

# ELEMENTIS

SPECIALTIES

*Rheology leadership plus so much more...*

One-stop Total Solution Provider  
一站式整体解决方案的伙伴

Application Leaflet  
December 2015

## **BENGEL<sup>®</sup> 988**

*Super Dispersible Organoclay*



*Innovation • Compliance • High Performance*



[www.elementis-specialties-asia.com](http://www.elementis-specialties-asia.com)

## Rheological Additive for Medium to High Polarity Solventborne Systems

BENGEL® 988 is a new organic derivative of a bentonite clay. It is designed for use across in a wide range of medium to high polarity coating and ink systems containing aromatic solvents, ketones, esters, glycol ethers or alcohols.

BENGEL® 988 is easy to incorporate and can be added directly to pigment grind without the need for polar/chemical activator or preparation of pregel. Compared to the conventional products, BENGEL® 988 demonstrates wider formulation and application latitudes making it an ideal formulating tool and candidate for consolidation of organoclay grades in production.

### PROPERTIES

Composition	organic derivative of a bentonite clay
Appearance	cream white, finely divided powder
Moisture	≤ 3 weight %

### KEY FEATURES

- \* Superior dispersibility and easy incorporation
- \* Versatile, suitable for medium to high polarity systems
- \* Good mid-shear viscosity build
- \* Good sag control and pigment suspension properties
- \* Eliminates the need for polar or chemical activators
- \* Greater flexibility in manufacturing process
- \* Low impact on transparency and gloss

### Applications

- \* Automotive finishes / primers
- \* 2K epoxy coatings
- \* Inorganic zinc-rich coatings
- \* 2K polyurethane coatings
- \* Vinyl paints (high-build)
- \* Thermoplastic acrylic coatings
- \* Wood coatings
- \* Coil coatings
- \* Industrial baking paints
- \* Offset / Gravure printing inks
- \* UV inks

### Incorporation

- \* BENGEL® 988 is easily dispersed in medium and high polarity solventborne coating systems. For optimum results, it should be dispersed in solvents or resin/solvent mixes before the addition of pigments and extenders. BENGEL® 988 does not require polar or chemical activators for proper activation. In addition, it is not sensitive to pigment grind temperatures and no minimum activation temperature is required.
- \* BENGEL® 988 may be post add to correct the rheology of the paint after letdown. Pre-tests are recommended to determine whether BENGEL® 988 will sufficiently disperse under normal stirring conditions. If desired, it can be made into a pregel before adding into the coatings.
- \* BENGEL® 988 can be combined with other rheological additives, such as M-P-A® 2000X, M-P-A® 60X, or DeuRheo 211 to improve anti-setting properties.

## Test Results

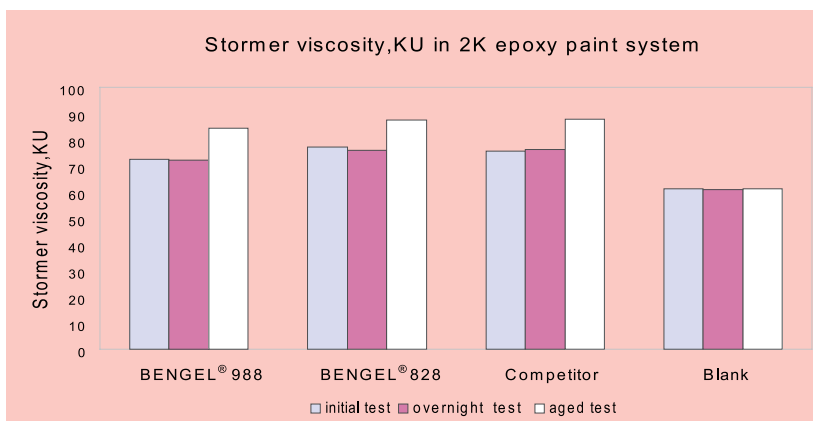
**BENGEL® 988** is designed for use in a wide range of coatings and inks applications such as protective and marine coatings, general industrial coatings, wood coatings, offset inks, UV inks, etc.

