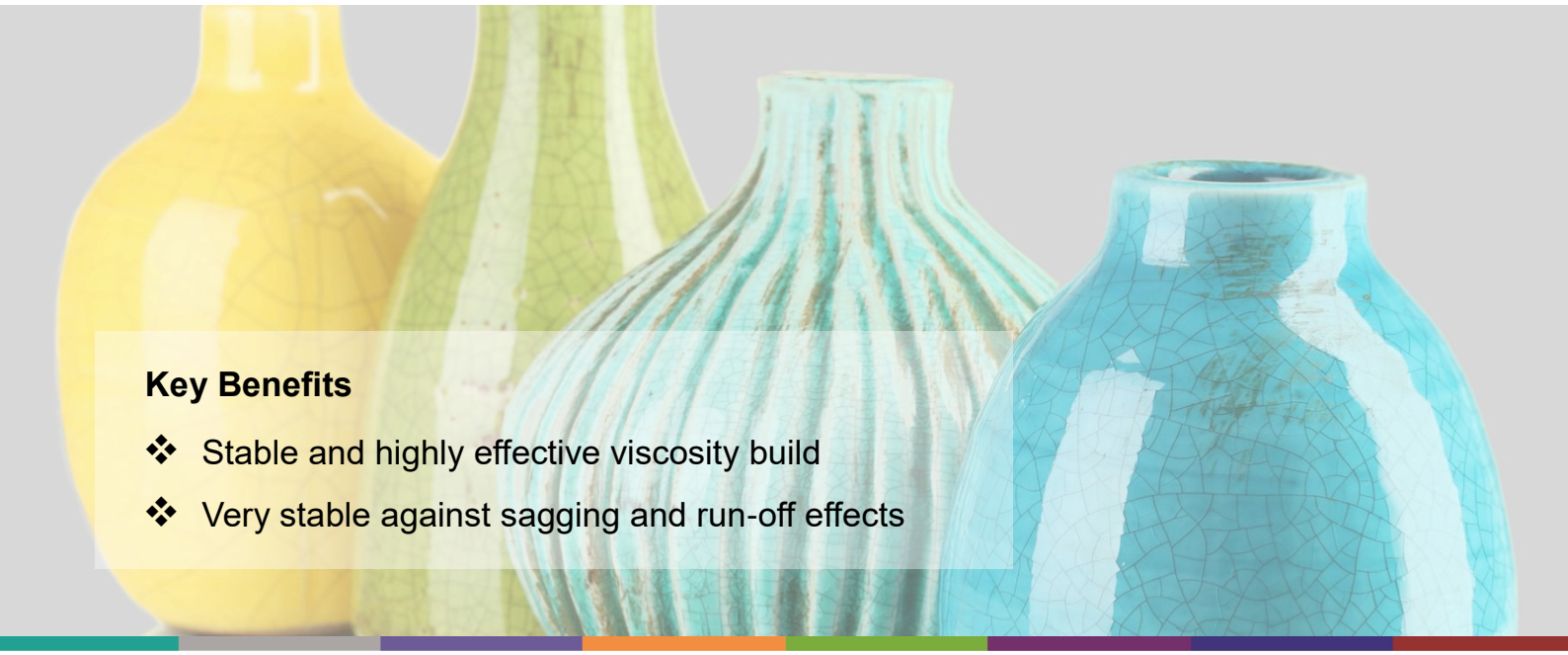
ELEMENTIS

A global specialty chemicals company

Application Leaflet

BENTONE® EW

Improved stability and suspension in glazes



Key Benefits

- Stable and highly effective viscosity build
- Very stable against sagging and run-off effects

Enhanced Performance Through Applied Innovation

Introduction

BENTONE® EW is based on hectorite clay, a Magnesium Lithium Silicate. Hectorite is a highly refractory mineral with similar firing characteristics to those of China clay, yet providing tremendous stability advantages.

Products tested

The use of BENTONE® EW as a rheological additive in deflocculated glazes gives a stable viscosity with time. BENTONE® EW will also prevent run-off problems and settling.

Test system

This study was carried out by CERAM Research UK.

The aim of the work was to investigate the use of deflocculants associated with thickeners to achieve glaze set up with enhanced stability over time.

Two glazes were tested :

1. CERAM trial glaze (Ferro Number 4 unleaded tableware frit with SP china clay)
2. An unleaded spray glaze

The glazes contained a standard commercial hardener from Zschimmer & Schwarz in a concentration of 0.3%.

The deflocculant used was based on ammonium polyacrylate at a concentration of 0.08%. This is the required concentration to reach the plateau level of the viscosity curve, i.e. excess deflocculant.

The control sample was made using the same base glaze set up but using $CaCl_2$ for controlled flocculation to develop viscosity which is commonly practised.

All samples were prepared so as to achieve a TTV (Technico Torsion Viscosity) fluidity of 290 overswing (11/16 inch bobbin).

Test methods

A Mettler Rheomat RM 260 (measuring system B cup and bob) was used to measure Bingham viscosity at fixed time intervals.

Experimental part

The conventional method of setting up glazes is to add $CaCl_2$ to a diluted glaze slop from the supplier in order to stabilize viscosity. This often leads to unpredictable results in terms of drift from target TTV fluidity values (viscosity) over a relatively short time period.

There is now a trend to receive glaze slops in a form ready for use, and a method of glaze set up which provides additional stability would be of considerable benefit.

with 0.1% BENTONE® EW

St

In this study, slops were first completely deflocculated using a surfactant. Next a stable structure was built using BENTONE® EW additive.

