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Additives

## Exolit® OP 1311

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### Phosphinate flame retardant system for reinforced polyamide 6 and elastomers

#### Product Description

Exolit OP 1311 is a non-halogenated flame retardant based on organic phosphinates. The product achieves its flame retardant effect through intumescence. The thermoplastic polymer with Exolit OP 1311 foams and crosslinks on exposure to flame and forms a stable char at the surface acting as a barrier. The protective layer provides a heat-insulating effect, reduces oxygen access and prevents dripping of molten polymer. Exolit OP 1311 is a white powder.

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

#### Benefits

- Achieves its flame retardant effect through a combined gas phase and condensed phase mode of action
- Suited for thermoplastic elastomers such as TPU and TPE-E for cable applications
- UL 94 V-0/VW-1 passed
- The flame retarded elastomers compounds exhibit good physical and electrical properties
- Low smoke toxicity
- Non-halogenated flame retardant with favorable environmental and health profile

#### Specifications

Characteristics	Unit	Target Value	DS <sup>1)</sup>	TD <sup>2)</sup>	Test Method
<b>Phosphorus</b>	%(w/w)	19.7 - 20.7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Photometry after oxidizing dissolution; (11/17) or wavelength dispersive X-ray fluorescence spectrometry; (11/23)
<b>Water / Moisture</b>	%(by wt.)	max. 0.25	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Karl-Fischer titration; (11/21)
<b>Density</b>	g/cm <sup>3</sup>	approx. 1.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	at 20 °C
<b>Bulk Density</b>	kg/m <sup>3</sup>	approx. 400	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>Decomposition Temperature</b>	°C	> 300	<input type="checkbox"/>	<input checked="" type="checkbox"/>	(DTA/TG)

<sup>1)</sup> Delivery specification: The product is monitored on a regular basis to ensure that it adheres to the specified values. Test methods: Clariant method numbers 11/xx in brackets.

<sup>2)</sup> Technical data: The technical data are used solely to describe the product and are not subject to regular monitoring.

#### Applications

Exolit OP 1311 was developed especially for use in polyamides. It is suited for both glass-fibre-reinforced and unreinforced grades. The flame retarded polyamide compounds exhibit very good physical and electrical properties.

#### Formulation

In glass-fibre-reinforced polyamide 6, a dosage of 15 to 20 % (by wt.) Exolit OP 1311 is usually sufficient to obtain the UL 94 V-0 classification for electrical components (at 1.6 as well as 0.8 mm thickness). For polyamide 66 applications, we recommend Exolit OP 1312.

Subject to the polymer grade, processing conditions and glass- fibre reinforcement the dosage of the flame retardant may vary.

#### Processing

Before incorporating Exolit OP 1311, 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 1311 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 1311. 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 300°C.

#### Packaging and Handling

##### Delivery form

White powder

**Packaging**

Exolit OP 1311 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.

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

**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).

[www.clariant.com](http://www.clariant.com)



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