THERMOPLAST® F YELLOW 084

General Properties

Chemical Structure: Perylene
Colour Index Part I: S.G. 5
Colour Index Part II: 59075
CAS Number: 2744-50-5
Physical Form: Powder
Colour Shade: Yellow

Preparations

(Other) preparations can be made on special request.

Colouristical Properties Org.

Hue Grade in PVC 1/3 SD: 93.3
Chroma in PVC 1/3 SD: 75.4
Red. Ratio in PVC-u 1/3 SD: 5

Physical Properties

Density: 1.3 g/cm³
Bulk Density: 0.42 g/cm³
Index of pH: 7-8
Conductivity: 60 µS/cm
Specific Surface: 1 m²/g

Fastness properties

Heat stability: 300 °C
Light fastness: 7
Weather fastness: -
Migration fastness: -
Infl. on warping of PE-HD: -

Fastness to chemicals:

HCl conc.: - Months
HCl 10%: - Months
H₂SO₄ conc.: - Months
H₂SO₄ 10%: - Months
HNO₃ conc.: - Months
HNO₃ 10%: - Months
NaOH conc.: - Months
Na₂CO₃ sat.: - Months

Criteria for the fastness to chemicals was a possible colour change of the coloured plastic material during the storage in the test medium.

Recommendations for applications

PVC-p: Not suitable
PVC-u: Suitable
PUR: Not suitable
LD-PE: Not suitable

All data is subject to the producer's disclaimer

LUCOLOR 2.0 - BASF Colourants for Plastics (Oct. 1998) - Printed: 8/26/99
<table>
<thead>
<tr>
<th>Material</th>
<th>Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD-PE</td>
<td>Not suitable</td>
</tr>
<tr>
<td>PP</td>
<td>Not suitable</td>
</tr>
<tr>
<td>PS</td>
<td>Suitable</td>
</tr>
<tr>
<td>SB</td>
<td>UCC</td>
</tr>
<tr>
<td>SAN</td>
<td>Suitable</td>
</tr>
<tr>
<td>ABS/ASA</td>
<td>UCC</td>
</tr>
<tr>
<td>PMMA</td>
<td>Suitable</td>
</tr>
<tr>
<td>PC</td>
<td>Suitable</td>
</tr>
<tr>
<td>PA</td>
<td>Not suitable</td>
</tr>
<tr>
<td>PETP</td>
<td>UCC</td>
</tr>
<tr>
<td>CA/CAB</td>
<td>UCC</td>
</tr>
<tr>
<td>UP</td>
<td>Suitable</td>
</tr>
</tbody>
</table>

**Recommendations for food applications**

<table>
<thead>
<tr>
<th>Region</th>
<th>Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>BgVV</td>
<td>Suitable</td>
</tr>
<tr>
<td>FDA</td>
<td>UCC</td>
</tr>
<tr>
<td>France</td>
<td>Not suitable</td>
</tr>
</tbody>
</table>

UCC: Under certain conditions

All data is subject to the producer’s disclaimer
Product Specification - THERMOPLAST® F YELLOW 084

**PROPERTIES**
- Pigment type: Perylene
- Colour Index: S.G. 5
- Application: Colourant for plastics
- Physical form: Powder
- Storage: practically unlimited shelf life
- Food packaging: approved according to "Empfehlung IX des BgVV".

**SPECIFICATION**
- Colour tolerances: $dH^* \pm 0.7; dC^* \pm 0.7$
- Strength equivalence: $100 \pm 5\%$
- Test method: Solvents (Regulation 11.3.4.1)

Please note:
The above data will be warranted by us. These data, however, as well as the properties of any product samples do not imply any legally binding assurance of certain properties or of suitability for a specific purpose so that any liability for damages cannot be derived therefrom.
Weather fastness
THERMOPLAST® F YELLOW 084

Test medium:
Standard PS
According to DIN 53387, 54001

Steps grey scale: 0:20, 1:100, 0.02%

- 3000 hours
- 2000 hours
- 1000 hours
- 500 hours
- 0 hours
Reflection Curve
THERMOPLAST® F YELLOW 084

Note: The program stores curve points (see table). The diagram shows approximations.
Heat Stability
THERMOPLAST® F YELLOW 084

Test medium:
Standard PS
According to DIN 53772

Note: The program stores curve points (see table). The diagram shows approximations.
Light fastness
THERMOPLAST® F YELLOW 084

Test medium:
Standard PS
According to
DIN 53387, 54004

Steps blue wool scale

<table>
<thead>
<tr>
<th>Test Medium</th>
<th>Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:20</td>
<td>2</td>
</tr>
<tr>
<td>1:100</td>
<td>4</td>
</tr>
<tr>
<td>0.02%</td>
<td>6</td>
</tr>
<tr>
<td>Name of product</td>
<td>C.I. No. / Name</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>THERMOPLAST® F Yellow 084</td>
<td>59 075 / C.I. Solvent Green 5</td>
</tr>
<tr>
<td>THERMOPLAST® Yellow 104</td>
<td>48 160 / Solvent Yellow 93</td>
</tr>
<tr>
<td>THERMOPLAST® Red 454</td>
<td>-*) / C.I. Solvent Red 195</td>
</tr>
<tr>
<td>THERMOPLAST® Blue 684</td>
<td>60 725 / C.I. Solvent Violet 13</td>
</tr>
<tr>
<td>THERMOPLAST® Black X70</td>
<td>Mixture</td>
</tr>
</tbody>
</table>

*) The Colour Index, CAS Nos. and EINECS Nos. are not yet available.

