

Vanderbilt Minerals, LLC

A Wholly Owned Subsidiary of R.T. Vanderbilt Holding Company, Inc.

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FORMULARY
WATER-BORNE INDUSTRIAL &
SPECIAL PURPOSE COATINGS
No. 503



VEEGUM® R and VAN GEL® ES, VAN GEL SX

Magnesium Aluminum Silicate

Anti-Settle Agents for Water-borne Industrial and Special Purpose Coatings

Description: **VEEGUM R, VAN GEL ES** and **VAN GEL SX** are derived from natural smectite clays that have been highly refined to produce uniform thixotropic aqueous dispersions at low concentrations. Unlike many other anti-settle additives, these products impart good in-can stability without excessive viscosity. **VEEGUM R, VAN GEL ES** and **VAN GEL SX** prevent syneresis and settling, provide dripless application, control sag and improve leveling. These products can be added to the dispersion portion of the coating manufacture after the mineral pigments, inert fillers and corrosion inhibitive pigments. At least 15 minutes of high shear dispersion time is required to achieve the full development of the anti-settling properties.

Typical Properties:

Appearance	Small granules
Color	Off white to beige
Density	2.6 g/cc, 21.7 lbs/gal
pH	8.5-9.5 (4% dispersion)
Moisture	8% max at time of shipment
Recommended dosage	5 to 15 lbs/100 gal

Formulations: The attached formulary, No. 503 “Water-borne Industrial and Special Purpose Coatings,” illustrates of the use of **VEEGUM R, VAN GEL ES** or **VAN GEL SX** in various types of water-borne industrial and special purpose coatings.

For additional information relating to the mineralogy and characteristics of **VEEGUM** and **VAN GEL** Magnesium Aluminum Silicate, please see the brochure “**VEEGUM/VAN GEL—The Story**”.

VAN GEL and **VEEGUM** are registered trademarks of R.T. Vanderbilt Holding Company and/or its wholly owned subsidiaries. 02/27/2014

Water-borne Industrial & Special Purpose Coatings

ACTIV-8[®] Drier, Stabilizer and Accelerator is a solution of 1,10-phenanthroline, a chelating agent for metals. **ACTIV-8** acts as a drier accelerator and stabilizer when used with cobalt and/ or manganese driers in paints and coatings based on oleoresinous binders. The ratio of 10 parts of **ACTIV-8** to 1 part of drier metal is most often used in solvent-borne coatings. When used with alkyd modifying resins, it can be used in water-borne coatings also. **ACTIV-8** will 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.

ACTIV-8 HGL Drier, Stabilizer and Accelerator is a solution of 1,10-phenanthroline in hexylene glycol. It is the same active ingredient as in **ACTIV-8** but with a more water compatible solvent. **ACTIV-8 HGL**, when used with cobalt drier at a ratio of 5:1, counteracts the loss of dry that often happens with cobalt in water-borne coatings.

BILT-PLATES[®] 156 Clay is a fine particle size kaolin clay from South Carolina. It is a general purpose filler for use where high brightness is not a prerequisite.

DARVAN[®] 7-N Dispersant is a sodium polymethacrylate for use in water-borne coatings. It is a clear to slightly opalescent colorless liquid. It shows very little tendency to foam.

DARVAN C-N Dispersant is an ammonium polymethacrylate dispersing agent for minerals and pigments in water-borne coatings. **DARVAN C-N** has good zinc oxide stability and inhibits gel formation.

VAN GEL[®] Magnesium Aluminum Silicate products are mineral-based thixotropes for water-borne coatings. The products contribute to anti-settle, good sag and leveling control with little increase in viscosity. **VAN GEL ES** is a highly purified smectite clay. **VAN GEL SX** is a blend of a smectite clay and xanthan gum.

VANSIL[®] W Wollastonite, products are available in five grades of fineness to meet the requirements of the coatings industry. The relatively high pH (10-11) of the **VANSIL** products is particularly useful in maintaining the desired alkaline pH level of water-borne paints and preventing the early rusting of latex maintenance coatings. **VANSIL W-30** disperses to a 4 Hegman fineness at three pounds per gallon.

