



Paint and Paper Department

No. 500

Architectural Exterior Formulary

ACTIV-8[®] Drier, Stabilizer and Accelerator is a solution of 1,10-phenanthroline, a chelating agent for metals. **ACTIV-8** acts as drier accelerator and stabilizer when used with cobalt and/or manganese driers in paints and coatings based on oleoresinous binders. A ratio of 10 parts of **ACTIV-8** to 1 part of drier metal is most often used in solvent-borne coatings. **ACTIV-8** does not affect the activity of the other commonly used drier metals. **ACTIV-8** is used in combination with manganese and/or cobalt driers in coatings that cure by oxidative polymerization. In general, **ACTIV-8** is used with manganese and cobalt in solvent-borne coatings. The surface drying activity of manganese is accelerated to a much greater degree than that of cobalt. The activity with cobalt improves through dry and long term aging stability, especially in waterborne coatings where loss of dry often occurs.

DARVAN[®] **7-N** Dispersant is a sodium polymethacrylate dispersant, a clear to slightly opalescent colorless liquid. It shows very little tendency to foam. It is used as a dispersant for minerals and pigments in the dispersion portion of manufacture of water based paints and coatings.

DARVAN 561 Dispersant is a sodium polymethacrylate dispersant. It is used as a dispersant for minerals and pigments in the dispersion portion of manufacture of water based paints and coatings. **DARVAN 561** is very effective in exterior paints containing zinc oxide where it inhibits gel formation.

VEEGUM[®] **T** Magnesium Aluminum Silicate Clay - technical grade - offers high thickening and suspension efficiency, particularly in highly alkaline products. Typical use levels are between 0.5% and 2%.

VANSIL[®] **W** Wollastonite, a calcium metasilicate mineral, is available in five grades of fineness to meet the requirements of the coatings industry. Each grade exhibits a lower viscosity in paint than is indicated by its oil absorption value. The relatively high pH (10-11) of **VANSIL W** is particularly useful in maintaining the desired alkaline pH level of latex paints and preventing the early rusting of latex maintenance coatings. **VANSIL W** is an excellent extender pigment for powder coatings as well as solvent-thinned and latex paints.

VANSIL W-50 disperses to 6 to 7 Hegman fineness at three pounds per gallon. This grade is suitable for liquid industrial and corrosion resistant coatings, powder coatings, and semi-gloss architectural coatings. In powder coatings, this grade is desirable for smoother films and improved gloss.

VANSIL W-40 disperses to 5 Hegman fineness at three pounds per gallon, providing good film smoothness.

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Formula 103101
Exterior Latex House Paint with good tint retention
DARVAN® 7-N¹ Dispersant, VANSIL® W-40¹ Wollastonite

	<u>Pounds</u>	<u>Gallons</u>	<u>Kilograms</u>	<u>Liters</u>
DISPERSION				
Water	200.0	24.0	23.87	23.87
Natrosol® Plus 330 ²	2.5	0.1	0.30	0.22
Drewplus® L 475 ³	2.0	0.3	0.24	0.26
DARVAN 7-N¹ Dispersant	5.5	0.6	0.66	0.57
Igepal® CO 630 ⁴	2.2	0.2	0.26	0.25
Propylene glycol	17.0	2.0	2.03	1.96
Ti-Pure® R 706 ⁵	150.0	4.5	17.90	4.48
VANSIL W-40¹ Wollastonite	180.0	7.5	21.48	7.41
ATTAGEL™ 50 ⁶	2.0	0.1	0.24	0.10
AMP-95 ⁷	1.0	0.1	0.12	0.13
Mildewcide	20.0	1.4	2.39	1.39

Disperse at high speed for 15 minutes. Reduce speed for let down.

LET DOWN

Rhoplex Multilobe® 200 Latex ⁸	300.0	34.0	35.80	34.76
Water	176.8	21.2	21.10	21.10
Drewplus® L 475 ³	1.5	0.2	0.18	0.20
Texanol ⁹	12.8	2.0	1.53	1.59
Acrysol® RM 2020 NPR ⁸	13.0	1.5	1.55	1.49
AMP-95 ⁸	2.0	0.3	0.24	0.25

Mix at slow speed for 10 minutes.

Tint at 8 oz/gal.

TOTALS	1088.3	100.0	129.89	100.03
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PAINT PROPERTIES

Density	10.9 lbs/gal	1.30 g/ml
% Solids by weight	47.5	
% Solids by volume	30.9	
% PVC	41	
Pigment to binder ratio	2.04:1	
Calculated VOC	0.86 lbs/gal	103 g/l

RAW MATERIAL SUPPLIERS

¹Vanderbilt Minerals, LLC, Norwalk, CT

²Aqualon Company, Wilmington, DE

³Ashland Specialty Chemical Company, Columbus, OH

⁴Rhodia Inc., Cranberry, NJ

⁵E.I. DuPont de Nemours & Company, Wilmington, DE

⁶BASF Corporation, Florham Park, NJ

⁷Angus Chemical Company, Buffalo Grove, IL

⁸Dow Chemical Company, Midland, MI

TRADEMARKS

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Acrysol and Rhoplex Multilobe are registered trademarks of Rohm & Haas Company.

AMP-95 is a registered trademark of Angus Chemical Company.

ATTAGEL is a trademark of BASF Catalysts LLC.

Drewplus is a registered trademark of Ashland Licensing & Intellectual Property, LLC.

Igepal is registered trademarks of Rhodia.

Natrosol is a registered trademark of Aqualon Company.

Texanol is a registered trademark of Eastman Chemical Company.

Ti-Pure is a registered trademark of E.I. du Pont de Nemours & Company.

