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VANDERBILT

Technical Data

DARVAN® Dispersing Agents

DARVAN products are highly effective dispersing agents used to lower the viscosity of particulate slurries and to inhibit the settling of particulate solids. When finely divided solids are dispersed in water, there is a tendency for particles to form agglomerates or flocs. The addition of a **DARVAN** dispersant increases the strength of the anionic charge on the particles, causing them to repel one another and remain dispersed. The resulting dispersion has more fluidity, stability and smoothness. For example, pigment suspensions develop greater color strength, additive concentrates remain stable and fluid, pesticide sprays maintain maximum activity, impact grinding achieves maximum efficiency, and ceramic bodies attain optimal rheology.

The amount of **DARVAN** required for dispersant and stabilization applications varies with the composition of the product. Simple experimentation will determine the proper amount for each specific application. The concentration required is generally between 0.25% and 5.0%, based on the weight of the ingredient being dispersed. The optimal amount of dispersant can be determined by the dispersant demand curve method. A copy of the method is available on request.

Typical Properties*

Additional information is available on the Technical Data Sheet for each product.

	DARVAN® 1 Spray Dried Dispersing Agent	DARVAN 2	DARVAN 670
Composition	Sodium Polynaphthalene Sulfonate	Sodium Lignosulfonate	Sodium Polynaphthalene Sulfonate
Physical Form	Granules	Powder	Powder
Color	Amber	Dark Brown	Amber
Active Ingredients	87%	85%	80%
Molecular Weight	800	---	---
pH	8 to 10.5 ¹	7 to 9 ³	8 to 10.5 ¹
Moisture	5% max.	10% max.	8% max
Foaming Tendency	None	Slight	None
	DARVAN™ 670 L	DARVAN 7-N	DARVAN 7-NS
Composition	Sodium Polynaphthalene Sulfonate	Sodium Polymethacrylate	Sodium Polymethacrylate
Physical Form	Liquid	Liquid	Powder
Color	Dark Brown	Colorless	White
Active Ingredients	40%	25%	95%
Molecular Weight	---	10,000-16,000	10,000-16,000
pH	9.0-10.5 ¹	9.5 to 11.5 ²	8.5 to 11.5 ¹
Moisture	---	---	5% max.
Foaming Tendency	none	Very Slight	Very Slight
	DARVAN 811	DARVAN 811D	DARVAN 821A
Composition	Sodium Polyacrylate	Sodium Polyacrylate	Ammonium Polyacrylate
Physical Form	Liquid	Powder	Liquid
Color	Amber	White to cream	Pale Yellow
Active Ingredients	43%	86%	40%
Molecular Weight	3500	3500	3500
pH	7 to 8 ¹	6 to 9 ²	7 to 8 ²
Moisture	---	8% max.	---
Foaming Tendency	None	None	None
	DARVAN C-N	DARVAN 560	DARVAN 561
Composition	Ammonium Polymethacrylate	Sodium salt of hydrophobically modified maleic anhydride copolymer	Sodium salt of polymethacrylic acid
Physical Form	Liquid	Liquid	Liquid
Color	Amber	Pale yellow	Pale yellow
Active Ingredients	25%	25%	30%
Molecular Weight	10,000—16,000	---	---
pH	7.5 to 9 ²	9.5 to 11.5 ⁴	9 to 10 ⁴
Moisture	---	---	---
Foaming Tendency	Very slight	none	none

*Typical properties are not specifications. Please request copies of our **DARVAN** specifications.

¹1% solution ²5% solution ³10% solution ⁴neat

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Applications:

The applications of **DARVAN®** Dispersing Agents comprise a wide and varied range of markets, as shown in the table below:

	DARVAN® 1 SD*	DARVAN 2	DARVAN 670 or 670L	DARVAN 7-N or 7-NS	DARVAN 811 or 811D	DARVAN 821A	DARVAN C-N	DARVAN 560	DARVAN 561
PRODUCTS									
Adhesives & Sealants	√	√	√	√				√	√
Agricultural Chemicals	√	√	√	√					
Animal Feeds		√							
Ceramics				√	√	√	√		
Concrete & Mortar	√	√	√	√	√				
Cosmetics & Toiletries	√	√		√					
	DARVAN® 1 SD*	DARVAN 2	DARVAN 670 or 670L	DARVAN 7-N or 7-NS	DARVAN 811 or 811D	DARVAN 821A	DARVAN C-N	DARVAN 560	DARVAN 561
Drilling Muds		√							
Dyes			√						
Gypsum Wallboard			√						
Industrial Cleaners			√	√					
Inks			√	√	√				
Latex Paints				√	√		√	√	√
Pharmaceuticals	√	√							
Pigment Slurries	√	√	√	√	√	√	√	√	√
Tanning Agents	√		√						
Water Treatment Chemicals		√	√	√	√				

	DARVAN® 1 SD*	DARVAN 2	DARVAN 670 or 670L	DARVAN 7-N or 7-NS	DARVAN 811 or 811D	DARVAN 821A	DARVAN C-N	DARVAN 560	DARVAN 561
PROCESSES									
Dispersion of Solids	√	√	√	√	√	√	√	√	√
Color Strength Improvement	√	√	√	√	√		√	√	√
Emulsification Aid	√	√	√						
Viscosity Reduction of:									
Mineral Slurries			√	√	√	√	√	√	√
Latexes			√	√					
Starches				√					
Ore Flotation			√	√					
Pitch Control (pulp & paper)	√		√						
Textile Treatment			√	√					

***DARVAN 1 Spray Dried** Dispersing Agent

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Some Specific Applications for the DARVAN® Dispersing Agent Products:

DARVAN 1 Spray Dried

- Dispersing and suspending agent for pigments in nail polish.
- Stabilizer for silicone auto polishes.
- Viscosity reducer for TiO₂ dispersions.
- Dispersing agent for pigments used in leather tanning processes.
- Dispersing agent in mortars and cements for terrazzo tiles.
- Suspending aid for the preparation of red blood cell suspensions in Hayem's solution.
- Dispersing agent for plate-counting dilutions in microbiology.
- Dispersing agent for high solids mineral slurries.