VEEGUM[®] R Magnesium Aluminum Silicate is a mineral thixotrope for water-borne coatings. It contributes to anti-settle, good sag and leveling control with little increase in viscosity.

For further information relating to any of the above products, please see the respective technical data sheet.

ACTIV-8, BILT-PLATES, DARVAN, VAN GEL, VANSIL and **VEEGUM** are registered trademarks of R.T. Vanderbilt Holding Company, Inc and/or its wholly owed subsidiaries.

Formula 103013

Water-Reducible Alkyd Black Gloss Corrosion Inhibitive Dip Enamel
VEEGUM® R¹ Magnesium Aluminum Silicate, ACTIV-8® HGL¹ Drier Accelerator and Stabilizer

	Pounds	Gallons	Kilograms	Liters
GRIND				
Kelsol® 3961-B2G-75 WR Alkyd Resin ²	70.0	7.9	13.26	12.63
Butyl Cellosolve ^{®3}	7.5	1.0	1.42	1.58
VEEGUM® R ¹ Magnesium Aluminum Silicate	5.0	0.2	0.95	0.36
Raven® H2O Carbon Black ⁴	11.5	0.8	2.18	1.21
JO 855 Zinc Phosphate ⁵	30.0	1.1	5.69	1.77
Drewplus® L 475 ⁶	2.0	0.3	0.38	0.42
28% Ammonium Hydroxide	2.0	0.3	0.38	0.41
Triethanolamine	1.5	0.3	0.28	0.39
Distilled Water	121.5	14.5	23.02	23.02

Measure pH and adjust to 8.0 to 8.5 with 28% Ammonium Hydroxide.

Ball Mill for 1 hour. Transfer to Let Down tank.

LET DOWN

Kelsol® 3961-B2G-75 WR Alkyd Resin ²	180.0	20.5	17.05	16.24
Butyl Cellosolve ^{®3}	39.0	5.2	3.70	4.10
<i>Premix the next 5 items and add.</i>				
Butyl Carbitol ^{®3}	5.0	0.6	0.47	0.50
ACTIV-8® HGL ¹ Drier Accelerator and Stabilizer	1.6	0.2	0.13	0.14
Mn Hydrocure® II ⁷	1.4	0.2	0.15	0.15
Co Hydrocure® II ⁷	2.3	0.3	0.22	0.24
Skinol® No 2 ⁷	2.4	0.3	0.23	0.25
Surfynol® 104 BC ⁸	2.0	0.3	0.19	0.21
28% Ammonium Hydroxide	8.0	1.1	0.76	0.82
Distilled Water	375.5	45.0	35.58	35.58

Measure pH and adjust to 8.0 to 8.5 with 28% Ammonium Hydroxide.

Mix at slow speed for 10 minutes.

TOTALS	868.2	100.1	106.04	100.02
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PAINT PROPERTIES

Density	8.7 lbs/gal	1.06 g/cc
% Solids by weight	27	
% Solids by volume	22	
PVC	8.6	
Pigment to binder ratio	0.10:1	
Calculated VOC	2.93 lbs/gal	350 g/L

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Reichhold Incorporated, Research Triangle Park, NC
- ³Dow Chemical Company, Midland, MI
- ⁴Columbia Chemicals Company, Marietta, GA
- ⁵Rockwood Pigments NA Incorporated, Beltsville, MD
- ⁶Ashland Specialty Chemical Company, Columbus, OH
- ⁷OM Group, Incorporated, Cleveland, OH
- ⁸Air Products and Chemicals, Allentown, PA

TRADEMARKS

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Carbitol and Cellosolve are registered trademarks of Union Carbide Chemicals & Plastics Technology Corporation.

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

Hydro-Cure and Skino are registered trademarks of OM Group, Inc.

Kelsol is a registered trademark of Reichhold Chemical, Inc.

Raven is a registered trademark of Columbian Chemical Company.

