

# Formulation challenges and product recommendations

BASF offers a broad range of mainly organic rheology modifiers each one designed for specific application areas and customer requirements.

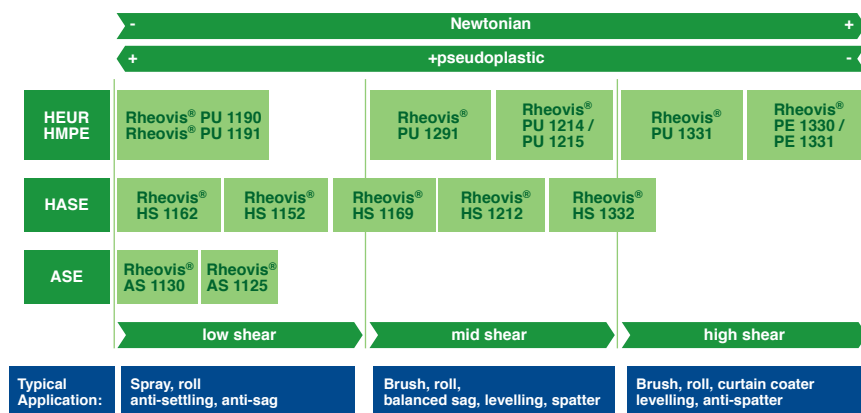


Figure 21:

BASF product recommendations for organic rheology modifiers for water-based systems and their corresponding shear profiles.

- HEUR:** Hydrophobically modified polyurethanes
- HMPE:** Hydrophobically modified polyethers
- HASE:** Hydrophobically modified alkali swellable emulsions
- ASE:** Alkali swellable emulsions

Typical challenges customers encounter while formulating paints are:

- **Leveling** – Good leveling is needed to ensure a smooth finish, to avoid brush marks.
  - High shear thickeners help to improve leveling.
- **Brush drag** – A well balanced brush drag is needed to provide perfect hiding power.
  - Mid shear thickeners help to adjust the “resistance” needed to process the paint.
- **Sagging** – Sagging leads to gravity-driven irregularities in thickness and can be prevented by rendering the paint pseudo-plastic behavior.
  - ASE-type thickeners provide optimal anti-sagging behavior.
- **Spattering characteristics**
  - Associative thickener allow for low spatter characteristics.
- **Anti-settling** - Homogenous distribution of components of paint allow for a ready-to-use paint without stirring / mixing.
  - Attagel provides convincing anti-settling characteristics.

### A. Rheology control in aqueous systems, low shear thickening, strong pseudoplasticity

#### Rheovis PU 1191

Latest generation strong low-shear thickener with excellent performance and easy handling. Strong pseudoplasticity VOC-free.

#### Rheovis PU 1190

A highly effective, non-ionic rheology additive with high thickening properties at low shear stress to form a pseudoplastic viscosity.

#### Rheovis HS 1162

Acrylic thickener with associative thickening; strong thixotropic flow-behavior; low water uptake; no impact on wet adhesion even after long water contact; highly recommended for non-dripping stains and paints

#### Rheovis HS 1152

Acrylic low-shear thickener with associative thickening for paints and plasters; improves anti-sagging; prolongs open time.

#### Rheovis AS 1130

Non-associative pure acrylic thickener; highly efficient low-shear thickener; high shear thinning, anti-sagging and anti-settling; used in pigment and filler slurries but also highly successful in industrial and automotive formulations for spray applications.

#### Rheovis AS 1125

Non-associative pure acrylic thickener; alkali-swellable emulsion (ASE); low-shear thickener; highly shear thinning; anti-sagging; high yield point; lower water uptake.

#### Rheovis HS 1169

Acrylic low-shear thickener with associative thickening; suitable for spray applications; less water uptake; prolonged open time.

### B. Rheology control in aqueous systems, mid shear thickening, medium to low pseudoplasticity

#### Rheovis PU 1291

VOC-free, odor-free, associative thickener that shows high efficiency in ICI viscosity at lower dosage. This well-balanced mid-shear rheology modifier allows for improved hiding power and excellent film appearance. It is suitable for all types of aqueous paints and coatings: premium flat & eggshell, semi-gloss and gloss coatings.

#### Rheovis PU 1214 / PU 1215

A non-ionic mid-shear thickener for aqueous systems, low structural viscosity, polyurethane polymer. Nearly Newtonian, excellent balance of high- and low-shear viscosity build.

#### Rheovis HS 1212

Hydrophobically modified, alkali-swellable emulsion (HASE) for high quality waterborne systems where good flow and leveling are required. Improves flow; excellent efficiency; all-round product which can be used in most paint systems.

### C. Rheology control in aqueous systems, high shear thickening, Newtonian

#### Rheovis PU 1331

Heavy metal-, solvent- and VOC-free solution of polyurethane in water. Latest generation high-shear thickener. Ultra efficient, best in class ICI performance.

#### Rheovis PE 1330 / PE 1331

Newtonian rheology modifier for aqueous coatings. Features include excellent flow and leveling properties, excellent application hiding, excellent splatter resistance, good gloss development, and excellent shelf-life of coatings.

### D. Rheology control in non-aqueous systems

#### Efka RM 1920

Efka® RM 1920 offers a strong thickening effect in different coating systems. It produces a high thixotropy so that higher film thickness can be applied. Sagging of thick films on vertical surfaces is effectively prevented while working and flow properties are also improved. Efka RM 1920 tolerates relatively high working temperatures which are particularly evident wherever the solvent consists mainly of white spirit. It shows optimum temperature stability in coatings based for instance on air-drying alkyd resins.

#### Efka RM 1900

Micronized powder offering a strong thickening effect; high thixotropy, anti-sagging, improved working and flow properties.