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Additives and Adsorbents

## Exolit® OP 1400

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### Highly stable phosphinate based flame retardant for polyamides

#### Product Description

Exolit OP 1400 is a non-halogenated flame retardant based on organic phosphinates for reinforced polyamide 6, polyamide 66 and high temperature polyamides. The product achieves its flame retardant effect through a combined gas phase and condensed phase mode of action. Exolit OP 1400 is based on a new chemical substance which is currently being registered in various national and regional chemical inventories.

For more details see our [Innovation Spotlight video](#).

#### Benefits

- Suited for applications in hot and humid environments
- Outstanding thermal stability - widest processing window within Exolit OP product range for polyamides
- UL 94V-0 rating down to 0.4 mm thickness
- The flame retardant polyamide compounds exhibit very good physical and excellent electrical properties
- Low material density
- Good colorability
- Good contrast in laser marking
- Non-halogenated flame retardants with favorable environmental and health profile
- Shows a high-potential for mechanical recycling while maintaining the flame retardancy and other properties.

#### Specifications

##### Technical Data

			Test method
<b>Phosphorus</b>	(w/w)	24.5-25.5	Photometry after oxidizing dissolution; (11/17) or wavelength dispersive X-ray fluorescence spectrometry; (11/23)
<b>Moisture content (IR lamp)</b>	% (by wt.)	max. 0.5	Karl-Fischer titration; (11/21)
<b>Decomposition temperature</b>	°C	350	(DTA/TG 2% weight loss, air)
<b>Density at 20°C</b>	g/cm <sup>3</sup>	approx. 1.45	
<b>Bulk Density</b>	kg/m <sup>3</sup>	approx. 466	(DIN 53466)

#### Applications

Exolit OP 1400 was developed especially for use in polyamides. It is suited for polyamide 6 and 66 as well as polyphthalamides and other high temperature polyamides, e.g. PA 46, for both glass-fiber-reinforced and unreinforced grades. The flame retarded polyamide compounds exhibit very good physical and electrical properties. Flame retarded polyamides with Exolit OP 1400 are suitable for applications also in hot and humid environment.

##### Formulation

In glass-fiber-reinforced polyamide 6 or 6.6, a dosage of about 20 % (by wt.) of Exolit OP 1400 is usually sufficient to obtain the UL 94 V-0 classification for electrical components (at 1.6 mm as well as 0.8 mm and 0.4 mm thickness). In semi-aromatic polyamides the dosage can be reduced to approx. 15%. Subject to the polymer grade, processing conditions and glass-fibre reinforcement the dosage of the flame retardant may vary.

#### Processing

Before incorporating Exolit OP 1400, it is important to predry the polyamide as usual. If possible, the resulting moisture content should be below 0.1 % (by wt.). Predrying of Exolit OP 1400 is not necessary. However, predrying (e.g. 4 h at 120 °C) is recommended, if even very low moisture contents must be avoided.

The mixing and processing methods customary in powder processing of polymers can be used with Exolit OP 1400. The VDI Guideline 2263 Prevention of dust fires and dust explosions or the relevant national regulations must be observed.

The optimum conditions for incorporating should be determined in each individual case. Care must be taken to ensure homogeneous dispersion of all components. The temperature of the polymer melt should not exceed 340 °C.

#### Packaging and Handling

**Delivery form**

Powder

**Packaging**

Exolit OP 1400 is delivered in 20 kg paper bags with PE inliner or 500 kg big bags.

**Storage**

The product should be stored in a dry place at room temperature. Opened containers should be tightly resealed after use.

Minimum shelf life is 12 months from the date of shipping when stored according to the said conditions.

**EcoTain®**

Products that offer outstanding sustainability advantages are awarded Clariant's EcoTain® label. EcoTain® products significantly exceed sustainability market standards, have best-in-class performance and contribute overall to sustainability efforts of the company and our customers. Find out more about: [EcoTain®](#).

**PEOPLE**

- Non hazardous, studies on life cycle data available



- Saves lives and assets as a (halogen free) flame retardant. Supports the attainability of eco-labels for customer products.

**PLANET**

- Phosphorus is on the EU list of critical raw materials but recycling is possible and actively investigated.



- Very efficient production process with high yield, minimized waste and low water consumption.

**PERFORMANCE**

- Extensive work with customers along the value chain, optimizing material performance and evaluating life cycle aspects with stakeholders.



- Optimized blend, efficient in polyamides at comparatively low loadings. Very good physical and excellent electrical properties of the flame retarded materials. Lower smoke toxicity in case of a fire.

**More Information**

For more details see our [Innovation Spotlight video](#).

**Safety**

For regulatory details such as the classification and labelling as dangerous substances or goods please refer to our corresponding Material Safety Data Sheet. For disposal in accordance with the regulations the product should be treated as special waste and taken to a suitable incineration plant.

**Contact Us;**

Please contact us for safety and regulatory details or the Material Safety Data Sheet (MSDS).

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