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

Rev02/27/2014

Formula 111413

Water-borne Alkyd Emulsion Red Iron Oxide Primer

VAN GEL® SX¹ Magnesium Aluminum Silicate, **DARVAN® CN¹** Dispersing Agent,
VANSIL® W-30¹ Wollastonite, **ACTIV-8®¹** Drier Accelerator and Stabilizer

	Pounds	Gallons	Kilograms	Liters
DISPERSION				
Water	139.5	16.7	18.04	18.04
AMP-95 ^{®2}	1.9	0.2	0.24	0.26
DARVAN® CN¹ Dispersing Agent	9.3	1.0	1.20	1.08
Surfynol [®] 104 BC ³	1.9	0.2	0.24	0.27
Drewplus [®] L 475 ⁴	1.9	0.2	0.24	0.26
Red Iron Oxide	46.5	1.2	6.01	1.26
Moly-White [®] 212 ⁵	46.5	1.9	6.01	2.00
VANSIL® W-30¹ Wollastonite	46.5	1.9	6.01	2.07
Gama-Sperse [®] 80 ⁶	93.0	4.1	12.02	4.44
VAN GEL® SX¹ Magnesium Aluminum Silicate	9.3	0.9	2.40	0.93
<i>Disperse at high speed for 15 minutes. Set aside.</i>				

LET DOWN
Preblend the driers in the butanol/xylene then add to the resin.

50/50 Butanol/xylene	18.6	2.7	2.40	2.86
ACTIV-8®¹ Drier Accelerator and Stabilizer	0.6	0.1	0.07	0.08
12% Co Cem-All ^{®7}	0.9	0.1	0.12	0.13
12% Zr Hex-Cem ^{®7}	3.9	0.5	0.51	0.52
Skino [®] No. 2 ⁷	1.0	0.1	0.12	0.13
Beckosol AQ [®] 210 ⁸	418.6	47.1	54.11	50.71

Mix at slow speed for 5 minutes.
Add DISPERSION.

Drewplus [®] L 475 ⁴	1.9	0.2	0.24	0.26
<i>Preblend the next two items and add.</i>				
Water	46.5	5.6	6.01	6.01
Acrysol [®] RM 825 ⁹	7.0	0.8	0.90	0.87
Water	120.9	14.5	7.82	7.82

Mix at slow speed for 10 minutes.

TOTALS	1016.2	100.0	124.71	100.00
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PAINT PROPERTIES

Density	10.2 lbs/gal	12.47 g/cc
% Solids by weight	46.5	
% Solids by volume	34.7	
PVC	29	
Pigment to binder ratio	1.05:1	
Calculated VOC	0.55 lbs/gal	66 g/L

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Angus Chemical Company, Buffalo Grove, IL
- ³Air Products and Chemicals, Allentown, PA
- ⁴Ashland Specialty Chemical Company, Columbus, OH
- ⁵Moly-White Pigments Group, Cleveland, OH
- ⁶Imerys Minerals, Ltd., Roswell, GA
- ⁷OM Group, Incorporated, Cleveland, OH
- ⁸Reichhold Incorporated, Research Triangle Park, NC
- ⁹Dow Chemical Company, Midland, MI

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Acrysol is a registered trademark of Rohm & Haas Company.
 AMP-95 is a registered trademark of Angus Chemical Company.
 Beckosol AQ is a registered trademark of Reichhold, Inc.
 Cem-All, Hex-Cem and Skino are registered trademarks of OM Group, Inc.
 Drewplus is a registered trademark of Ashland Licensing and Intellectual Property, LLC.
 Gama-Sperse is a registered trademark of Imerys Marble, Inc.
 Moly-White is a registered trademark of SWIMC, Inc.
 Surfynol is a registered trademark of Air Products and Chemicals, Inc.

