

## COATING RESINS

### TECHNICAL DATA

### FLOWTONE GST

#### SALES SPECIFICATION

Particle size distribution: 99.5% <45µm  
(Malvern Mastersizer S laser particle size analyser) (CR 005)

#### OTHER PROPERTIES

Density at 25°C (77°F), g/cm <sup>3</sup> (CR 006)	1.47
Bulk density, g/cm <sup>3</sup> (CR 016)	0.4-0.6
Appearance	Off white powder
Capillary Melting Point (CR 003)	130-140°C (266-284°F)

#### PRODUCT INFORMATION

**FLOWTONE GST** is a micronised blend of kaolin and amide-modified hydrogenated castor oil. This rheology modifier is intended for solvent-based and solvent-free coatings. The performance benefits of this product are:

- Imparts shear-thinning rheology with thixotropic viscosity recovery
- Very good sag resistance
- Very good anti-settle properties
- Suitable for solvent-free coatings
- Good recoatability

#### RECOMMENDED AMOUNTS

Anti-settling and sag resistance 0.3–2.5%

#### INCORPORATION METHODS AND PROCESSING INSTRUCTIONS

The presence of kaolin clay makes **FLOWTONE GST** easier to disperse and activate compared with **FLOWTONE ST**. A consequence of this increased efficiency is that **FLOWTONE GST** can be used at less than twice the level of **FLOWTONE ST** to obtain the same level of activation.

**FLOWTONE GST** is suited to coating systems based on aliphatic hydrocarbons, aromatic hydrocarbons and aromatic hydrocarbons/alcohol blends. Compared with most basic hydrogenated castor oil based rheology modifiers, **FLOWTONE GST** is more tolerant of stronger solvents, resulting in a lowered risk of such problems as seeding and false-body.

The following table gives processing temperature guidelines for some solvent systems commonly used in coatings:

Aliphatic hydrocarbons	35–75°C (95–167°F)
Aromatic hydrocarbons	30–50°C (86–122°F)
Solvent-free epoxy coatings	40–60°C (104–140°F)
Aromatic hydrocarbons/alcohol blends	30–50°C (86–122°F)

**FLOWTONE GST** is best incorporated during the pigment dispersion stage using a high-speed disperser operating at a temperature within the recommended guidelines. In order to obtain the maximum performance from **FLOWTONE GST**, the dispersion process should be maintained for a period of 10–30 minutes at the recommended temperature.

The use of high-speed dispersers is ideal in that they generate both the necessary shear and temperature required for full dispersion and activation. The activation process involves the conversion of the **FLOWTONE GST** particles into an interacting network of fibre-like particles. It is this network that gives rise to the shear-thinning rheology of the final coating. This shear-thinning characteristic provides a very high viscosity under the low shear rates associated with sedimentation, and a low viscosity at the much higher application shear rates. The net result is excellent control of sedimentation combined with ease of application.

Immediately following application, where low shear conditions again predominate, the viscosity of the coating undergoes a time dependent recovery as the network re-establishes itself. This time dependence is known as thixotropy and enables the final coating to attain very good levelling.

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Activation at too low a temperature, too high a temperature, or for too short a time, will result in the formation of an inefficient interacting network. The use of too high a temperature will result in **FLOWTONE GST** partially dissolving. During coating manufacture this manifests itself on cooling in the form of seeding. This is when dissolved material crystallises out in an uncontrolled manner.

As with all rheology modifiers based on hydrogenated castor oil, coatings prepared using **FLOWTONE GST** may sometimes develop an excessively high structure, or false-body. This results when the hot coating is allowed to cool in the absence of stirring. This effect is minimised by cooling the coating with stirring to less than 40°C (104°F) prior to discharge.

Fortunately, this false-body phenomenon is a temporary effect and can be removed by the application of shear. Due to the potential for false-body to occur, care must be taken to ensure that process and quality control tests are not carried out on affected samples. This is best achieved by pre-conditioning all samples by mechanical stirring for several minutes prior to testing.

In addition to solvent-based coatings applications, **FLOWTONE GST** has been used successfully in a multitude of other applications such as inks, adhesives, mastics, caulks, sealants, fillers, greases and lubricants.

Due to the multitude of formulations, processing methods and application conditions used in the field, we strongly recommend that all products containing **FLOWTONE GST** be tested thoroughly to ensure suitability for their intended end use. In particular, application in poorly ventilated areas, on hot substrates, or by hot spray, may require additional attention.

#### PRECAUTIONS FOR STORAGE

**Flowtone GST** should be stored in the original containers in a dry place at temperatures between 5°C (41°F) and 30°C (86°F). Avoid exposure to direct sunlight or frost. Under these conditions the product may be stored for up to 12 months.

#### PRECAUTIONS FOR USE

Please refer to the corresponding Safety Data Sheet.