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Formula 022309
Exterior Semi-Gloss Alkyd Emulsion Paint
ACTIV-8[®] HGL¹ Drier, Stabilizer and Accelerator,
VEEGUM[®] T¹ Magnesium Aluminum Silicate,
VANSIL[®] W-50¹ Wollastonite

	<u>Pounds</u>	<u>Gallons</u>	<u>Kilograms</u>	<u>Liters</u>
DISPERSION				
Water	115.0	13.8	13.79	13.79
AMP-95 ^{®2}	0.5	0.1	0.06	0.06
Disperbyk [®] 2010 ³	9.5	1.1	1.14	1.06
Aerosol [®] OT-75 ⁴	2.5	0.3	0.30	0.28
2.5% VEEGUM T gel ¹ Magnesium Aluminum Silicate	41.0	4.9	4.92	4.92
Rhodoline [®] 643 ⁵	2.5	0.3	0.30	0.33
Natrosol [®] Plus 330 ⁶	1.0	0.1	0.12	0.09
Ti-Pure [®] R 706 ⁷	200.0	6.0	24.00	6.00
VANSIL W-40¹ Wollastonite	100.0	4.1	11.99	4.13

Mix at high speed for 15 minutes. Set aside.

LET DOWN

Beckosol [®] AQ 205 Alkyd Emulsion Resin ⁸	510.0	58.1	61.15	58.07
<i>Preblend the next four items and add to resin.</i>				
Propylene glycol	8.6	1.0	1.03	1.00
ACTIV-8 HGL¹ Drier, Stabilizer and Accelerator	0.6	0.1	0.07	0.07
12% Cobalt Cem-All ^{®9}	0.9	0.1	0.11	0.11
12 % Zirconium Hex-Cem ^{®9}	3.5	0.4	0.42	0.43
<i>Add dispersion.</i>				
Rhodoline [®] 643 ⁵	2.5	0.3	0.30	0.33
AMP-95 ^{®2}	0.5	0.1	0.06	0.06
<i>Preblend the next two items and add.</i>				
Water	72.5	8.7	8.69	8.69
Acrysol [®] RM 825 ¹⁰	5.0	0.6	0.60	0.57

Mix at slow speed for 10 minutes.

TOTALS	1076.1	100.1	129.05	99.99
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PAINT PROPERTIES

Density	10.9 lbs/gal	1.30 g/ml
% Solids by weight	55.0	
% Solids by volume	41.1	
% PVC	25	
Pigment to binder ratio	1.13:1	
Calculated VOC	0.25 lbs/gal	30 g/l

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Angus Chemical Company, Buffalo Grove, IL
- ³BYK USA Inc., Wallingford, CT
- ⁴Cytec Industries Inc., West Paterson, NJ
- ⁵Rodia Inc., Canberry, NJ
- ⁶Aqualon Company, Wilmington, DE
- ⁷E.I. DuPont de Nemours & Company, Wilmington, DE
- ⁸Reichhold Inc., Research Triangle Park, NC
- ⁹OM Group Inc., Cleveland, OH
- ¹⁰Dow Chemical Company, Midland, MI

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 Disperbyk is a registered trademark of Byk-Chemie GmbH, Ltd.
 Natrosol is a registered trademark of Aqualon Company.
 Rhodoline is a registered trademark of Rhodia.
 Ti-Pure is a registered trademark of E.I. du Pont de Nemours & Company.

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Formula 100807
Exterior Latex Deep Toned Tint Base House and Trim Paint
VANSIL® W-40¹ Wollastonite, DARVAN® 7-N¹ Dispersant

	<u>Pounds</u>	<u>Gallons</u>	<u>Kilograms</u>	<u>Liters</u>
DISPERSION				
2% Cellosize® ER 15 M ²	204.0	24.3	24.50	24.37
28% Ammonium hydroxide	2.0	0.3	0.24	0.26
Proxel®GXL ³	1.0	0.1	0.12	0.11
DARVAN 7-N¹ Dispersant	15.0	1.6	1.80	1.55
Drewplus® L 475 ⁴	2.0	0.3	0.24	0.26
Triton® CF -10 ²	2.0	0.2	0.24	0.22
Propylene glycol	29.0	3.4	3.48	3.36
Ti-Pure® R 902 ⁵	35.0	1.1	4.20	1.05
VANSIL W-40¹ Wollastonite	240.0	9.9	28.83	9.94
ATTAGEL™ 50 ⁶	3.0	0.2	0.36	0.15

High speed disperse for 15 minutes. Reduce speed for let down.

LET DOWN

Rhoplex Multilobe® 200 Latex ¹	335.0	39.0	40.24	39.07
Texanol ⁶⁷	10.0	1.3	1.20	1.25
Drewplus® L 475 ⁴	2.0	0.3	0.24	0.26
Polyphase® AF 1 ⁸	10.0	1.0	1.20	1.01
Triton® GR-7M ²	1.0	0.1	0.12	0.12
<i>Preblend the next two items and add</i>				
Water	135.0	16.2	16.22	16.22
Acrysol® RM 825 ⁷	7.0	0.8	0.84	0.81

Mix at slow speed for 10 minutes.

Tint at 12 oz/gallon to yield deep toned paint with good tint retention.

TOTALS	1033.0	100.1	124.07	100.01
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PAINT PROPERTIES

Density	10.3 lbs/gal	1.24 g/ml
% Solids by weight	44.8	
% Solids by volume	31.6	
% PVC	36	
Pigment to binder ratio	1.54:1	
Calculated VOC	0.96 lbs/gal	115 g/l

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Dow Chemical Company, Midland, MI
- ³AstraZeneca Pharmaceuticals LP, Wilmington, DE
- ⁴Ashland Specialty Chemical Company, Columbus, OH
- ⁵E.I. DuPont de Nemours & Company, Wilmington, DE
- ⁶BASF Corporation, Florham Park, NJ
- ⁷Eastman Chemical Company, Kingsport, TN
- ⁸Troy Corporation, Florham Park, NJ

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Proxel is a registered trademark of Arch UK Biocides.