Rev02/27/2014

Formula 120313

Alkyd Modified Acrylic Latex Maintenance Primer

DARVAN® 7N¹ Dispersing Agent, **VAN GEL® ES¹** Magnesium Aluminum Silicate,
ACTIV-8®¹ Drier Accelerator and Stabilizer

	Pounds	Gallons	Kilograms	Liters
DISPERSION				
Water	106.0	12.7	12.69	12.69
Drewplus® L 475 ²	1.0	0.1	0.12	0.13
28% Ammonium Hydroxide	1.0	0.1	0.12	0.13
DARVAN® 7N¹ Dispersing Agent	13.5	1.4	1.62	1.40
Triton® X 405 ³	1.5	0.2	0.18	0.18
Texanol® ⁴	10.0	1.3	1.20	1.25
<i>Preblend the driers and alkyd resin.</i>				
Beckoso® 1271 Alkyd Resin ⁵	57.0	6.9	6.84	6.84
ACTIV-8®¹ Drier Accelerator and Stabilizer	0.2	<0.1	0.02	0.02
12% Zr Hex-Cem® ⁶	1.7	0.2	0.21	0.21
6% Co Cem-All® ⁶	0.3	<0.1	0.04	0.04
6% Mn Nap-All® ⁶	0.3	<0.1	0.04	0.04
Skino® No. 2 ⁶	0.5	0.1	0.06	0.06
Triton® X 100 ³	4.5	0.6	0.54	0.51
Ethylene Glycol	20.0	2.2	2.40	2.16
15% Sodium Nitrite	6.0	0.7	0.72	0.72
Ti-Pure® R 960 ⁷	150.0	4.4	17.99	4.50
325 Mesh WG Mica ⁸	25.0	1.1	3.00	1.06
Gama-Sperse® 80 ⁹	140.0	6.2	16.79	6.19
Busan® 11-M1 ¹⁰	100.0	3.6	12.00	3.63
VAN GEL® ES¹ Magnesium Aluminum Silicate	10.0	0.5	1.20	0.46
<i>Disperse at high shear for 15 minutes. Reduce speed for LET DOWN.</i>				
LET DOWN				
Rhoplex® MV-23 LO ³	475.0	54.0	56.95	54.03
Drewplus® L 475 ²	1.0	0.1	0.12	0.13
2.5% Cellosize® QP-4400 ³	30.0	3.6	3.60	3.60
<i>Mix at slow speed for 10 minutes.</i>				
TOTALS	1154.5	100.0	138.45	99.98
PAINT PROPERTIES				
Density	11.5 lbs/gal		1.38 g/cc	
% Solids by weight	59.5			
% Solids by volume	45.3			
PVC	35			
Pigment to binder ratio	1.58:1			
Calculated VOC	0.67 lbs/gal		80 g/L	

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Ashland Chemical Company, Covington, KY
- ³Dow Chemical Company, Midland, MI
- ⁴Eastman Chemical Company, Kingsport, TN
- ⁵Reichhold Incorporated, Research Triangle Park, NC
- ⁶OM Group, Incorporated, Cleveland, OH
- ⁷E.I. DuPont de Nemours & Company, Wilmington, DE
- ⁸KMG Minerals, Kings Mountain, NC
- ⁹Imerys Minerals, Ltd., Roswell, GA
- ¹⁰Buckman Laboratories International, Inc., Memphis, TN

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Busan is a registered trademark of Buckman Laboratories International, Inc.

Cem-All, Hex-Cem, Nap-All and Skino are registered trademark of OM Group, Inc.

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

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

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. DuPont de Nemours & Company.

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

Rev02/27/2014

Formula 121813

Alkyd Modified Acrylic Latex DTM Primer

DARVAN® CN¹ Dispersing Agent, **BILT-PLATES® 156¹** Clay,

VAN GEL® SX¹ Magnesium Aluminum Silicate, **ACTIV-8®¹** Drier Accelerator and Stabilizer