Result

Figure 1: Unleaded tableware frit - dipping

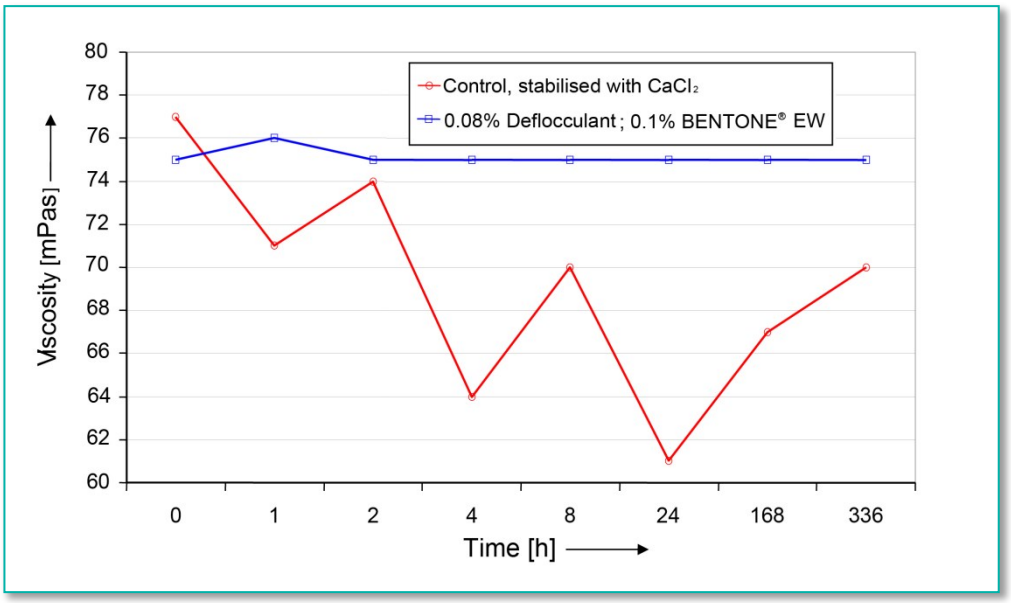
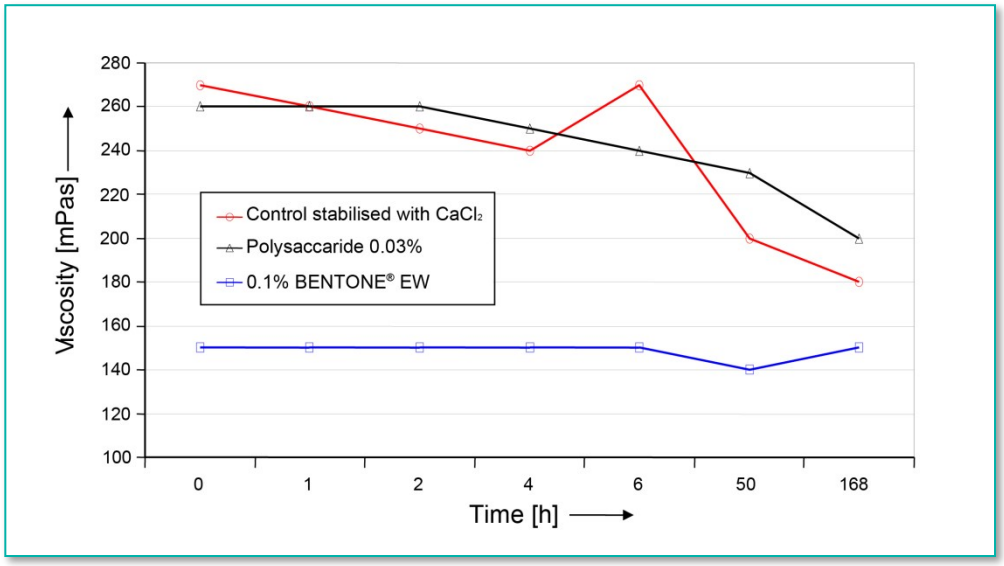


Figure 2: Unleaded tableware frit - spray



BENTONE® EW additive gives stable viscosity in deflocculated glazes, even when ions leaching from the frit and accumulate in the water.

Conclusion

Further firing tests showed that BENTONE® EW has no influence on the quality of the fired glazes. BENTONE® EW rheological additive also imparts a very high yield value which will give a good anti-settling effect and prevent run-off problems.

NOTE: The information herein is currently believed to be accurate. We do not guarantee its accuracy. Purchasers shall not rely on statements herein when purchasing any products. Purchasers should make their own investigations to determine if such products are suitable for a particular use. The products discussed are sold without warranty, express or implied, including a warranty of merchantability and fitness for use. Purchasers will be subject to a separate agreement which will not incorporate this document.

North America
Elementis
469 Old Trenton Road
East Windsor,
NJ 08512, USA
Tel:+1 609 443 2500
Fax:+1 609 443 2422

Europe
Elementis UK Ltd.
c/o Elementis GmbH
Stolberger Strasse 370
50933 Cologne, Germany
Tel:+49 221 2923 2066
Fax:+49 221 2923 2011

Asia
Deuchem (Shanghai) Chemical Co., Ltd.
99, Lianyang Road
Songjiang Industrial Zone
Shanghai, China 201613
Tel:+86 21 5774 0348
Fax:+86 21 5774 3563