



LET'S COLOR THE WORLD

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YOUR SMART ALTERNATIVE FOR QUALITY

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INKS:

Light fastness:

Light fastness testing was carried out on a print from fat oil ink with 20% pigment content and a film weight of 1,5 gr./m² in a Fade-O- Meter fitted with a Xenon arc lamp. The change in shade is assessed, by using the 8 step blue scale: ISO 105 B01
Rating: 1 = poor fastness to light
8 = very high fastness to light

Heat Resistance:

A tin plate is printed in offset with a tin plate ink, pigmented at 25% for an organic pigment, 35% for a mineral pigment and 20% for a lumiere pigment. The plate is cut into 5 parts. The first part is conserved; the second one is stoved for 10 minutes at 180°C, the third one for 20 minutes at 150°C, the fourth one for 30 minutes at 120°C and the fifth part for 45 minutes at 100°C. The heat resistance is indicated as follow:
5 = excellent resistance, no change at 180°C
4 = good resistance at 150°C
3 = good resistance at 120°C
2 = poor resistance at 100°C

Fastness to sterilization:

A tin plate is prepared in the same way as for the heat resistance and cut into 3 pieces: A, B and C. A is conserved; B and C are stoved in dry heat for 12 minutes at 150°C. C is submitted afterwards to humid heat in an autoclave for 1 hour at 132°C.
Rating:
5 = pigment with excellent fastness
4 = pigment showing a very small change of colour or gloss, the change is not being accentuated after heating more presenting a loss of adhesion after autoclaving.
3 = pigment showing changes as under 4, but more accentuated
2 = pigment showing a distinct change of colour, gloss and intensity after heating, the changes being more accentuated after autoclaving, but of which the adhesion remains good.
1 = pigment with poor fastness, with loss of adhesion

Application area:

++: Much used pigment in application
+: Suitable pigment in application
Blank: Not tested in application

PLASTICS:

Bulk Volume:

The bulk volume is determined according to DIN ISO 787-11.

DIDP absorption:

The DIDP absorption of pigments is determined after ASTM "Designation D 281-84". A stiff, putty like paste is formed by the drop wise addition of DIDP to 100 gr. pigment which is being thoroughly rubbed with a spatula. The amount of DIDP required to produce the end point is taken to calculate a DIDP absorption value.
The DIDP absorption has been expressed in gr./100 gr. pigment.

Migration:

According to DIN53415. The migration is tested in LDPE at a pigment concentration of 1%.
The test runs for 24 hours, the weight used is 1 kg, the temperature is 80°C.
The degree of migration is assessed by means of the grey scale: ISO 105-A02.
Rating: 1 = poor fastness
5 = very high fastness

Light fastness:

Determined with a PVC-compound (according to DIN53775) coloured in the following concentrations: Organic pigments - Full shade at 0.1%
- Reduced shade at 0.56% + 5% TiO₂
Inorganic pigments - Full shade at 5%
- Reduced shade at 1.25% + 5% TiO₂

The trial is made according to ISO4892-2 in a Ci3000¹ fade-O-meter.
Rating:
according to ISO 105-B01 for the blue wool scale:
8 = exceptional light fastness
1 = very poor light fastness

Heat Resistance:

Determined on an injection moulding machine according to DIN EN 12877-2.
Pigment is pre-dispersed in a masterbatch.
Organic pigments: Reduced shade at 0.1% + 1% TiO₂
Inorganic pigments: Full shade at 0.5%
Reference = 30" at 200°C (except ABS: 220°C, PA6: 240°C);
Dwell time = 5 minutes; maximum dE = 3.00.

PAINTS:

Heat Resistance:

To test the heat resistance, a medium solid stoving system is prepared, composed of a non-plastified melamine resin and a non-drying short oil alkyd resin (Setal 84/Setamine US 135). The pigments are dispersed in this system. The paint is applied on a steel panel by using a bar-coater with a film thickness of 100µm wet. The painted panel is cut in five equal parts, which are cured at following conditions:

Part no.1 = 30 minutes at 120°C
Part no.2 = 30 minutes at 140°C
Part no.3 = 30 minutes at 160°C
Part no.4 = 30 minutes at 180°C
Part no.5 = 30 minutes at 200°C