Texanol is a registered trademark of Eastman Chemical Company.

Ti-Pure is a registered trademark of E.I. du Pont de Nemours & Company.

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Formula 040808
Exterior Alkyd Modified Latex Tint Base for Deep Toned House & Trim Paint
DARVAN® 7-N¹ Dispersant, ACTIV-8®¹ Drier Accelerator

	<u>Pounds</u>	<u>Gallons</u>	<u>Kilograms</u>	<u>Liters</u>
DISPERSION				
2% Cellosize® QP 4400 ²	204.0	24.3	24.48	24.48
28% Ammonium Hydroxide	2.0	0.3	0.24	0.26
Proxel® GXL ³	1.0	0.1	0.12	0.11
DARVAN 7-N¹ Dispersant	15.0	1.6	1.80	1.55
Drewplus® L 475 ⁴	2.0	0.3	0.24	0.26
Triton® CF 10 ²	2.0	0.2	0.24	0.22
Propylene Glycol	29.0	3.4	3.48	3.36
Ti-Pure® R 902 ⁵	35.0	1.1	4.20	1.05
Talcron® 35 LOA Talc ⁶	233.0	10.0	27.94	9.98
ATTAGEL™ 50 ⁷	3.0	0.2	0.36	0.15

High speed disperse for 15 minutes. Reduce speed for let down.

LET DOWN

Rhoplex Multilobe® 200 ²	335.0	39.0	40.20	39.03
Aroplaz® 1271 ⁸ & driers**	41.0	4.9	4.80	4.83
Texanol ⁹	10.0	1.3	1.20	1.25
Drewplus L 475 ⁴	2.0	0.3	0.24	0.26
Polyphase® AF 1 ¹⁰	10.0	1.0	1.20	1.00
Triton® GR-7M ²	1.0	0.1	0.12	0.12
<i>Preblend the next two items and add.</i>				
Water	92.6	11.1	11.28	11.28
Acrysol® RM 825 ²	7.0	0.8	0.84	0.81

Mix at slow speed for 10 minutes.

Tint at 8 to 12 oz/gal to yield deep toned paint with good tint retention.

TOTALS	1024.6	100.0	122.98	100.00
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PAINT PROPERTIES

Density	10.25 lbs/gal	1.23 g/l
% Solids by weight	49.4	
% Solids by volume	37.8	
% PVC	31	
Pigment to binder ratio	1.24:1	
Calculated VOC	1.18 lbs/gal	141 g/l

	<u>Pounds</u>	<u>Gallons</u>	<u>Kilograms</u>	<u>Liters</u>
** Aroplaz 1271⁸ & driers.				
<i>Add driers to resin as follows.</i>				
Aroplaz 1271 ⁸	38.30	4.6	4.48	4.48
ACTIV-8¹ Drier Accelerator	0.14	0.0	0.02	0.02
6% Co drier	0.22	0.0	0.03	0.02
6% Mn drier	0.22	0.0	0.03	0.02
12% Zr drier	1.16	0.1	0.14	0.14
Skino® No 2 ¹¹	1.00	0.1	0.12	0.13

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Dow Chemical Company, Inc., Midland, MI
- ³AstraZeneca Pharmaceuticals LP, Wilmington, DE
- ⁴Ashland Specialty Chemical Company, Columbus, OH
- ⁵E.I. DuPont de Nemours & Company, Wilmington, DE
- ⁶Specialty Minerals Incorporated, Barretts, MT
- ⁷BASF Corporation, Florham Park, NJ
- ⁸Reichhold Inc., Research Triangle Park, NC
- ⁹Eastman Chemical Company, Kingsport, TN
- ¹⁰Troy Corporation, Florham Park, NJ
- ¹¹OM Group, Inc., Cleveland, OH

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Texanol is a registered trademark of Eastman Chemical Company.

Talcron is a registered trademark of Minerals Technologies, Inc.

Ti-Pure is a registered trademark of E.I. du Pont de Nemours & Company.

Formula 070809
General Purpose Primer for Stain Blocking and Tannin Blocking
DARVAN® 7-N¹ Dispersing Agent,
ACTIV-8®¹ Drier Accelerator and Stabilizer

	<u>Pounds</u>	<u>Gallons</u>	<u>Kilograms</u>	<u>Liters</u>
DISPERSION				
Water	85.0	10.2	10.19	10.19
Cellosize® QP 4400 ²	1.0	0.1	0.12	0.09
Ammonium Hydroxide	1.0	0.1	0.12	0.13
Ethylene Glycol	30.0	3.2	3.60	3.23
DARVAN 7-N¹ Dispersing Agent	15.0	1.6	1.80	1.55
Igepal® CO 630 ²	2.5	0.3	0.30	0.28
Surfynol® 104 BC ³	4.0	0.5	0.48	0.53
Ti-Pure® R900 ⁴	150.0	4.5	17.98	4.49
Min-flex® 325 ⁵	25.0	1.1	3.00	1.07
Halox® BW 100 ⁶	50.0	2.2	6.00	2.19
Zinc Oxide	10.0	0.2	1.20	0.22

High speed disperse for 15 minutes. Reduce speed for let down.