Comparative testing of **BENGEL® 988** against other easily dispersible organoclays has been carried out in the following systems:

- \* 2K epoxy white paint
- \* 2K polyurethane coating
- \* Conventional long oil alkyd paint
- \* 2K epoxy zinc rich primer

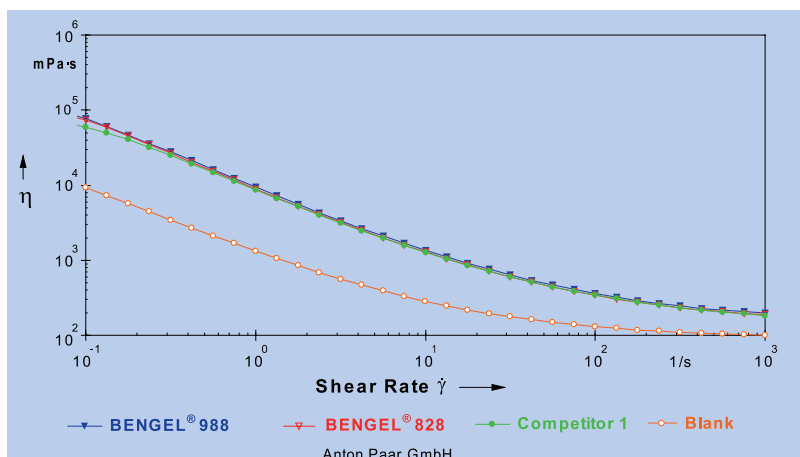
### A. 2K epoxy white paint

Graph 1 Stormer viscosity

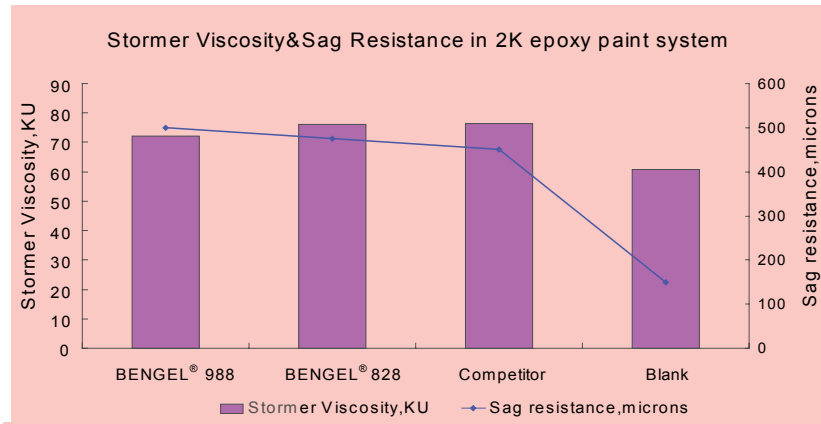


**BENGEL® 988** gave good thickening and storage stability, similar to **BENGEL® 828** which is a well established organoclay designed for high polarity system.

Graph 2 Flow behavior

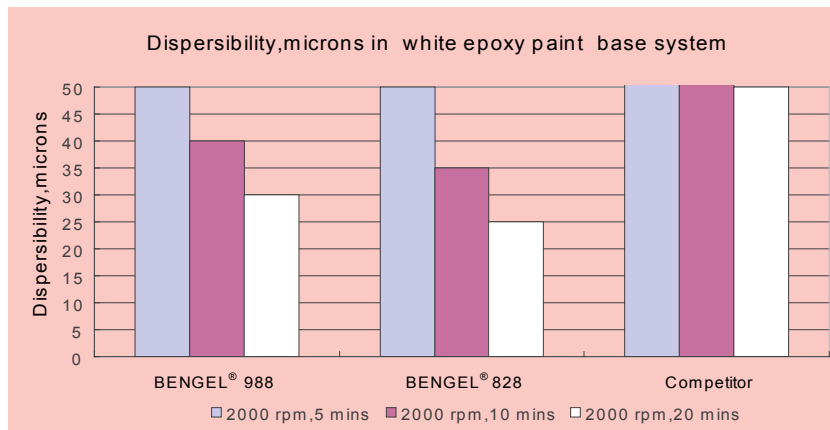


Graph 3 Sag resistance



Despite the slightly lower Stormer viscosity, BENGEL® 988 yielded the best sag resistance compared to BENGEL® 828 and the competitor product.

Graph 4 Dispersibility

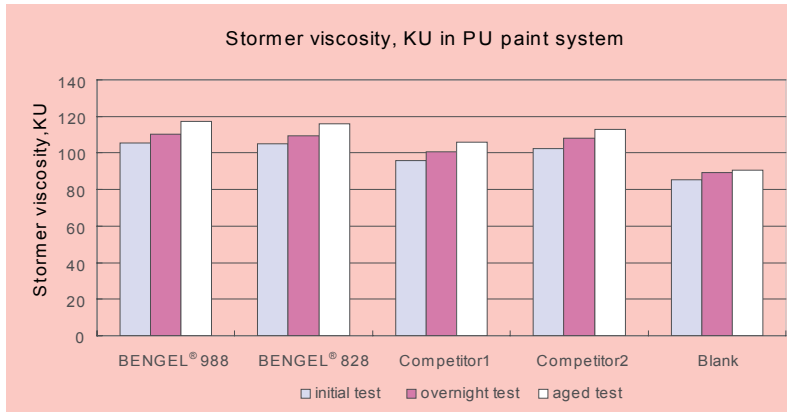


The dispersibility of BENGEL® 988 is fairly comparable to that of BENGEL® 988 and better than the competitor's product even at low shear rate incorporation.



