Print this page **Flame Retardants** **Additives**

Exolit® AP 462

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Micro encapsulated APP (phase II) with extremely low water solubility

Product Description

Exolit AP 462 is a product based on ammonium polyphosphate. The crystal modification is phase II. It is manufactured from ammonium polyphosphate by micro-encapsulation with melamine resin according to Clariant's own method. Exolit AP 462 is a fine-particle white powder with very low solubility in water, even at elevated temperatures. It is completely insoluble in organic solvents. The product is non-hygroscopic and non-flammable.

Benefits

- Extremely low water solubility
- Completely insoluble in organic solvents, non-hygroscopic and non-flammable
- Even lower viscosity in aqueous suspension, lower heat stability in the temperature range > 300 °C and improved powder flowability in comparison to Exolit® AP 422
- Can be used for all applications where ammonium polyphosphate is suitable
- Can be used advantageously in intumescent coatings where the ammonium polyphosphate is required to have extremely low water solubility and where lower heat stability at temperatures above 300 °C contributes to more rapid foaming of the coating
- Particularly suitable as an "acid donor" for intumescent coatings thanks to its low water solubility. Steel structures coated with intumescent paints can meet the requirements of fire resistance classes specified in EN, DIN, BS, ASTM and others. The application of Exolit® AP 462 based intumescent coatings on wood or plastics enables these materials to qualify for Building Material Class B (DIN EN 13501-1)
- Imparts a good flame-retardant effect to adhesives and sealants when it is incorporated into the base formulation at the rate of 10 - 20%
- Suitable non-halogenated flame retardant for polyurethane foams
- Excellent flame-retardant effect in cellulose-containing materials such as paper and wood products
- With chipboard products, the B classification according to DIN EN 13501-1 can be achieved by adding 15 - 20%
- Casting resins based on epoxy resins or unsaturated polyester resins achieve the classification UL94-V0
- Non-halogenated flame retardant with favorable environmental and health profile

Specifications

Characteristics	Unit	Target value	DS[1])	TD[2])	Test method
Chemical Formula		[NH4PO3]n n > 1000	☐	☑	
Phosphorus	% (w/w)	29.0 - 31.0	☑	☐	Photometry after oxidizing dissolution; (11/17)
Water / Moisture	% (w/w)	max. 1.0	☑	☐	Thermogravimetry at 130 °C; (11/03)
Nitrogen	% (w/w)	15.0 - 17.0	☑	☐	Elemental analysis; (11/07)
Density	g/cm³	1.9	☐	☑	at 25 °C
Bulk Density	g/cm³	approx. 0.9	☐	☑	
Viscosity	mPa*s	max. 20	☐	☑	at 25 °C in 10 % aqueous suspension
pH Value		6.5 - 8.5	☑	☐	Potentiometry in 10 % aqueous suspension; (11/12)
Solubility in Water	% (w/w)	max. 0.04	☑	☐	Gravimetry after filtration of a 10 % aqueous suspension at 25 °C; (11/41)
Acid Number	mg KOH/g	max. 0.5	☑	☐	Titration using alkali in 10 % aqueous suspension; (11/11)
Average Particle Size (D50)	µm	approx. 20	☐	☑	
Particle Size Distribution	% (w/w)		☑	☐	Air jet sieving; (11/02)
	> 100 µm	max. 0.2			

[1]) Delivery specification: The product is constantly monitored to ensure that it adheres to the specified values. Test methods: Clariant method numbers 11/xx in brackets.
[2]) Technical data: The technical data are used solely to describe the product and are not subject to regular monitoring.

Applications

Exolit AP 462 can be used for all applications ammonium polyphosphate is suitable for. In cases where a specific phosphorus content is required to obtain the desired effect, the lower phosphorus content of Exolit AP 462 should be compensated by increasing the amount of product added.

Exolit AP 462 can be used advantageously in intumescent coatings where the ammonium polyphosphate is required to have extremely low water solubility and where lower

heat stability at temperatures above 300 °C contributes to more rapid foaming of the coating.

Intumescent coatings
On account of its low water solubility, Exolit AP 462 is particularly suitable as an ”acid donor” for intumescent coatings. Other essential components of intumescent systems include a binder, a carbon donor (e.g. pentaerythritol) and a blowing agent (e.g. melamine).
On exposure to flame, the intumescent coatings form a carbonaceous foam which effectively shields the underlying material from temperature increases.
Steel structures coated with intumescent paints can meet the requirements of fire resistance classes specified in EN, DIN, BS, ASTM and others.
The application of Exolit AP 462 based intumescent coatings on wood or plastics enables these materials to qualify for Building Material Class B (DIN EN 13501-1).
Exolit AP 462 imparts a good flame-retardant effect to adhesives and sealants when it is incorporated into the base formulation at the rate of 10 - 20 %.

Polyurethane foams
Exolit AP 462 is a suitable non-halogenated flame retardant for polyurethane foams. If handling of Exolit AP 462 as a solid is not possible we recommend the dosage of the flame retardant by preparing an Exolit AP 462/polyol-suspension. Because of the low acid number of Exolit AP 462 it is also possible to incorporate this flame retardant in an Exolit AP 462/isocyanate suspension. To prevent the solid from settling the Exolit AP 462 suspensions should be stirred or circulated by pump.

Other applications
Exolit AP 462 has an excellent flame-retardant effect in cellulose-containing materials such as paper and wood products. With chipboard products the B classification according to DIN EN 13501-1 can be achieved by adding 15 - 20 % Exolit AP 462. Casting resins based on epoxy resins or unsaturated polyester resins achieve the classification UL94-V0 with Exolit AP 462.

Packaging and Handling

Delivery form
White powder

Packaging
Exolit AP 462 is packed in 40 x 25 kg-paper bags (polyethylene inliner) net per 1.000 kg-pallet, shrink-wrapped. Exolit AP 462 can also be supplied in a variety of big bags, shrink-wrapped.

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

Safety

For regulatory details such as the classification and labeling as dangerous substances or goods please refer to our corresponding Material Safety Data Sheet.

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

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