**Chemical nature**

These dyes are free of extenders and soluble in plastics. They belong to different classes of chemical compounds. **THERMOPLAST® F Yellow 084** is the isobutyl ester of perylene-3,9-dicarboxylic acid. **Yellow 104**, known as pyrazolone yellow, consists of two pyrazolone rings connected by a methine bridge. **Red 454** is a monoazo compound and **Blue 684** is a substituted 1-hydroxy-4-aminoanthraquinone. **Black X70** is a mixture of compounds.

**Toxicology**

In experiments on animals, **THERMOPLAST®** dyes did not display acute toxicity. No acute irritant effect was shown in tests to determine the acute irritation of the skin and mucous membranes.

**Ecology**

Because they are chemically inert and practically insoluble in water, dyes are not environmentally hazardous. The dyes are insoluble in water. They can be removed from waste water by mechanical means.

**Labelling**

The above listed products are not dangerous substances in the sense of the German Ordinance on Dangerous Substances or of corresponding EU regulations.

**Classification as dangerous goods**

The products are not classified as hazardous under transport regulations.

**TA Luft**

Para 3.1.3 - Total dust (Germany)
**MAK value**
The general threshold value for dust, i.e. 6 mg/m³, must be observed.
(Proposal of the MAK commission for the alveolar passing dust fraction, i.e. 1.5 mg/m³, is not yet valid) (Germany)

**Water hazard class**
WGK 1 (slightly water hazardous according to German legislation - KBwS - group classification organic colours)

**Heavy metal content**

<table>
<thead>
<tr>
<th>Element</th>
<th>THERMOPLAST® dyes contain</th>
<th>Chromium</th>
<th>&lt; 50 mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>&lt; 20 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arsenic</td>
<td>&lt; 20 mg/kg</td>
<td>Selenium</td>
<td>&lt; 20 mg/kg</td>
</tr>
<tr>
<td>Barium</td>
<td>&lt; 50 mg/kg</td>
<td>Mercury</td>
<td>&lt; 20 mg/kg</td>
</tr>
<tr>
<td>Lead</td>
<td>&lt; 20 mg/kg</td>
<td>Zinc</td>
<td>&lt; 20 mg/kg</td>
</tr>
<tr>
<td>Cadmium</td>
<td>&lt; 30 mg/kg</td>
<td>Prim. aromatic amines</td>
<td>&lt; 100 mg/kg</td>
</tr>
</tbody>
</table>

The metal levels quoted are based on the detection limit of the analytical determination method used (X-ray fluorescence spectroscopy). The actual levels may lie well below these values.

**Halogen content**
All types listed do not contain any chemically combined halogen.

**Food legislation**
According to tests on standard samples (Type 8081) the listed THERMOPLAST® dyes conform to the demands on purity in the following food legislation (see also "Heavy metal content"):

- Europe: Resolution AP (89)
- Germany: BgVV Empfehlung IX., 190. Mitteilung vom 1.6.1994
- France: Brochure No. 1227; F Yellow 084 and Red 454 are not listed in the French Positive List
- Italy: Decreto Ministeriale dated 21.3.1973
- USA: Not listed on the FDA List (21.CFR, § 178.3297). Current use only on evidence of "non migration".

**Toys**
According to tests on standard samples (Type 8082), the listed THERMOPLAST® dyes conform to the demands on purity in the European standard on toys, i.e. EN 71, Part 3.

**Registration status**
The components of the products are listed in the chemical inventories of the following countries: EU (EINECS), USA (TSCA), Canada (DSL), Japan (MITI), Australia (AICS), Korea (ECL). THERMOPLAST® Red 454 is not listed in Japan (MITI).

**Other legislation on chemicals**
The products do not fall under the provisions of the agreement on chemical weapons and do not contain any substances that are mentioned in the German Ordinance on the Prohibition of Certain Chemicals (ChemVerbotsV). They are produced without using substances that destroy ozone (Montreal Agreement - Ozone Depleting Substances).

Further information can be found in our Material Safety Data Sheets and Technical Information Bulletins. The Product Safety Department in our Organic Pigments Division will gladly reply to your queries and can
be reached under the following address:

BASF AG  Dr Oberlinner  Tel. ++49 (0)621-60-99232
EFO/FS - J 550  Mrs Paymal  Tel. ++49 (0)621-60-40681
D-67056 Ludwigshafen, Germany  Mr Schwanse  Tel. ++49 (0)621-60-71503

Fax: ++49 (0)621-60-40673

The information submitted in this publication is based on our current knowledge and experience. It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation are observed.