LET DOWN

Rhoplex® MV 23-LO Latex ²	550.0	63.7	65.91	63.62
Texanol® ⁷	6.0	0.8	0.72	0.75
<i>Preblend the next five items and add:</i>				
Aroplaz® 1271 Alkyd Resin ⁸	57.4	6.9	6.88	6.88
6% Cobalt drier	0.3	0.0	0.04	0.04
6% Manganese drier	0.3	0.0	0.04	0.04
12% Zirconium drier	1.7	0.2	0.21	0.19
ACTIV-8¹ Drier Accelerator and Stabilizer	0.2	0.0	0.03	0.03
Drewplus® L 475 ⁹	2.0	0.3	0.24	0.26
Acrysol® RM 825 ²	5.5	0.6	0.66	0.63
Water	30.0	3.6	3.60	3.60

Mix at slow speed for 10 minutes.

TOTALS	1026.9	100.1	123.12	100.01
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PAINT PROPERTIES

Density	10.3 lbs/gal	1.23 g/L
% Solids by weight	51.4	
% Solids by volume	40.8	
% PVC	20	
Pigment to binder ratio	0.81:1	
Calculated VOC	0.83 lbs/gal	99 g/L

RAW MATERIAL SUPPLIERS

¹Vanderbilt Minerals, LLC, Norwalk, CT

²Dow-DuPont, Midland, MI

³Air Products and Chemicals, Inc., Allentown, PA

⁴E.I. DuPont de Nemours & Company, Wilmington, DE

⁵Specialty Minerals Incorporated, Barretts, MT

⁶Halox Pigment, Hammond, IN

⁷Eastman, Kingsport, TN

⁸Reichhold, Research Triangle Park, NC

⁹Ashland Specialty Chemical Company, Columbus, OH

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Halox is a registered trademark of Halox Pigments.

Igepal is a registered trademark of Rhodia.

Min-flex is a registered trademark of Specialty Minerals (Michigan) Inc.

Surfynol is a registered trademark of Air Products and Chemicals, Inc.

Texanol is a registered trademark of Eastman Chemical Company.

Ti-Pure is a registered trademark of E.I. du Pont de Nemours & Company.

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Formula 061510
Latex Tannin Blocking Primer
VANSIL® W-30¹, Wollastonite, DARVAN® 7-N¹, Dispersing Agent

	<u>Pounds</u>	<u>Gallons</u>	<u>Kilograms</u>	<u>Liters</u>
DISPERSION				
2% Cellosize® QP 4400 ²	100.0	12.0	11.99	11.99
Water	15.0	1.8	1.80	1.80
Nuosept® 95 ³	2.0	0.2	0.24	0.19
Rhodoline® 643 ⁴	2.0	0.3	0.24	0.28
DARVAN 7-N¹ Dispersing Agent	6.5	0.7	0.78	0.67
Triton® X 100 ²	3.0	0.3	0.36	0.34
Ti-Pure® R 900 ⁵	185.0	5.5	22.19	5.55
Busan® 11M-1 ⁶	27.5	1.0	3.30	1.00
VANSIL W-30¹ Wollastonite	72.5	3.0	8.69	3.00

Mix at high speed for 15 minutes. Reduce speed for let down.

LET DOWN

Rhoplex® MV 23-LO ²	500.0	57.9	59.96	57.88
Water	100.0	12.0	11.99	11.99
Texanol® ⁷	21.0	2.6	2.52	2.63
Ethylene Glycol	25.0	2.7	3.00	2.69

Mix at slow speed for 10 minutes.

TOTALS	1059.5	100.0	127.06	100.01
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PAINT PROPERTIES

Density	10.6 lbs/gal	1.27 g/cc
% Solids by weight	47.3	
% Solids by volume	33.2	
% PVC	28.9	
Pigment to binder ratio	1.33:1	
Calculated VOC	0.63 lbs/gal	76 g/l

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Dow Chemical Corporation, Midland, MI
- ³International Specialty Products, Columbia, MD
- ⁴Rodia, Cranberry, NJ
- ⁵E.I. DuPont de Nemours & Company, Wilmington, DE
- ⁶Buckman Laboratories International, Incorporated, Memphis, TN
- ⁷Eastman Chemicals, Kingsport, TN

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Rhoplex is a registered trademark of Rohm & Hass Company.

Texanol is a registered trademark of Eastman Chemical Company.

Ti-Pure is a registered trademark of E.I. du Pont de Nemours & Company.

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Formula 042710
Semi-Transparent Stain
VANSIL® W-30¹, Wollastonite, ACTIV-8® HGL¹ Drier, Stabilizer and Accelerator

	<u>Pounds</u>	<u>Gallons</u>	<u>Kilograms</u>	<u>Liters</u>
DISPERSION				
2% Cellosize® QP 4400 ²	204.0	24.5	24.49	24.49
Rhodoline® 643 ³	3.0	0.4	0.36	0.42
Igepal® CTA 639 W ³	3.0	0.3	0.36	0.34
VANSIL® W-30¹	96.7	4.0	11.60	4.00
Nuocide® 960 ⁴	20.0	2.4	2.40	2.40
<i>Mix at high speed for 10 minutes. Reduce speed for let down.</i>				
LET DOWN				
Beckosol AQ® 101 ⁵	265.1	30.1	31.81	30.16
<i>Preblend the next 4 items and add:</i>				
Propylene Glycol	5.0	0.6	0.60	0.58
ACTIV-8® HGL¹	0.4	0.1	0.04	0.04
Cobalt Hydro-Cure® II ⁶	1.5	0.2	0.18	0.20
12% Zirconium Hydro-Cem™ ⁶	3.0	0.3	0.36	0.33
Michem® Lube 743 ⁷	15.0	1.8	1.80	1.84
Water	294.4	35.3	35.20	35.20
<i>Mix at slow speed for 10 minutes.</i>				
<i>Post add 4 oz/gal Red Iron Oxide tint paste. Mix 5 minutes at slow speed.</i>				
TOTALS	911.1	100.0	109.20	100.00