	Pounds	Gallons	Kilograms	Liters
DISPERSION				
Water	150.0	18.0	18.00	18.00
Cellosize® QP 4400 ²	1.0	0.1	0.12	0.09
28% Ammonium Hydroxide	0.3	<0.1	0.04	0.04
Methyl Carbitol® ³	30.0	3.5	3.60	3.53
DARVAN® CN¹ Dispersing Agent	15.0	1.6	1.80	1.62
Surfynol® 104 BC ³	2.0	0.3	0.24	0.27
Igepal® CO 630 ⁴	2.5	0.3	0.30	0.28
Ti-Pure® R 900 ⁵	75.0	2.3	9.00	2.25
Raven® H2O ⁶	1.0	0.1	0.12	0.07
JO 855 ZnPO ₄ ⁷	100.0	3.7	12.00	3.74
Imsil® A-15 ⁸	65.0	2.9	7.80	2.94
Gama-Sperse® 80 ⁹	55.0	2.4	6.60	2.44
Talcron® 35 LOA ¹⁰	35.0	1.5	4.20	1.50
BILT-PLATES® 156¹ Clay	25.0	1.1	3.00	1.15
VAN GEL® SX¹ Magnesium Aluminum Silicate	15.0	0.7	1.80	0.72

Disperse at high speed for 15 minutes. Reduce speed for Let Down.
LET DOWN

Rhoplex® MV 23-LO ²	420.0	47.8	50.50	47.82
Texanol® ¹¹	6.5	0.8	0.78	0.81

Preblend the driers and the alkyd resin.

Beckosol® 1271 ¹²	42.8	5.2	5.13	5.13
ACTIV-8®¹ Drier Accelerator and Stabilizer	0.1	<0.1	0.02	0.02
6% Co Cem-All® ¹³	0.2	<0.1	0.03	0.03
12% Zr Hex-Cem® ¹³	1.3	0.2	0.15	0.16
6% Mn Nap-All® ¹³	0.2	<0.1	0.03	0.03
Skino® No.2 ¹³	0.4	0.1	0.04	0.05
Surfynol® 104 BC ³	2.0	0.3	0.24	0.27
Drewplus® L 475 ¹⁴	2.0	0.3	0.24	0.26

Preblend the next two items and add.

Water	51.7	6.2	6.20	6.20
Acrysol® RM 825 ²	5.0	0.6	0.60	0.58

Mix at slow speed for 10 minutes.

TOTALS	1102.0	99.9	132.49	100.01
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PAINT PROPERTIES

Density	11.0 lbs/gal	1.35 g/cc
% Solids by weight	54.6	
% Solids by volume	39.6	
PVC	37.4	
Pigment to binder ratio	1.60:1	
Calculated VOC	0.96 lbs/gal	116 g/L

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Dow Chemical Company, Midland, MI
- ³Air Products and Chemicals, Allentown, PA
- ⁴Rhodia Incorporated, Cranberry, NJ
- ⁵E.I. DuPont de Nemours & Company, Wilmington, DE
- ⁶Columbian Chemicals Company, Marietta, GA
- ⁷Rockwood Pigments NA Incorporated, Beltsville, MD
- ⁸Unimin Corporation, New Canaan, CT
- ⁹Imerys Minerals, Ltd., Roswell, GA
- ¹⁰Specialty Minerals, Inc., Barretts, MT
- ¹¹Eastman Chemical, Kingsport, TN
- ¹²Reichhold Incorporated, Cleveland, OH
- ¹³OM Group, Incorporated, Cleveland, OH
- ¹⁴Ashland Chemical Company, Covington, KY

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Beckosol is a registered trademark of Reichhold Chemicals, Inc.

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

Cem-All, Hex-Cem, Nap-All and Skino are registered trademarks of OM Group, Inc.

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

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

Igepal is a registered trademark of Rhodia.

Imsil is a registered trademark of Unimin Corporation.

Raven is a registered trademark of Columbian Chemical Company

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

Talcron is a registered trademark of Minerals Technologies Inc.

