Dispex® Ultra PA 4513

General

Dispex® Ultra PA 4513 is a derivative of a family of specialty resins for use in high-viscosity, water-borne systems. A typical end use application example is the production of ceramic materials.

Chemical nature

Aqueous solution of a polyacrylamide polymer

Properties

Physical form

Colourless to straw coloured liquid

Technical data

(not supply specification)

Solid content	BASF method (1g, 1h at 110 °C)	19.0 – 21.0 %
pH value	BASF method (25 °C)	7.0 – 9.0
Viscosity, dynamic	BASF method (25 °C, 20 rpm	600 – 1,400 mPa.s
Density	BASF method (20 °C)	~ 1.080 g/m^3

Application

Dispex® Ultra PA 4513 may be used as the main binder to allow formulation of special clay pastes which are the precursors for ceramics. The “green strength” effect of the resin enables the manufacturer to form bodies, which - although still delicate to handle – are stable enough to keep their designed form until the ceramic lattice is achieved by firing.

Dispex® Ultra PA 4513 is also suitable for ceramic production by the “spray drying and pressing route”. It is recommended that a moisture content of greater than 0.75% is maintained after the spray drying in order to produce flow of the particles whilst under high pressure. Dispex® Ultra PA 4513 can also perform in a similar way when used as a glaze hardener.

Under typical firing conditions (500-700°C) Dispex® Ultra PA 4513 is burned off without leaving an ash residue, especially no residual inorganic salts. The burning off process is gradual and no deposits of carbon are formed. Hence, there is little or no distortion of the ceramic article.

Data from TGA experiment on the pure substance:
- remaining residue after 1 hour at 500°C: < 0.6%
- remaining residue after 1 hour at 600°C: < 0.4%
- remaining residue after 1 hour at 700°C: < 0.1%

Since the products may release acrylamide during the burn off process good ventilation must be ensured.

The amount of Dispex® Ultra PA 4513 required for optimum performance should be determined in trials covering a concentration range.

Recommended concentrations

Production of ceramic materials
2.0 – 4.0 % Dispex® Ultra PA 4513 (based on clay dry weight)

Storage

Dispex® Ultra PA 4513 should be handled in accordance with good industrial practice. Detailed information is provided in the Safety Data Sheet.

By analytical inspection of each individual batch, BASF warrants that the acrylamide monomer concentration in the product is below 1000 mg/kg.

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Validity

This Technical Data Sheet is valid for all versions of the Dispex® Ultra PA 4513.

Safety

When handling this product, please comply with the advice and information given in the safety data sheet and observe protective and workplace hygiene measures adequate for handling chemicals.

Note

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights, etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. The agreed contractual quality of the product results exclusively from the statements made in the product specification. It is the responsibility of the recipient of our product to ensure that any proprietary rights and existing laws and legislation are observed.

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