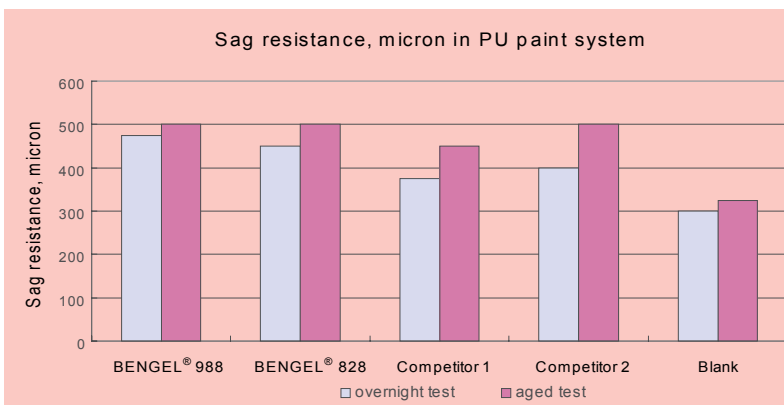
## B. 2K polyurethane coating

Graph 5 Stormer viscosity



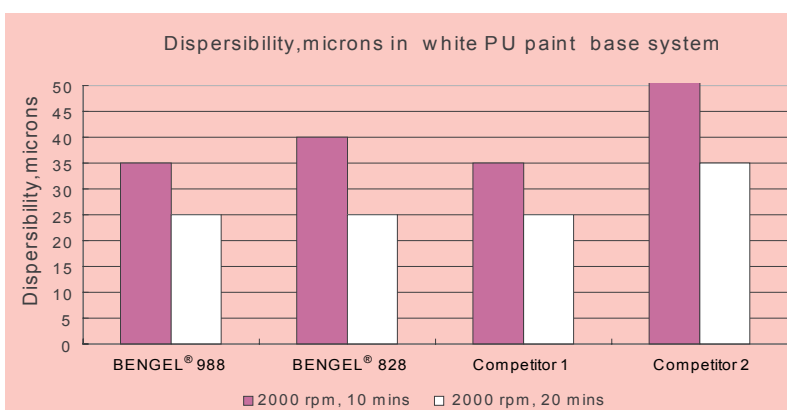
In this system, **BENGEL® 988**, along with **BENGEL® 828**, showed good initial thickening and storage stability compared to the competitive products.

Graph 6 Sag resistance



The good sag resistance of **BENGEL® 988** is again demonstrated in this coating system.