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

Rev02/24/2014

Formula 010814
 Yellow TX-DOT Traffic Marking Paint
DARVAN® CN¹ Dispersing Agent, **VAN GEL® ES¹** Magnesium Aluminum Silicate

	Pounds	Gallons	Kilograms	Liters
DISPERSION				
Encor® DT 400 Latex ²	375.0	43.1	44.90	43.05
DARVAN® CN¹ Dispersing Agent	9.0	1.0	1.08	0.97
Drewplus® L 475 ³	2.0	0.3	0.24	0.26
28% Ammonium Hydroxide	2.0	0.3	0.26	0.26
Ti-Pure® R 900 ⁴	20.0	0.6	2.40	0.60
Dolocron® 45-12 ⁵	650.0	28.8	77.83	28.72
Sunbrite® Yellow 65 ⁶	30.0	2.1	3.59	2.10
VAN GEL® ES¹ Magnesium Aluminum Silicate	10.0	0.4	1.20	0.46

Disperse at high speed for 15 minutes. Reduce speed for Let Down.

LET DOWN

Encor® DT 400 Latex ²	125.0	14.4	14.97	14.35
Anhydrous Methanol	25.0	3.8	2.99	3.74
Texanol® ⁷	25.0	3.1	2.99	3.12
Drewplus® L 475 ³	2.0	0.3	0.24	0.26
Nuosept® 44 ³	2.0	0.3	0.24	0.18
Water	15.0	1.8	1.92	1.92

Mix at slow speed for 10 minutes.

TOTALS	1292.0	100.3	154.85	99.94
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PAINT PROPERTIES

Density	12.9 lbs/gal	1.55 g/cc
% Solids by weight	74.9	
% Solids by volume	60.3	
PVC	52.6	
Pigment to binder ratio	2.71:1	
Calculated VOC	0.74 lbs/gal	89 g/L

RAW MATERIAL SUPPLIERS

¹Vanderbilt Minerals, LLC, Norwalk, CT

²Arkema Emulsion Systems, Cary, NC

³Ashland Specialty Chemical Company, Columbus, OH

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

⁵Specialty Minerals Incorporated, Barretts, MT

⁶Sun Chemical Corporation, Cincinnati, OH

⁷Eastman Chemical, Kingsport, TN

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Encor is a registered trademark of Arkema Inc.

Nuosept is a registered trademark of ISP Investments Inc.

Sunbrite is a registered trademark of Sun Chemical.

Texanol is a registered trademark of Eastman Chemical Company.

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

Rev02/27/2014

061114
Alkyd Modified Acrylic Latex Maintenance Primer
ACTIV-8^{®1} Drier, Stabilizer and Accelerator, **DARVAN[®] 7-N¹** Dispersant,
VAN GEL[®] ES¹ Magnesium Aluminum Silicate

	Pounds	Gallons	Kilograms	Liters
DISPERSION				
Water	106.0	12.7	12.71	12.71
VAN GEL[®] ES¹ Magnesium Aluminum Silicate	10.0	0.5	1.20	0.46
<i>Mix at high speed for 20 minutes. Reduce speed and add:</i>				
Drewplus [®] L 475 ²	1.0	0.1	0.12	0.13
28% Ammonium Hydroxide	1.0	0.1	0.12	0.13
DARVAN[®] 7-N¹ Dispersant	13.5	1.4	1.62	1.40
Triton [®] X 405 ³	1.5	0.2	0.18	0.18
Texanol ^{®4}	10.0	1.3	1.20	1.25
<i>Pre-blend the driers and alkyd resin and add:</i>				
Beckosol [®] 1271 ⁵	57.0	6.8	6.83	6.83
ACTIV-8^{®1} Drier, Stabilizer and Accelerator	0.2	0.0	0.02	0.03
12% Zirconium Hex-Cem ^{®6}	1.7	0.2	0.20	0.21
6% Cobalt Cem-All ^{®6}	0.3	0.0	0.04	0.04
6% Manganese Nap-All ^{®6}	0.3	0.0	0.04	0.04
Skino [®] No 2 ⁶	0.5	0.1	0.06	0.07
Triton [®] X 100 ³	4.5	0.5	0.54	0.51
Ethylene Glycol	20.0	2.2	2.40	2.16
15% Sodium Nitrite	6.0	0.7	0.72	0.72
Ti-Pure [®] R-960 ⁷	150.0	4.5	17.99	4.50
325 Mesh Mica	25.0	1.1	3.00	1.06
Gama-Sperse [®] 80 ⁸	140.0	6.2	16.79	6.19
Busan [®] 11M1 ⁹				

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

LET DOWN

Rhoplex [®] MV-23 LO ³	475.0	54.1	56.95	54.03
Drewplus [®] L 475 ²	1.0	0.1	0.12	0.13
2.5% Cellosize [®] QP 4400 ³	30.0	3.6	3.60	3.60

Mix at slow speed for 10 minutes.

