**General Properties**

- **Chemical Structure**: Perylene Red
- **Colour Index Part I**: P.R. 178
- **Colour Index Part II**: 71155
- **CAS Number**: 3049-71-6
- **Physical Form**: Powder
- **Colour Shade**: Red

**Preparations**

Eupolen® Red 39-1101

(Other) preparations can be made on special request.

**Colouristical Properties Org.**

<table>
<thead>
<tr>
<th>Property</th>
<th>PVC 1/3 SD</th>
<th>PVC 1/9 SD</th>
<th>PE-LD 1/3 SD</th>
<th>PE-LD 1/9 SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hue Grade</td>
<td>18.4</td>
<td>11.6</td>
<td>16.5</td>
<td>10.1</td>
</tr>
<tr>
<td>Chroma</td>
<td>56.9</td>
<td>43</td>
<td>55</td>
<td>41.7</td>
</tr>
<tr>
<td>Red. Ratio</td>
<td>5.1</td>
<td>19.4</td>
<td>4.8</td>
<td>17.4</td>
</tr>
</tbody>
</table>

**Ease of Dispersion**: <10

**Physical Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>1.6 g/cm³</td>
</tr>
<tr>
<td>Bulk Density</td>
<td>0.22 g/cm³</td>
</tr>
<tr>
<td>Index of pH</td>
<td>7</td>
</tr>
<tr>
<td>Conductivity</td>
<td>20 μS/cm</td>
</tr>
<tr>
<td>Specific Surface</td>
<td>37 m²/g</td>
</tr>
</tbody>
</table>

**Fastness properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat stability</td>
<td>300 °C</td>
</tr>
<tr>
<td>Light fastness</td>
<td>8</td>
</tr>
<tr>
<td>Weather fastness</td>
<td></td>
</tr>
<tr>
<td>Migration fastness</td>
<td>4-5</td>
</tr>
<tr>
<td>Infl. on warping of PE-HD</td>
<td>Distinct</td>
</tr>
</tbody>
</table>
Fastness to chemicals:

- HCl conc. >6 Months
- HCl 10% >6 Months
- H2SO4 conc. >6 Months
- H2SO4 10% >6 Months
- HNO3 conc. Instable
- HNO3 10% >6 Months
- NaOH conc. >6 Months
- Na2CO3 sat. >6 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 Suitable
- PVC-u Suitable
- PUR Suitable
- LD-PE Suitable
- HD-PE Suitable
- PP Suitable
- PS Suitable
- SB Suitable
- SAN Suitable
- ABS/ASA UCC
- PMMA Suitable
- PC UCC
- PA UCC
- PETP Suitable
- CA/CAB Suitable
- UP Suitable

UCC: Under certain conditions

Recommendations for food applications

- BgVV Suitable
- FDA UnderApp.
- France Suitable

UCC: Under certain conditions

All data is subject to the producer's disclaimer
Product Specification - PALIOGEN® RED K 3911 HD

PROPERTIES
Pigment type: Perylene red
Colour Index: Pigment Red 178
Application: Colourant for plastics
Physical form: Powder
Storage: practically unlimited shelf life
Food packaging: approved according to "Empfehlung IX des BgVV".

SPECIFICATION
Colour tolerances: \( dH^* \pm 0.7; dC^* \pm 0.7; dL^* \pm 0.7; dE^* \leq 1.0; \)
\( da^* \pm 0.7; db^* \pm 0.7 \)
Strength equivalence: 100 ± 5 %
Test method: BASF test method 11.3.1

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.
Reflection Curve
PALIOGEN® RED K 3911 HD

Note: The program stores curve points (see table). The diagram shows approximations.
Particle Size Distribution
PALIOGEN® RED K 3911 HD

Note: The program stores curve points (see table). The diagram shows approximations.

Susp. Fluid: H2O
Disp. Agent: Tetronic
Mixer Time: 60 s
Median Size: 0.571 µ
CILAS
Heat Stability
PALIOGEN® RED K 3911 HD

Note: The program stores curve points (see table). The diagram shows approximations.

Test medium:
PE-HD (Lupolen 6031M)
According to DIN 53772

All data is subject to the producer’s disclaimer
LUCOLOR 2.0 - BASF Colourants for Plastics (Oct.1998) - Printed: 8/24/99
Weather fastness
PALIOGEN® RED K 3911 HD

Steps grey scale

Test medium:
PE-HD (Lupolen 6031M)
According to
DIN 53387, 54001

All data is subject to the producer's disclaimer
Light fastness
PALIOGEN® RED K 3911 HD

Test medium:
PE-HD (Lupolen 6031M)
According to
DIN 53387, 54004
**Name of product** | PALIOGEN® Red K 3580  
**C.I. No. / Name** | 71 137 / C.I. Pigment Red 149, Perylene Red  
**CAS No. / EINECS No.** | 4948-15-6 / 225-590-9

**Name of product** | PALIOGEN® Red K 3911 HD  
**C.I. No. / Name** | 71 155 / C.I. Pigment Red 178, Perylene Red  
**CAS No. / EINECS No.** | 3049-71-6 / 221-264-5

**Name of product** | PALIOGEN® Red K 4180  
**C.I. No. / Name** | 71 130 / C.I. Pigment Red 179, Perylene Red  
**CAS No. / EINECS No.** | 5521-31-3 / 226-866-1

**Name of product** | PALIOGEN® Red Violet K 5011  
**C.I. No. / Name** | 71 129 / C.I. Pigment Violet 29, Perylene Red  
**CAS No. / EINECS No.** | 81-33-4 / 201-344-6

**Chemical nature**  
The listed PALIOGEN® types, also known as perylene pigments, are derivatives of perylenetetracarboxylic anhydride. Originally used as vat dyes, it is only since 1950 that they have found application as pigments for colouring plastics and high-grade industrial paints.

**Toxicology**  
Perylene pigments do not exhibit acute oral toxicity in animal trials, nor do they irritate the skin and mucous membranes. A 28-day (subacute) feeding trial carried out with a perylene pigment did not show any adverse toxicological results.

**Ecology**  
Because of their poor solubility in water, perylene pigments are nontoxic to aquatic organisms and are not an environmental hazard. An 8-week bioaccumulation study with a perylene pigment on fish showed that the pigment does not accumulate in the organism.

**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.

**Heavy metal content**  
PALIOGEN® pigments do not contain any lead, cadmium, chromium(VI) and mercury compounds in their formulations. The sum of the total contents of these elements, according to tests on standard samples, is less than 100 mg/kg. It is thus below the limit in the EU packaging directives and the American CONEG model.

- Antimony < 20 mg/kg  
- Chromium < 50 mg/kg  
- Arsenic < 20 mg/kg  
- Selenium < 20 mg/kg
Lead < 20 mg/kg  Mercury < 20 mg/kg  Cadmium < 30 mg/kg  Zinc < 20 mg/kg  Prim. aromatic amines < 100 mg/kg

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  PALIOGEN® pigments do not contain organically combined halogens.

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


are not listed in the French Positive List.

Italy: Decreto Ministeriale dated 21.3.1973  Spain: Resolución del 4.11.82 de la Subsecretaría de Sanidad  USA: C.I. Pigment Red 179 ist listed in the FDA-Positive List (21.CFR, § 178.3297). The other PALIOGEN® pigments are in approval. Current use only on evidence of "non migration".

Toys  According to tests on standard samples (Type 8082), the listed PALIOGEN® pigments 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), Philippines (PICCS, Final Version 1995), and Switzerland (BAGT No. 612200, Class free).

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).

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)

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:
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.