PAINT PROPERTIES

Density	9.1 lbs/gal	1.09 g/ml
% Solids by weight	30.0	
% Solids by volume	23.4	
% PVC	21.2	
Pigment to binder ratio	0.70:1	
Calculated VOC	0.24 lbs/gal	28 g/l

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
²Dow Chemical Corporation, Midland, MI
³Rodia Incorporated, Cranberry, NJ
⁴International Specialty Products, Columbia, MD
⁵Reichhold Incorporated, Research Triangle Park, NC
⁶OM Group, Incorporated, Cleveland, OH
⁷Michelman, Inc., Cincinnati, OH

TRADEMARKS

Registered and pending trademarks appearing printed in bold in these materials are those of Vanderbilt Minerals, LLC. For a complete listing, please visit http://www.vanderbiltminerals.com/ee_content/Documents/Technical/Trademarks_VM_Web.pdf

Beckosol AQ is a registered trademark of Reichhold, Inc
 Cellosize is a registered trademark of Union Carbide Chemicals & Plastics Technology Corporation.
 Hex-Cem is a registered trademark of OM Group, Inc.
 Hydro-Cem is a trademark of OM Group, Inc.
 Igepal is a registered trademark of Rhodia.
 Michem is a registered trademark of Michelman, Inc.
 Nuocide is a registered trademark of Nuodex Inc.
 Rhodoline is a registered trademark of Rhodia.

rev02/19/2013

Formula 110211
Exterior House Paint with Good ZnO Stability
DARVAN® 561¹ Dispersing Agent, VANSIL® W-30¹ Wollastonite

	<u>Pounds</u>	<u>Gallons</u>	<u>Kilograms</u>	<u>Liters</u>
DISPERSION				
2.5% Cellosize® QP 4400 ²	125.0	15.0	15.01	15.01
DARVAN 561¹ Dispersing Agent	8.0	0.9	0.96	0.79
KTPP	1.0	0.0	0.12	0.05
Triton® CF-10 ²	2.5	0.3	0.30	0.28
Drewplus® L 475 ³	1.0	0.1	0.12	0.13
Propylene Glycol	34.0	3.9	4.08	3.94
Ethylene Glycol	25.0	2.7	3.00	2.70
Ti-Pure® R 706 ⁴	225.0	6.8	27.01	6.75
XX 503R Zinc Oxide ⁵	25.0	0.5	3.00	0.54
VANSIL W-30¹ Wollastonite	217.5	9.0	26.11	9.00
ATTAGEL™ 50 ⁶	5.0	0.3	0.60	0.25

Mix at high speed for 15 minutes. Reduce speed for let down.

LET DOWN

Rhoplex® Multilobe® 200 ²	335.0	37.7	40.22	37.73
Drewplus® L 475 ³	1.0	0.1	0.12	0.13
Texanol ⁷	9.0	1.1	1.08	1.13
28% Ammonium Hydroxide	2.0	0.3	0.24	0.26
<i>Preblend the next two items and add.</i>				
2.5% Cellosize® QP 4400 ²	120.0	14.4	14.41	14.41
Water	57.5	6.9	6.90	6.90

Mix at slow speed for 10 minutes.

TOTALS	1193.5	100.0	143.28	100.00
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PAINT PROPERTIES

Density	1.43 lbs/gal	1.43 g/l
% Solids by weight	55.0	
% Solids by volume	36.5	
PVC	46.1	
Pigment to binder ratio	2.66:1	
Calculated VOC	1.30 lbs/gal	156 g/l

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Dow Chemical Corporation, Midland, MI
- ³Ashland Specialty Chemical Company, Columbus, OH
- ⁴E.I. DuPont de Nemours & Company, Wilmington, DE
- ⁵Zinc Corporation of America, Monaca, PA
- ⁶BASF Corporation, Florham Park, NJ
- ⁷Eastman Chemical, Kingsport, TN

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ATTAGEL™ is a trademark of BASF Catalysts LLC.

Cellosize and Triton are registered trademarks of Union Carbide Chemicals & Plastics Technology Corporation.

Drewplus is a registered trademark of Ashland Licensing and Intellectual Property, LLC.

Multilobe and Rhoplex are registered trademarks of Rohm & Haas Company.

Texanol is a registered trademark of Eastman Chemical Company.

Ti-Pure is a registered trademark of E.I. du Pont de Nemours & Company.

Rev02/19/2013

Formula 021612
Latex Tannin Blocking Primer
DARVAN® 561¹ Dispersant, VANSIL® W 30¹ Wollastonite,

	<u>Pounds</u>	<u>Gallons</u>	<u>Kilograms</u>	<u>Liters</u>
DISPERSION				
2.5% Cellosize® QP 4400 ²	40.0	4.8	4.82	4.82
Water	60.0	7.2	7.23	7.23
Drewplus® L 475 ³	2.0	0.3	0.24	0.27
Propylene Glycol	25.0	2.9	3.01	2.91
DARVAN 561¹	10.0	1.0	1.21	1.00
Triton® CF-10 ²	2.0	0.2	0.24	0.23
Ti-Pure® R 706 ⁴	200.0	6.0	24.11	6.03
XX 503 R ZnO ⁵	25.0	0.5	3.01	0.54
Stainban® 208 ⁶	65.0	2.6	7.83	2.66
VANSIL W 30¹	65.0	2.7	7.83	2.70
Diafil® 570 ⁷	10.0	0.5	1.21	0.55
Fungicide	20.0	1.4	2.41	1.41
ATTAGEL™ 50 ⁸	5.0	0.3	0.60	0.26

Mix at high shear for 15 minutes. Reduce speed for let down.