TOTALS	1154.5	100.0	138.44	100.01
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PAINT PROPERTIES

Density	11.5 lbs/gal	1.38 g/cc
% Solids by weight	59	
% Solids by volume	43.9	
PVC	35	
Pigment to binder ratio	1.59:1	
Calculated VOC	0.63 lbs/gal	75 g/L

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Ashland Specialty Chemical Company, Columbus, OH
- ³Dow Chemical Company, Midland, MI
- ⁴Eastman Chemical, Kingsport, TN
- ⁵Reichhold Incorporated, Research Triangle Park, NC
- ⁶OM Group, Incorporated, Cleveland, OH
- ⁷E.I. DuPont de Nemours & Company, Wilmington, DE
- ⁸Imerys Minerals, Ltd, Roswell, GA
- ⁹Buckman Laboratories International, Incorporated, Memphis, TN

TRADEMARKS

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

Cem-All, Hex-Cem, Nap-All and Skino are registered trademarks of OM Group, Inc

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

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

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. DuPont de Nemours & Company.

Rev11/06/2014

Formula 071614
Alkyd Modified Acrylic Latex Maintenance Primer
DARVAN®7-N¹ Dispersant, VEEGUM® CER¹ Magnesium Aluminum Silicate,
ACTIV-8®¹ Drier, Stabilizer and Accelerator

	Pounds	Gallons	Kilograms	Liters
DISPERSION				
Water	109.3	13.1	12.92	12.92
Drewplus® L 475 ²	1.0	0.1	0.12	0.13
28% Ammonium Hydroxide	1.0	0.1	0.12	0.13
DARVAN®7-N¹ Dispersant	13.5	1.4	1.62	1.40
Triton® X 405 ³	1.5	0.2	0.18	0.18
Texanol® ⁴	10.0	1.2	1.20	1.25
<i>Pre-blend the resin and driers and add:</i>				
Beckosol® 1271 ⁵	57.0	6.8	6.83	6.83
ACTIV-8®¹ Drier, Stabilizer and Accelerator	0.2	0.0	0.02	0.03
12% Zirconium Hex-Cem® ⁶	1.7	0.2	0.20	0.21
6% Cobalt Cem-All® ⁶	0.3	0.0	0.04	0.04
6% Manganese Nap-All® ⁶	0.3	0.0	0.04	0.04
Skin® No 2 ⁵	0.5	0.1	0.06	0.07
Triton® X 100 ³	4.5	0.5	0.54	0.51
Ethylene Glycol	20.0	2.2	2.40	2.16
15% Sodium Nitrite	6.0	0.7	0.72	0.72
Ti-Pure® R-960 ⁷	150.0	4.5	17.99	4.50
325 Mesh Mica	25.0	1.1	3.00	1.06
Gama-Sperse® 80 ⁸	140.0	6.2	16.79	6.19
Busan® 11M1 ⁹	100.0	3.6	11.99	3.63
VEEGUM® CER¹ Magnesium Aluminum Silicate	5.0	0.2	0.60	0.23
<i>Disperse at high shear for 15 minutes. Reduce speed for Let Down.</i>				
LET DOWN				
Rhoplex® MV 23LO ³	475.0	54.1	56.95	54.04
Drewplus® L 475 ²	1.0	0.1	0.12	0.13
2.5% Cellosize® QP-4400 ³	30.0	3.6	3.60	3.60
<i>Mix at slow speed for 10 minutes.</i>				
TOTALS	1152.8	100.0	138.05	100.00
PAINT PROPERTIES				
Density	11.5 lbs/gal		1.38 g/cc	
% Solids by weight	59.0			
% Solids by volume	43.9			
PVC	35.5			
Pigment to binder ratio	1.61:1			
Calculated VOC	0.62 lbs/gal		74 g/L	

