



## Technical Data Sheet

### DURAMAX™ B-1022 Binder

DURAMAX™ B-1022 ceramic binder is an aqueous emulsion for enhancing green strength of industrial ceramic parts. DURAMAX™ B-1022 ceramic binder is provided as a ready-to-use water-based emulsion, with no dissolution required. Due to its low viscosity relative to other binders, DURAMAX™ B-1022 ceramic binder can be used to prepare slurries at higher powder loadings. Unlike other water-based binders, spray-dried powders incorporating DURAMAX™ B-1022 ceramic binder in their composition are highly insensitive to changes in humidity. Scrap containing DURAMAX™ B-1022 ceramic binder can be reslurried and reused.

#### Typical Physical Properties\*

Appearance	Milky white liquid
Total Solids (%)	45
Glass Transition Temperature	39°C
Density at 25°C	1.08 g/ml
Viscosity (Brookfield #2, 60 rpm)	400 cP
pH	7.0 - 8.0
Residue After Firing	0.40% (air)

\*These properties are typical but do not constitute specifications.

#### Typical Use Procedure

Mill ceramic powder, water, and dispersant\* to deagglomerate powder. Add DURAMAX™ B-1022 ceramic binder and stir to mix. Avoid or minimize milling the binder; this can degrade performance. The preferred large-scale mixing method is paddle agitation at 50-150 rpm. DURAMAX™ B-1022 ceramic binder is supplied pre-dispersed in water at 45% solids. The recommended use level is 0.5-5% dry weight based on powder.

If reducing the hardness of DURAMAX™ B-1022 is desired, blend it with lower Tg, DURAMAX™ B-1000 ceramic binder.

Example: 100 g of Alcoa A-16SG alumina, 53.0 g deionized water and 0.86 g of DURAMAX™ D-3005 solution (35% solids, 0.3% on alumina, solids basis) were charged to a 000 ball mill half filled with alumina grinding cylinders. The mixture was tumbled for 40 minutes and decanted. 6.67 g of DURAMAX™ B-1022 ceramic binder (45% solids, 3% on alumina, solids basis) was added, the mixture was stirred 10 minutes to mix, then spray dried.

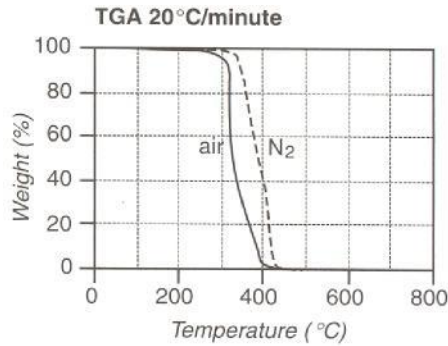
#### Reslurry Procedure

Mill scrap with water, and adjust pH to above 9 (i.e., 9.5) using aqueous ammonia. Mill to deagglomerate. Check particle size of the slurry to monitor process efficiency. Once the scrap is reslurried, then spray dry. Strength may drop slightly upon reslurry; this can be corrected by adding 0.5-1.0% DURAMAX™ B-1022 ceramic binder (solids basis) or blending with fresh slurry.

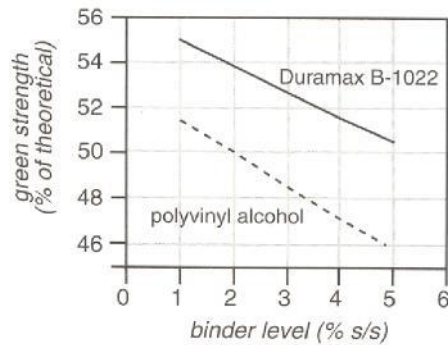
DURAMAX™ D-3005 Dispersant is a very effective product for deagglomerating most ceramic powders.



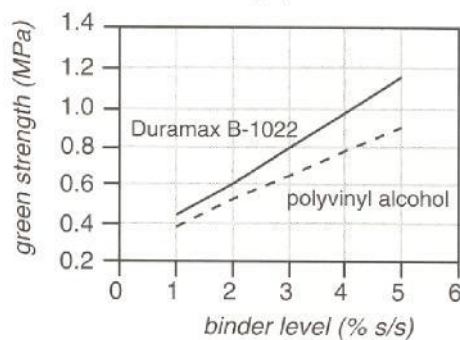
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**Relative Green Density vs. Binder Level**  
(dry pressed with Alcoa A-16SG  
alumina at 5000 psi)



**Green Strength vs. Binder Level**  
(dry pressed with Alcoa A-16SG  
alumina at 5000 psi)



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DURAMAX™ B-1022 Binder

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