LET DOWN

Rhoplex® PR 33 Latex ²	525.0	59.4	63.28	59.64
Texanol® ⁹	12.0	1.5	1.45	1.51
Water	25.0	3.0	3.01	3.01
<i>Preblend the next two items and add.</i>				
Water	27.5	3.3	3.31	3.31
Acrysol® RM 825 ²	2.5	0.3	0.30	0.29
Drewplus L 475 ³	2.0	0.3	0.24	0.27
Stainban 185 ⁶	25.0	2.1	1.81	1.39

Mix at slow speed for 10 minutes.

TOTALS	1145.5	100.0	137.15	100.03
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PAINT PROPERTIES

Density	11.4 lbs/gal	1.37 g/ml
% Solids by weight	54.3	
% Solids by volume	38.7	
% PVC	35	
Pigment to binder ratio	1.65:1	
Calculated VOC	0.57 lbs/gal	61 g/l

RAW MATERIAL SUPPLIERS

¹Vanderbilt Minerals, LLC, Norwalk, CT

²Dow Chemical Company, Midland, MI

³Ashland Specialty Chemical Company, Columbus, OH

⁴E.I. DuPont de Nemours & Company, Wilmington, DE

⁵Zinc Corporation of America, Monaca, PA

⁶WPC Technologies, Inc., Milwaukee, WI

⁷World Minerals, Santa Barbara, CA

⁸BASF, Florham Park, NJ

⁹Eastman Chemical, Kingsport, TN

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Cellosize and Triton are registered trademarks of Union Carbide Chemicals & Plastics Technology.

Diafil is a registered trademark of Celite Corporation.

Drewplus is a registered trademark of Ashland Licensing and Intellectual Property, LLC.

Stainban is a registered trademark of Wayne Pigment Corporation.

Texanol is a registered trademark of Eastman Chemical Company.

Ti-Pure is a registered trademark of E.I. DuPont de Nemours & Company

Rev02/19/2013

Formula 021712
Latex Tannin Blocking Primer
DARVAN® 561¹ Dispersant, VANSIL® W 30¹ Wollastonite,
VANCIDE® MZ 96¹ Fungicide

	<u>Pounds</u>	<u>Gallons</u>	<u>Kilograms</u>	<u>Liters</u>
DISPERSION				
2.5% Cellosize® QP 4400 ²	40.0	4.8	4.80	4.80
Water	60.0	7.2	7.20	7.20
Drewplus® L 475 ³	2.0	0.3	0.24	0.26
Propylene Glycol	25.0	2.9	3.00	2.90
DARVAN 561¹	10.0	1.0	1.20	0.99
Triton® CF-10 ²	2.0	0.2	0.24	0.22
Ti-Pure® R 706 ⁴	200.0	6.0	23.99	6.00
XX 503 R ZnO ⁵	25.0	0.5	3.00	0.54
Stainban® 208 ⁶	65.0	2.6	7.80	2.64
VANSIL W 30¹	65.0	2.7	7.80	2.69
Diafil® 570 ⁷	10.0	0.5	1.20	0.55
VANCIDE MZ 96¹	20.0	1.4	2.40	1.40
Attagel® 50 ⁸	5.0	0.3	0.60	0.25

Mix at high shear for 15 minutes. Reduce speed for let down.

LET DOWN

Rhoplex® PR 33 Latex ²	525.0	59.4	62.97	59.34
Texanol® ⁹	12.0	1.5	1.44	1.50
Water	51.7	6.2	6.30	6.30
Drewplus L 475 ³	2.0	0.3	0.24	0.26
Stainban 188 ⁶	25.0	2.2	3.00	2.16

Mix at slow speed for 10 minutes.

TOTALS	1144.7	100.0	137.42	100.00
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PAINT PROPERTIES

Density	11.4 lbs/gal	1.37 g/ml
% Solids by weight	56.4	
% Solids by volume	40.8	
% PVC	34.5	
Pigment to binder ratio	1.53:1	
Calculated VOC	0.57 lbs/gal	69 g/l

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Dow Chemical Corporation, Midland, MI
- ³Ashland Specialty Chemical Company, Columbus, OH
- ⁴E.I. DuPont de Nemours & Company, Wilmington, DE
- ⁵Zinc Corporation of America, Monaca, PA
- ⁶WPC Technologies, Inc., Milwaukee, WI
- ⁷World Minerals, Santa Barbara, CA
- ⁸BASF, Florham Park, NJ
- ⁹Eastman Chemical, Kingsport, TN

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Attagel is a registered trademark of Englehard Corporation.
 Cellosize and Triton are registered trademarks of Union Carbide Chemicals & Plastics Technology
 Diafil is a registered trademark of Celite Corporation.
 Drewplus is a registered trademark of Ashland Licensing and Intellectual Property, LLC.
 Rhoplex is a registered trademark of Rohm & Haas Company.
 Stainban is a registered trademark of Wayne Pigment Corporation.
 Texanol is a registered trademark of Eastman Chemical Company.
 Ti-Pure is a registered trademark of E.I. DuPont de Nemours & Company

Rev04/02/2012

Formula 040212
Exterior Latex Deep Toned House Paint
DARVAN® CN¹ Dispersant, VANCIDE® MZ-98¹ Fungicide, BILT-PLATES® 156¹ Clay

	Pounds	Gallons	Kilograms	Liters
DISPERSION				
Water	200.0	24.0	23.86	23.86
DARVAN® CN Dispersant ¹	12.0	1.3	1.43	1.29
Natrosol® Plus 330 ²	1.0	0.1	0.12	0.09
Ammonium Hydroxide	2.5	0.3	0.30	0.32
Triton® CF-10 ³	2.0	0.2	0.24	0.22
Drewplus® L 475 ⁴	2.0	0.3	0.24	0.26
Proxel® GXL ⁵	1.5	0.2	0.18	0.16
VANCIDE® MZ-98 Fungicide ¹	20.0	1.4	2.39	1.40
Satintone® W ⁶	160.0	7.3	19.09	7.26
Gama-Sperse® 80 ⁷	105.0	4.6	12.53	4.62
BILT-PLATES® 156 Clay ¹	50.0	2.3	5.97	2.28
Attagel® 50 ⁶	5.0	0.3	0.60	0.25

Mix at high speed for 15 minutes. Reduce speed for let down.