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Ashland Specialty Chemical Company, Columbus, OH
- ³Dow Chemical Company, Midland, MI
- ⁴Eastman Chemical, Kingsport, TN
- ⁵Reichhold Incorporated, Research Triangle Park, NC
- ⁶OM Group Incorporated, Cleveland, OH
- ⁷E.I. DuPont de Nemours & Company, Wilmington, DE
- ⁸Imerys Minerals, Ltd, Roswell, GA
- ⁹Buckman Laboratories International, Inc., Memphis, TN

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

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

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

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

Proxel is a register trademark of Arch UK Biocides.

Rhodoline is a registered trademark of Rhodia.

Talcron is a registered trademark of Minerals Technologies Inc.

Texanol is a registered trademark of Eastman Chemical Company.

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

Rev11/06/2014

Formula 061314
Gray Acrylic Latex Rust Inhibitive Primer
VAN GEL® SX¹ Magnesium Aluminum Silicate, DARVAN® 7-N¹ Dispersant

	Pounds	Gallons	Kilograms	Liters
DISPERSION				
Water	125.0	15.0	14.99	14.99
DARVAN® 7-N¹ Dispersant	12.5	1.3	1.50	1.29
Triton® CF-10 ²	2.5	0.3	0.30	0.28
Drewplus® L 475 ³	1.5	0.2	0.18	0.20
Methyl Carbitol® ²	25.0	2.9	3.00	2.94
<i>Mix at slow speed and add:</i>				
Tint-Ayd® AT 3451 Yellow Iron Oxide ⁴	10.0	0.6	1.20	0.60
Ti-Pure® R 706 ⁵	185.0	5.6	22.18	5.55
JO 855 Zinc Phosphate ⁶	30.0	1.2	3.60	1.21
325 Mesh Mica	30.0	1.3	3.60	1.27
Gama-Sperse® 80 ⁷	120.0	5.3	14.39	5.31
Raven® H2O ⁸	4.0	0.3	0.48	0.27
VAN GEL® SX¹ Magnesium Aluminum Silicate	5.0	0.2	0.60	0.23

Disperse at high speed for 20 minutes. Reduce speed for Let Down.
LET DOWN

Aroclon® 847-W-42 Latex ⁹	475.0	55.8	56.96	55.84
Arcosolv® PnB ¹⁰	45.0	6.2	5.40	6.19
10% Sodium Nitrite	4.0	0.5	0.48	0.48
28% Ammonium Hydroxide	2.0	0.3	0.24	0.26
Water	25.0	3.0	3.00	3.00

Mix at slow speed for 10 minutes.

TOTALS	1101.5	100.0	132.1	99.91
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PAINT PROPERTIES

Density	11.0 lbs/gal	1.32 g/cc
% Solids by weight	52.5	
% Solids by volume	36.3	
PVC	38.6	
Pigment to binder ratio	1.90:1	
Calculated VOC	1.48 lbs/gal	178 g/L

RAW MATERIAL SUPPLIERS

- ¹Vanderbilt Minerals, LLC, Norwalk, CT
- ²Dow Chemical Company, Midland, MI
- ³Ashland Specialty Chemical Company, Columbus, OH
- ⁴Elementis Specialties, East Windsor, NJ
- ⁵E. I. DuPont de Nemours & Company, Wilmington, DE
- ⁶Rockwood Pigments NA Incorporated, Beltsville, MD
- ⁷Imerys Minerals, LTD, Roswell, GA
- ⁸Columbian Chemicals Company, Marietta, GA
- ⁹Reichhold Incorporated, Research Triangle Park, NC
- ¹⁰Lyondell Chemical Company, Rotterdam, Netherlands

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Aroclon is a registered trademark of Reichhold, Inc.

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

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

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

Raven is a registered trademark of Columbian Chemical Company.

Tint-Ayd is a registered trademark of Elementis Specialties Inc.

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

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