DARVAN 2

- Dispersing agent for plate-counting dilutions in microbiology.
- Prevents gumming in aqueous suspensions of crude drug extracts.
- Dispersing agent for agricultural pesticide wettable powders and flowable liquids.
- Dispersing agent for high solids mineral slurries.

DARVAN 670 or DARVAN™ 670L

- Dispersing agent for agricultural pesticide wettable powders and flowable liquids.
- Viscosity reducer for agricultural spray mixtures.
- Prevents agglomeration and settling of mixtures of pesticides dispersed in water.
- Dispersing agent for high solids mineral pigment slurries.

DARVAN 7-N or DARVAN 7-NS

- Dispersing agent for TiO₂, sulfur, kaolin and nonionic organics used in rubber and ceramics.
- Dispersing agent for agricultural pesticide flowables.
- Dispersing agent for pigments and extenders in latex paints and water-borne coatings.
- Dispersing agent for use in making casting slips for whiteware and refractory compositions.
- Imparts rheological stability to glazes.

DARVAN 811 or DARVAN 811D

- Dispersing agent for TiO₂, kaolin, calcium carbonate and other mineral slurries.
- Dispersing agent for filler pigments in water-based paints, coatings and inks.
- Dispersing agent for minerals used in ceramics, glazes, etc.

DARVAN 821A

- Dispersing agent for minerals in specialty ceramics where low soda content is required.

DARVAN C-N

- Dispersing agent for casting slips from high oxide electronic bodies where minimum soda content is desired.
- Dispersing agent for slurries for spray driers.
- Dispersing agent for prime pigments and extenders used in latex paints.

DARVAN 560

- Dispersing agent for prime pigments and extenders used in interior or exterior latex paints.
- Dispersing agent for mineral slurries.

DARVAN 561

- Dispersing agent for prime pigments and extenders used in exterior latex paints.
- Dispersing agent for mineral slurries.

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FDA and EPA Status of DARVAN® Dispersing Agent

PRODUCT	FDA CFR TITLE 21 SECTION	EPA CFR TITLE 40 SECTION	LIMITATIONS
DARVAN® 1 Spray Dried Dispersing Agent DARVAN 670 or DARVAN 670 L	175.105		None
	175.300		≤0.6% by weight of cement solids in can end cements for containers having a capacity of not less than 5 gallons.
	176.170		For use as an adjuvant to control pulp absorbency and pitch content prior to sheet-forming operations in paper manufacturing.
	176.180		None
	176.210		None
	177.1200		0.1% for use as an emulsifier.
	177.1210		≤0.2% by weight of closure sealing gasket compositions.
	177.1650		None
	177.2600		Emulsifier
	182.99		Surfactant
		180.1001 (d)	Surfactant

PRODUCT	FDA CFR TITLE 21 SECTION	EPA CFR TITLE 40 SECTION	LIMITATIONS
DARVAN 2	173.310		None
	175.105		None
	175.300		For use in can end cement.
	176.170		None
	176.180		None
	176.210		None
	177.1210		≤0.2% by weight of closure sealing gasket compositions.
	177.2600		Emulsifier
	178.3120		None
	182.99		Surfactant
	573.600		≤4% of animal feed.
			180.1001 (c)
		180.1001 (e)	Surfactant

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FDA and EPA Status of DARVAN® Dispersing Agents

PRODUCT	FDA CFR TITLE 21 SECTION	EPA CFR TITLE 40 SECTION	LIMITATIONS
DARVAN® 7-N Dispersing Agent and DARVAN 7-NS	173.310		None
	175.105		None
	176.170		≤0.3% by weight of the coating for viscosity control.
	176.180		≤0.3% by weight of the coating composition for viscosity control.
	182.99		pH control.
		180.1001 (c)	pH control.
DARVAN 811 and DARVAN 811D	175.300		
	175.105		
	176.170		
DARVAN 560	176.180		
	175.105		
	175.300		
	176.180		
DARVAN 561	180.1001		
	175.105		
	175.300		
	175.320		
	176.170		
	176.180		

FDA 21 CFR SECTION	SUBJECT HEADING
173.310	Boiler water additives.
175.105	Adhesives.
175.300	Resinous and polymeric coatings.
175.320	Resinous and polymeric coatings for polyolefin films.
176.170	Components of paper and paperboard in contact with aqueous and fatty foods.
176.180	Components of paper and paperboard in contact with dry food.
176.210	Defoaming agents used in the manufacture of paper and paperboard.
177.1200	Cellophane.
177.1210	Closures with sealing gaskets for food containers.
177.1650	Polysulfide polymer-polyepoxy resins.
177.2600	Rubber articles intended for repeated use.
178.3120	Animal glue
182.99	Adjuvants for pesticides chemicals.
573.600	Lignin sulfonates (for animal feed).

FDA 40 CFR SECTION	SUBJECT HEADING
180.1001	Inert ingredients in pesticide formulations, exempt from tolerance requirements.

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