LET DOWN

Rhoplex Multilobe® 200 ³	300.0	33.8	35.79	33.57
Texanol® ⁸	10.0	1.3	1.19	1.24
Ethylene Glycol	10.0	1.1	1.19	1.07
Drewplus® L 475 ⁴	2.0	0.3	0.24	0.26
<i>Premix the next two items and add.</i>				
Water	166.8	20.0	20.70	20.70
Acrysol® RM 825 ³	10.0	1.2	1.19	1.15

Mix at slow speed for 10 minutes.

Post add colorant at 12 oz/gal

Mix at slow speed for 5 minutes

TOTALS	1049.8	100.0	127.25	100.00
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PAINT PROPERTIES (excluding colorant)

Density	10.5 lbs/gal	1.27 g/ml
% Solids by weight	48.1	
% Solids by volume	34.5	
PVC	45.8	
Pigment to binder ratio	1.97:1	
Calculated VOC	0.50 lbs/gal	60 g/L

RAW MATERIAL SUPPLIERS

¹Vanderbilt Minerals, LLC, Norwalk, CT

²Aqualon Company, Wilmington, DE

³Dow Chemical Company, Midland, MI

⁴Ashland Specialty Chemical Company, Columbus, OH

⁵Lonza, Basel, Switzerland

⁶Engelhard Corporation, Iselin, NJ

⁷Imerys Minerals, LTD, Roswell, GA

⁸Eastman Chemical, Kingsport, TN

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Acrysol and Rhoplex Multilobe are registered trademarks of Rohm & Haas Company.

Attagel is a trademark of BASF Catalysts LLC.

Drewplus is a registered trademark of Ashland Licensing and Intellectual Property, LLC.

Gama-Sperse is a registered trademark of Imerys Marble, Inc.

Natrosol is a registered trademark of Aqualon Company.

Proxel is a registered trademark of Arch UK Biocides.

Texanol is a registered trademark of Eastman Chemical Company.

Triton is a registered trademark of Union Carbide Chemicals & Plastics Technology Corporation.

Rev07/23/2014

Formula 060216
Elastomeric Roof Mastic Coating
DARVAN® 7N¹ Dispersing Agent, **VANSIL® HR-1500¹** Wollastonite, **VANCIDE® MZ-98¹** Fungicide

	<u>Pounds</u>	<u>Gallons</u>	<u>Kilograms</u>	<u>Liters</u>
DISPERSION				
Water	153.5	18.4	18.61	18.61
DARVAN® 7N¹	12.0	1.2	1.44	1.24
KTPP	1.5	0.1	0.18	0.07
Drewplus® L 475 ²	2.0	0.3	0.24	0.26
Ti-Pure® R 960 ³	70.0	2.1	8.40	2.10
Kadox® 915 ⁴	50.0	1.1	6.00	1.07
Dolocron® 45-12 ⁵	356.2	15.8	42.76	15.78
VANSIL® HR-1500¹	20.0	0.8	2.40	0.83
VANCIDE® MZ-98¹	20.0	1.4	2.40	1.40

Mix at high speed for 20 minutes. Reduce speed for let down.
LET DOWN

Rhoplex® EC 1791 ⁶	475.0	54.8	57.02	54.83
Drewplus® L 475 ²	2.0	0.3	0.24	0.26
Texanol® ⁷	7.0	0.9	0.84	0.88

Measure pH and adjust to 9.0-9.5 with NH₄OH
Preblend the next two items and add:

Propylene Glycol	20.0	2.3	2.40	2.32
Cellosize® QP-4400 ⁶	4.0	0.4	0.48	0.35

Mix at medium speed for 15 minutes.

TOTALS	1193.2	99.9	143.41	100.00
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PAINT PROPERTIES

Density	11.9 lbs/gal	1.43 g/ml
% Solids by weight	65.2	
% Solids by volume	50.2	
PVC	40.6	
Pigment to binder ratio	1.90:1	
Calculated VOC	0.48 lbs/gal	58 g/L

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Ashland Specialty Chemical Company, Columbus, OH
- ³Chemours Company, Wilmington, DE
- ⁴Zinc Corporation of America, Monaca, PA
- ⁵Specialty Minerals Incorporated, Barretts, MT
- ⁶Dow-DuPont, Midland, MI
- ⁷Eastman Chemicals, Kingsport, TN

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Cellosize is a registered trademark of Union Carbide Chemicals & Plastics Technology Co.

Dolocron is a registered trademark of Mineral Technologies, Inc.

Drewplus is a registered trademark of Ashland Licensing and Intellectual Property, LLC.

Kadox is a registered trademark of Zinc Corp. of America/Horsehead Corporation.

Rhoplex is a registered trademark of Rohm & Haas Company.

Texanol is a registered trademark of Eastman Chemical Company.

Ti-Pure is a registered trademark of E.I. du Pont de Nemours & Company.

September 12, 2016

Formula 092915
Water-Borne Alkyd Emulsion Tannin Stain Blocking Primer
DARVAN® 7N¹ Dispersing Agent, VEECOTE®¹ Pyrophyllite

	<u>Pounds</u>	<u>Gallons</u>	<u>Kilograms</u>	<u>Liters</u>
DISPERSION				
Water	150.0	18.0	17.97	17.97
Natrosol® Plus 330 ²	1.5	0.1	0.18	0.13
28% Ammonium Hydroxide	1.5	0.2	0.18	0.19
DARVAN® 7N¹	9.0	0.9	1.08	0.93
Drewplus® L 475 ³	1.0	0.1	0.12	0.13
Triton® CF-10 ⁴	2.5	0.3	0.30	0.28
Ti-Pure® R 706 ⁵	210.0	6.3	25.16	6.29
VEECOTE®¹	260.0	11.1	31.15	11.12
Halox® BW 100 ⁶	50.0	2.2	5.99	2.19

High speed disperse for 15 minutes. Reduce speed for Let down.

