Elementis Specialties

Zwijnaardse Steenweg 316 A
9000 Ghent
Belgium
Tel: + 32.9.242.96.43
Fax: +32.9.242.96.58

Elementis Specialties

P.O. Box 700
Hightstown, NJ 08520
USA
Tel: + 1-609-443 2500
Fax: + 1-609-443 2422

ELEMENTIS
SPECIALTIES

BENTONE® 38

rheological additive

for low to intermediate polarity organic systems

BENTONE 38 is an organic derivative of a special smectite. This highly efficient rheological additive is designed for low to intermediate polarity organic systems.

Applications

- Adhesives and mastic compounds
- Aerosol paints
- Anti-corrosive paints
- Automotive finishes, primers
- Coil coating systems
- Cosmetics
- Industrial paints
- Interior and exterior house paints
- Mould release agents
- Plastisols, organosols
- Primers
- Refinish systems
- Trichlorethylene dip coatings
- Water-reducible systems
- Wood stains

Key Properties

Advantages of BENTONE 38 in various systems:

Alkyd No hard pigment settling, no sag, no syneresis in thixotropic paints, no flooding
Epoxy Ester No settling or sag of the paint
Epoxy/Coal Tar Thixotropy, more uniform coat surface
Polyacrylic No film cracking; increased film thickness
Polyester Increased film thickness and film stability, unpigmented top coats of good clarity
Polyurethane Increased film thickness, no settling, no sag
Polyvinyl Increased film thickness, no settling, no sag
Silicone Increased film thickness, retards flow in baking cycles

Chemical and Physical Data

Composition	organic derivative of a special magnesium montmorillonite
Colour	creamy white
Form	finely divided powder
Moisture	Max. 3 %
Density	1.7 g/cm^3

Incorporation

General

Incorporation of BENTONE 38 in organic systems, e.g. paints, requires high shear dispersion equipment and the addition of a chemical activator.

It is activated in two steps:

1. Dispersion (mechanical breakdown of agglomerates)
2. Gelation (development of the gel structure)

There are three basic ways to incorporate BENTONE 38:

1. as a dry powder for in-situ gelation
2. as a pregel of commonly used concentration (5-10% by weight)
3. as a pregel of higher concentration (10-15% weight) adjusted to lower viscosity by addition of a wetting agent

I. Addition of BENTONE 38 as a dry **powder** for in situ gelation:

No masterbatching process step is required with this method.

The BENTONE 38 powder is added directly to the resin (diluted if need be) and is dispersed in it for 5 min. After this, the pigments are added and dispersed. Then the chemical activator is added. If plastic flow of the mill base is desired, the activator can be added before the pigment.

If a wetting agent is to be used, it should be added after the chemical activator and prior to the pigment dispersion.

II. Addition of BENTONE 38 as a **pregel**:

The solvent is charged to the mixing tank. BENTONE 38 powder is added and dispersed at high shear force. Then a chemical activator (most suitably methanol or propylene carbonate, see below) is introduced for gelation.

For incorporation (e.g. into a paint), begin with the binder solution and stir the pregel into it. Add the pigments and disperse.

III. Addition as a pregel containing surfactant:

This method is recommended when a pregel of high concentration is required or for post-correction of the flow properties of a paint.

This pregel is prepared in the same way as described under 2. It is advisable to add the surfactant to the solvent prior to introducing and dispersing BENTONE 38.

For more details see Rheology Handbook.

Suitable dispersion equipment

High speed disc impellers (Cowles Dissolver), Ultra-Turrax, pearl-, sand-, ball and three-roll mills

Chemical activators

are recommended to ensure full activation, i.e. optimum efficiency of BENTONE 38.

Suitable chemical activator	% based on weight of dry BENTONE 38
Methanol/H_2O (95/5)	33 %
Propylene carbonate	33 %
Propylene carbonate/ H_2O (95/5)	33 %
Ethanol/H_2O (95/5)	50 %
Acetone/H_2O (95/5)	60 %

Recommended quantities of BENTONE 38

The level depends on the system in which BENTONE 38 is to be used. For house paints and industrial paints typical levels are between 0.2 and 0.5% (dry) BENTONE 38 based on total system weight. In synthetic resins (epoxy, polyester), quantities range between 0.5 and 1.0 %.

Summary of Toxicity Data

This summary is provided as an overview of more detailed toxicity test results on BENTONE 38. Comprehensive reports detailing the procedure and results of these tests are available upon request.

Acute Oral Toxicity (Rats)
BENTONE 38 has an acute oral LD_{50} greater than 20.0 g/kg.

Primary Skin Irritation (Rabbits)
BENTONE 38 is not primary skin irritant as defined by 16-CFR Hazardous Substances Act, Section 1500.41.

Eye Irritation (Rabbits)
BENTONE 38 is not ocular irritant as defined by 16-CFR Hazardous Substances Act, Section 1500.42.