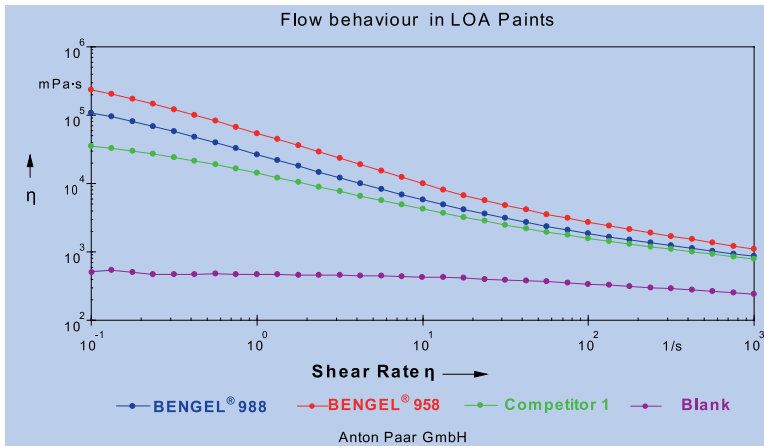
Graph 7 Dispersibility



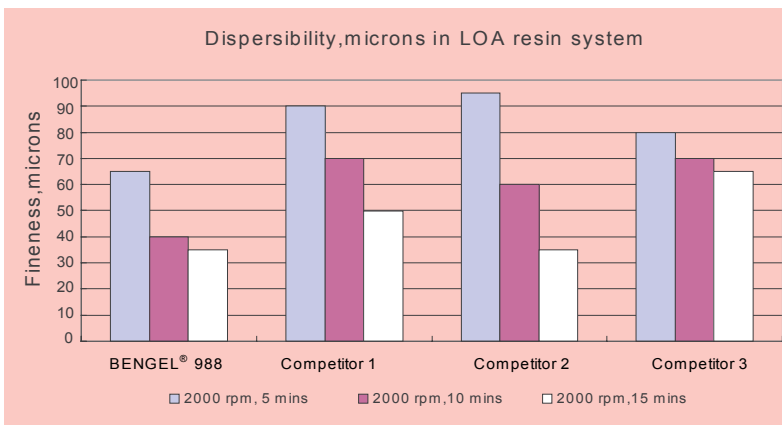
**BENGEL® 988** showed excellent dispersibility under low shear conditions in the 2K PU coating.

### C. Conventional Long Oil Alkyd Coating

Graph 8 Flow behavior

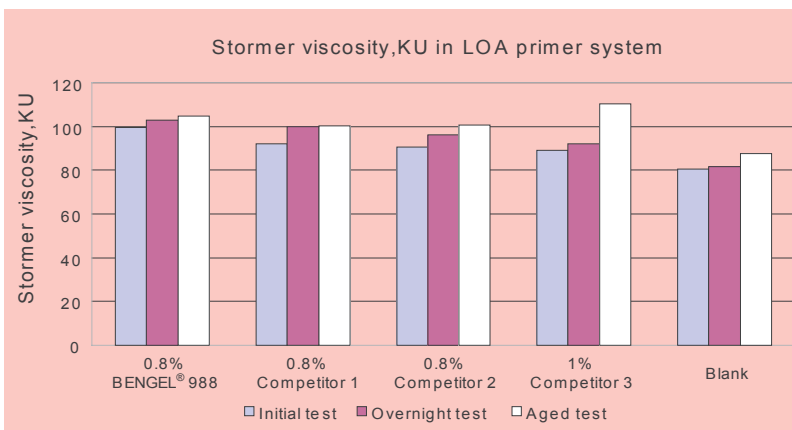


Graph 9 Dispersibility



BENGEL® 988 requires a shorter time to reach a fineness of grind of < 40 microns. This would save time for the dispersion process and raise productivity.

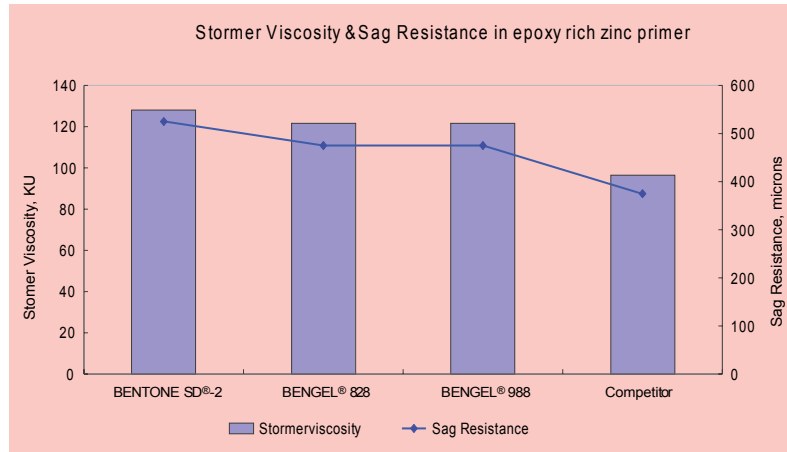
Graph 10 Thickening efficiency



BENGEL® 988 showed outstanding initial thickening and storage stability compared to the products of competitors.

## D. 2K Epoxy Zinc Rich Primer

Graph 11 Sag control



**BENGEL® 988** displayed very efficient sag control in this primer system. It is noteworthy that **BENTONE SD®-2** yielded the best sag resistance in this comparative study.



After one week stored at 50°C, **BENGEL® 988** showed similar anti-settling performance compared to the market reference (**BENTONE SD®-2**) and **BENGEL® 828**.

## Summary

Evaluation in multiple systems demonstrates that **BENGEL® 988** exhibits good versatility and balanced performance across the medium and high polarity solvent-based coating systems. Benefits that can be gained from the use of **BENGEL® 988** are:

- \* Short dispersion time
- \* Excellent sag control and anti-settling performance
- \* Strong thickening and good storage stability



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