LET DOWN

Preblend the Beckosol AQ 205 & Oxycoat then add to dispersion.

Beckosol AQ® 205 ⁷	450.0	51.3	53.91	51.20
Borchi® OXY-Coat 100 ⁸	6.2	0.7	0.74	0.71
Propylene Glycol	12.0	1.4	1.44	1.39
Stainban® 185 ⁹	20.0	1.8	2.40	1.84
10% Ammonium Benzoate	5.0	0.6	0.60	0.60

Preblend water and Acrysol RM 825 and add:

Water	37.5	4.5	4.49	4.49
Acrysol® RM 825 ⁴	3.5	0.4	0.42	0.40
Drewplus L 475	1.0	0.1	0.12	0.13

Mix at slow speed for 10 minutes.

TOTALS	1220.7	100.0	146.25	100.00
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PAINT PROPERTIES

Density	12.2 lbs/gal	1.46 g/ml
% Solids by weight	63.0	
% Solids by volume	46.5	
PVC	42	
Pigment to Binder Ratio	2.10:1	
Calculated VOC	0.34 lbs/gal	41 g/L

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Aqualon Company, Wilmington, DE
- ³Ashland Specialty Chemical Company, Columbus, OH
- ⁴Dow Chemical Company, Midland, MI
- ⁵E.I. DuPont de Nemours & Company, Wilmington, DE
- ⁶Halox Pigment, Hammond, IN
- ⁷Reichhold Incorporated, Research Triangle Park, NC
- ⁸OM Group, Incorporated, Cleveland, OH
- ⁹WPC Technologies, Inc., Milwaukee, WI

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Acrysol and Triton are registered trademarks of Rohm & Haas Company.

Beckosol AQ is a registered trademark of Reichhold, Inc.

Borchi is a registered trademark of OMG Borchers GmbH, LLC.

Drewplus is a registered trademark of Ashland Licensing and Intellectual Property, LLC.

Halox is a registered trademark of Halox Pigments.

Natrosol is a registered trademark of Aqualon Company.

Stainban is a registered trademark of Wayne Pigment Corporation.

Ti-Pure is a registered trademark of E.I. du Pont de Nemours & Company.

December 2, 2015

Formula 093015
Water-Borne Alkyd Emulsion Tannin Stain Blocking Primer
DARVAN® 7N¹ Dispersing Agent, VANSIL® W-30¹ Wollastonite

	<u>Pounds</u>	<u>Gallons</u>	<u>Kilograms</u>	<u>Liters</u>
DISPERSION				
Water	150.0	18.0	17.96	17.96
Natrosol® Plus 330 ²	1.5	0.1	0.18	0.13
28% Ammonium Hydroxide	1.5	0.2	0.18	0.19
DARVAN® 7N¹	9.0	0.9	1.08	0.93
Drewplus® L 475 ³	1.0	0.1	0.12	0.13
Triton® CF-10 ⁴	2.5	0.3	0.30	0.28
Ti-Pure® R 706 ⁵	210.0	6.3	25.15	6.29
VANSIL® W-30¹	270.0	11.1	32.34	11.15
Halox® BW 100 ⁶	50.0	2.2	5.99	2.19

High speed disperse for 15 minutes. Reduce speed for Let down.

LET DOWN

Preblend the Beckosol AQ 205 & Oxycoat then add to dispersion.

Beckosol AQ® 205 ⁷	450.0	51.3	53.89	51.18
Borchi® OXY-Coat 100 ⁸	6.2	0.7	0.74	0.71
Propylene Glycol	12.0	1.4	1.44	1.39
Stainban® 185 ⁹	20.0	1.8	2.40	1.84
10% Ammonium Benzoate	5.0	0.6	0.60	0.60
<i>Preblend water and Acrysol RM 825 and add:</i>				
Water	37.5	4.5	4.50	4.50
Acrysol® RM 825 ⁴	3.5	0.4	0.42	0.40
Drewplus L 475	1.0	0.1	0.12	0.13

Mix at slow speed for 10 minutes.

TOTALS	1230.7	100.0	147.40	100.00
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PAINT PROPERTIES

Density	12.3 lbs/gal	1.47 g/ml
% Solids by weight	63.3	
% Solids by volume	46.5	
PVC	42	
Pigment to Binder Ratio	2.14:1	
Calculated VOC	0.34 lbs/gal	41 g/L

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Aqualon Company, Wilmington, DE
- ³Ashland Specialty Chemical Company, Columbus, OH
- ⁴Dow Chemical Company, Midland, MI
- ⁵E.I. DuPont de Nemours & Company, Wilmington, DE
- ⁶Halox Pigment, Hammond, IN
- ⁷Reichhold Incorporated, Research Triangle Park, NC
- ⁸OM Group, Incorporated, Cleveland, OH
- ⁹WPC Technologies, Inc., Milwaukee, WI

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Borchi is a registered trademark of OMG Borchers GmbH, LLC.

Drewplus is a registered trademark of Ashland Licensing and Intellectual Property, LLC.

Halox is a registered trademark of Halox Pigments.

Natrosol is a registered trademark of Aqualon Company.

Stainban is a registered trademark of Wayne Pigment Corporation.

Ti-Pure is a registered trademark of E.I. du Pont de Nemours & Company.

December 2, 2015