The contrast is estimated according to the grey scale: ISO 105-A02.
Rating: 1 = poor fastness to heat
5 = very high fastness to heat

Pigments showing a tendency to bloom are marked with asterisk (*)

PAINTS:

Application Area:

1) WB = Water based
2) SB = Solvent based

The suitable pigments for each application are indicated with * + :

Light Fastness:

Fastness to light is carried out, by using the same binder system as used for the weathering fastness testing. The painted panel in full shade is exposed to sunlight under glass. The change in shade is assessed by using the 8 step blue scale: ISO 105-B01.
Rating: 1 = poor fastness to light
8 = very high fastness to light

Pigments showing a tendency to darkening are marked with a d.

Weathering Fastness:

The fastness to weathering of all inorganic and high quality organic pigments is tested in an alkyd/melamine stoving system based on Setal 84 and Setamine US 135. (Setal 84: short oil alkyd resin; Setamine US 135: melamine resin, both manufactured by Nuplex Resins). The Monoazo yellow (PY3, 65, 74) and red pigments (PR3) are only tested in an air drying long oil alkyd resin based on Setal 270, manufactured by Nuplex Resins. The weathering test was carried out in the Menen (Belgium) area. The painted panels in full shade were exposed for 12 months. After this period the change in coloristic properties between exposed and non-exposed surface was assessed according to the grey scale: ISO 105-A02.
Rating: 1 = poor fastness to weathering
5 = very high fastness to weathering

Pigments showing a tendency to darkening are marked with a d.

Overspray Fastness:

The overspray fastness is examined by applying a white paint on top of an existing coloured paint. Depending on the constitution many organic pigments bleed into the white paint and colour this in varying degree. The degree of bleeding is taken as a measurement to judge the overspray fastness.
This is caused by the fact that the pigment applied in the base coat is dissolved to some extent by organic solvents of the topcoat (usually white paint). This phenomenon is therefore closely linked to the solvent fastness of the pigment and strongly influenced by the curing conditions.

All the suitable Cappelle pigments for stoving systems are tested in full shade with regard to overspray fastness in alkyd/melamine system. The coated panels are cured for 30 minutes at 120°C. The degree of bleeding into the white paint is assessed by means of the grey scale: ISO 105-A02

Rating: 1 = poor overspray fastness
5 = very high overspray fastness

Explanation to Technical Data

General Properties

Specific gravity:

The specific gravity is determined by means of a pycnometer according to ASTM "Designation D 153-84, test method A".
Solvent used as immersion liquid: Shelsoll D 70

Oil absorption:

The oil absorption of pigments is determined after ASTM "Designation D281-84/oil absorption of pigments by spatula rubout". A stiff, puttylike paste is formed by the drop wise addition of linseed oil to 100 gr. pigment that is being thoroughly rubbed with a spatula. The amount of linseed oil required to produce the end point is taken to calculate an oil absorption value.
The oil absorption has been expressed in gr./ 100 gr. pigment.

Specific surface:

The specific surface area is determined by nitrogen gas adsorption according to the BET- method. It's expressed in m²/gr. pigment

Fastness to solvents:

A folded filter paper of low porosity, containing 0,5 gr. pigment, is immersed into 20 ml of solvent at 20°C. After standing for 24 hours the colouration of the solvent is compared using the grey scale:ISO 105-A02.
Rating: 1 = poor fastness
5 = very high fastness

Fastness to acids & alkalis:

Paints: The fastness property of pigments to chemicals is determined in full shade, which is produced in an alkyd/melamine system. The paint is applied on a metal panel. A 10% solution of HCl or a 5% solution of NaOH is dropped on the already cured paint film. The full shade is exposed to these chemical agents for 24 hours.

Plastic: The fastness property to chemicals is determined in full shade, which is produced in PP. The piece of coloured PP is immersed in a 25 ml of a 3% solution of HCl or NaOH for 48 hours.

Ink: To acids, according to the specifications of ISO 2836, replacing the water by a solution of sulphuric acid at 1% To alkalis, according to the specifications of ISO 2838.
An eventual discoloration is rated according to the grey scale: ISO 105 A02

Rating: 1 = poor fastness to chemicals
5 = very high fastness to chemicals



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pigments for

inks
paints
plastics

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