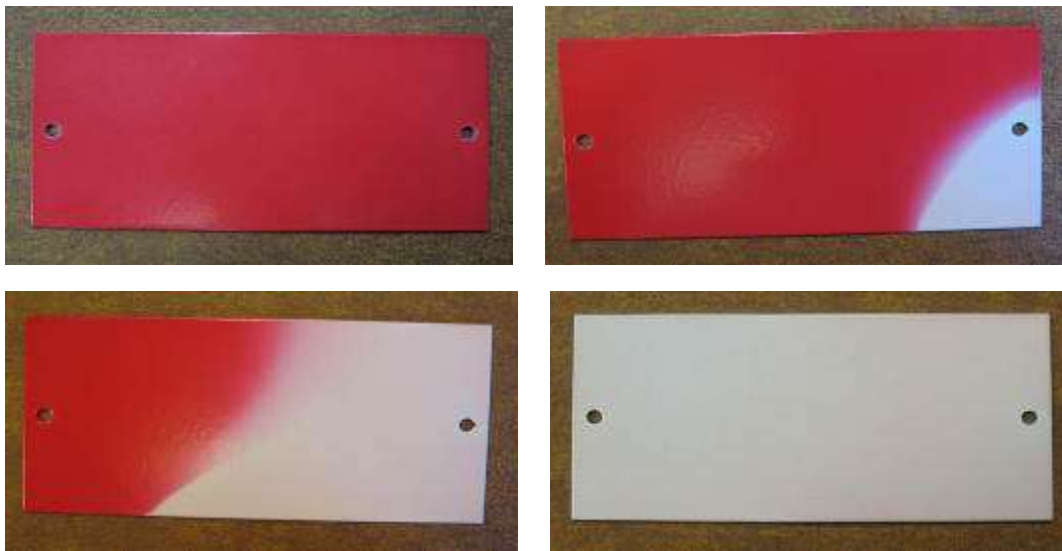
Thermochromics Powder coatings

1. Product features

The powders of the *Thermo* series contain special pigments that can change with heat: in a small temperature range these powder coatings switch from colored to transparent.

Since variation is *from colored to transparent* with increasing temperature, these coatings are generally used as second hand in a double coating, over a white (or colored) layer of paint; once the thermochromics layer has become transparent at a certain temperature, the first layer of paint shines through, thus giving the effect of a change in color.

The unique characteristic of these products represent a fascinating feature for the objects that will be coated and also offers innovative possible applications for them.



Double coated aluminum panel: *Thermo-003* (magenta) on *PE 411* (white polyester); by heating over 28°C, the thermochromics top layer becomes colorless, so the color of the first layer is fully visible.

2. Technical information

- Technical data

Powder type	Low-temperature cross-linking polyester
Class resistance	Indoor use
Yield (in surface/mass)	13,1 m ² /Kg
Specific weight	1,27 ± 0,03 g/cm ³

- Application and curing cycle

Available for corona charging.

Curing time and temperature: 15 minutes at 190°C – 374 F (metal temperature).

Reccomended thickness: 60 microns – yield 13.1 m²/Kg,
 70 microns – yield 11.2 m²/Kg,
 80 microns – yield 9.8 m²/Kg.

3. Variants and special formulations

These powders are available in matt, glossy, and textured version, and they are all suitable for decoration with heat-transfer technology.

It is possible to produce thermochromics powders in different colors and that change from colored to transparent at different temperatures.

Colors:

Code	Color
Thermo-001	Yellow
Thermo-002	Orange
Thermo-003	Pink
Thermo-005	Light Blue
Thermo-006	Dark Blue
Thermo-008	Black

Colour change temperatures:

- 5÷8°C – 41÷46 F (inside/outside temperature; storage and preservation of food);
- 15÷18°C – 59÷64 F (room temperature variations);
- 28÷30°C – 82÷86 F (close to body temperature);
- 50°C – 122 F (for hot objects and surfaces).

4. Test for the accurate determination of the temperature of the colour change

With a test, the DecoralLab has determined with accuracy the temperature at which a thermochromics powder coating changes colour, and the range within the change occurs.

The test has been performed on a *Thermo-005* applied as top coat on a white *PE411* (room temperature colour: blue; expected colour variation: >28°C).

The sample has been put into water; temperature has been checked with thermal probe.

While heating:

- 26°C ± 0,5°C blue;
- 28°C ± 0,5°C starts to change;
- 31°C ± 0,5°C transparent (white first coat fully visible).

While cooling:

- 30°C ± 0,5°C transparent (white first coat fully visible);
- 29°C ± 0,5°C starts to change;
- 27°C ± 0,5°C blue.

The change in colour occurs *between 28°C and 30°C* (82 F – 86 F).

5. Sublimation

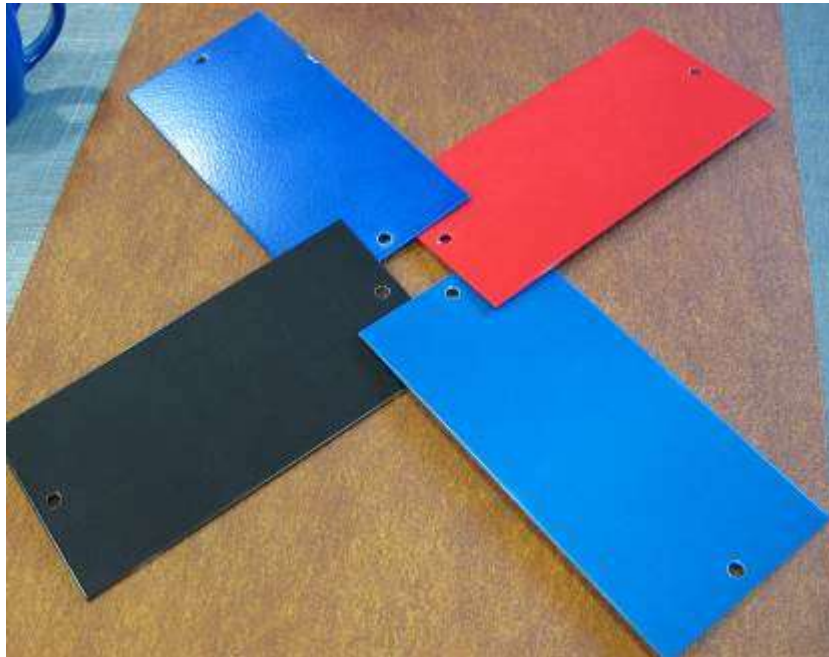
Heat-transfer technology on *Thermo* powders allows amazing effects: by matching the colour of the powder coat and the inks of the heat-transfer film, it is possible to make a picture (as well as a writing or a decor) appear and disappear by changing temperature: indeed, when the special pigments of the thermochromics powders change from coloured to transparent, the underlying picture becomes fully visible.



On the left, Thermo-008 (black), top coat on PE411 (white); On the right, after heating, the thermochromics powder coating becomes transparent and it is visible the heat-transferred image.

6. Possible usage and applications

The powders of the *Thermo* series represent an extraordinary product for the impressive effects that are possible by changing colour and temperature together, and also for the functionalities and the practical usefulness that can be obtained by properly choosing the suitable temperature threshold according to the application of the decorated object.



Double coated aluminium panels: different colours of thermochromics powders over a layer of white polyester; heating in the centre causes the *Thermo* powders to switch from coloured to transparent.

Dedicated marketing material:

- MRK-005-0322



Marchi di qualità registrati di Decoral System:



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