



Using Laponite® as a set-up agent in ceramic glazes

Fields of use

Laponite® products are used in combinations with sodium carboxymethylcellulose (CMC) to control the viscosity of ceramic glazes and engobes. Laponite® will develop a highly shear thinning gel structure that gives improved stability of suspended solids is particularly suited for spray application.

Grades

Recommended grades for use in ceramic glazes and engobes are Laponite® RD and Laponite® RDS. Very effective results have been obtained when using a 50: 50 mixture of these two grades as this allows preparation of a low viscosity pre-mix, which is very easy to handle and incorporate into the glaze preparation. The combination of two products gives a rapid build of viscosity after addition to the formulation and improved viscosity stability over time.

Make-up procedure

A procedure is described below that is suitable for making 1000g of a liquid Laponite® pre-mix, at 6% solids content suitable for use in a lab or pilot test formulation.

1	Weigh 30g Laponite® RDS powder. Weigh 30g Laponite® RD powder. Add 940g water into a clean 2 litre beaker. Water drawn from the cold tap is preferred, at 20°C or lower; if water temperature is >25°C, clumping may occur when the Laponite® RD is added.
2	Set the water stirring using a propeller blade or similar (see Page 6 & 7 of the Laponite® Brochure for more information on this). Ensure that the whole body of the water is moving rapidly to produce a vortex around the shaft of the stirrer.
3	Add the Laponite® RDS powder to the water first, gradually over 5-10 seconds. Wait for 5 seconds and then add the Laponite® RD powder to the mixture, again gradually over about 5-10 seconds.
4	Continue mixing for at least 15 minutes. The dispersion should be a relatively clear, colourless, low viscosity liquid.
5	This pre-mix should be aged for a further 30 minutes. After this time it is suitable for addition into the glaze formulation. It is recommended that the Laponite® dispersion is added to the glaze before addition of the CMC pre-gel.
6	The Laponite® pre-mix should be used within one week. After this time the viscosity will begin to increase, making it more difficult to add into the glaze formulation.
Laponite® is completely inorganic and addition of a biocide into the pre-mix is not normally required	

Use level

- Typical use level is 0.1% - 0.5% dry mass of Laponite® based on the total mass of a liquid ceramic glaze formulation; up to 1.0% dry mass of Laponite® may be required in an engobe.
- Laponite and CMC combinations often show synergistic increases in viscosity build. Using Laponite® as a co-thickener with CMC in a glaze or engobe may allow a reduction to be made in CMC addition level.

For more information- contact the Laponite team on help@laponite.com

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