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VANDERBILT

Minerals Technical Data

DARVAN® 811 Dispersing Agent

Sodium Polyacrylate
for Ceramic Bodies and Glazes

DARVAN 811 is a sodium polyacrylate. In appearance it is a light amber liquid.

PHYSICAL PROPERTIES

Molecular Weight:	3500
Total Active Solids:	43%
Density at 25°C:	1.30 Mg/m ³
Weight Per Gallon:	10.6 to 10.9 lb.
pH at 25°C:	7.0 to 8.0
Viscosity:	180 cps
Solubility:	Very soluble in water systems.
Stability:	Stable in the presence of acids and alkalis over a wide pH range.
Storage:	Product should be stored above 10°C (50°F). Partial freezing does not affect the product's dispersing properties.

APPLICATIONS

DARVAN 811 is used successfully in vitreous and semivitreous bodies, and in glazes. A slip deflocculated with **DARVAN 811** provides the following advantages over the conventional soda-ash, sodium silicate system used to disperse ceramic bodies:

- Longer casting range.
- Higher solids content.
- Controlled thixotropy.
- Improved viscosity stability.
- Does not block the pores of molds and significantly increases the life of plaster of paris molds.
- Reduces "hard spots", "yellow spots", or "soda spots".
- No calcium silicate scum and consequently less glaze rejection.

DARVAN 811's compatibility with other dispersing agents should be considered. A study conducted by Vanderbilt's Ceramics Laboratory on sanitaryware bodies demonstrated that **DARVAN 811** was most effective when used without primary dispersing agents.

Vanderbilt Minerals, LLC, 33 Winfield Street, P.O. Box 5150, Norwalk, CT 06856-5150
Telephone: (800) 562-2476 - Fax: (203) 855-1220 - Web Site: vanderbiltminerals.com

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COMPATIBILITY OF DARVAN® 811 Dispersing Agent WITH OTHER DISPERSANTS

25.8%	F-4 feldspar
21.2%	325m silica
16.0%	O.M. #4 ball clay
11.6%	Tenn. #5 ball clay
25.4%	PEERLESS® #2 Clay
100.0%	Total
38.8%	Controlled water*

Soda Ash	0.05%	0.05%	---	---	---	---	---
Sod. Sil.	0.168%	0.10%	---	---	---	---	0.10%
DARVAN 811	---	0.05%	0.09%	0.021%	0.09%	0.085%	0.089%
TSPP	---	---	---	0.05%	---	---	---
DTPA**	---	---	---	---	0.10%	---	---
NaOH	---	---	---	---	---	0.025%	---

Viscosity after preparation (cps.)

10 rpm	12,440	11,980	21,400	10,700	19,020	20,960	20,080
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Viscosity after standing overnight

10 rpm	2,600	4,500	7,310	7,160	8,080	9,830	20,080
Adjusted	---	---	0.009%	0.008%	0.014%	0.009%	---
10 rpm	2,600	4,500	2,990	2,510	5,000	4,150	5,340

Viscosity after standing for two nights (total)

10 rpm	1,520	2,900	3,190	1,830	5,450	3,220	5,140
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Viscosity after standing for three nights (total)

10 rpm	1,090	2,010	2,340	1,270	3,740	2,300	3,290
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Viscosity after standing for 11 nights (total)

10 rpm	1,060	1,030	1,050	940	1,340	1,260	1,420
20 rpm	925	875	830	835	1,035	1,020	1,090
50 rpm	704	628	580	636	702	696	726
100 rpm	584	534	493	566	567	559	569
10 at 3 minutes	2,040	1,930	1,740	2,000	2,060	2,080	2,190

Casting Characteristics

Outflow:	good	good	good	good	good	good	good
Firmness:	slightly hard	slightly hard	slightly hard	slightly hard	good	good	good
Mold Release:	good	good	good	good	good	good	good
Casting Rate:	88.1	87.2	91.7	89.7	89.8	89.0	95.7
% Water Ret.:	21.3	21.8	21.8	21.7	22.0	21.7	22.6

*Water controlled to have a specific resistance of 13,000 Ohms

** (Carboxymethylimino)-bis(ethylenedinitrilo)-tetraacetic acid pentasodium salt.