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# VANDERBILT

## Technical Data

### VEEGUM® T Magnesium Aluminum Silicate in Latex Paints

Paint Department

**VEEGUM T** magnesium aluminum silicate is a water-washed natural smectite clay. Aqueous dispersions of **VEEGUM T** are high viscosity thixotropic gels at low solids.

#### Typical Properties of VEEGUM T

Appearance:	Small flakes
Color:	Near white
Odor:	None
Density:	2.8 Mg/m <sup>3</sup> (23.4 lbs./gal.)
Moisture:	Less than 8% (at time of shipment)
4% Water gel pH:	9 - 9.5

The thixotropy developed in latex paints by **VEEGUM T** imparts desirable properties such as: no separation, "dripleless" application, and leveling with sag resistance. The formulations in this Technical Data Sheet serve as a guide to the use of **VEEGUM T** in the preparation of latex paints varying in degree of thixotropy and yield value.

#### VEEGUM T in Polyvinyl Acetate (PVA) Latex Paint, No. 1242

#### VEEGUM T in Stipple Finish PVA Latex Paint, No.1243

	Pounds	Gallons
<u>Pigment dispersion, Cowles Dissolver</u>		
1.5% Sodium CMC	134	16.0
<b>In can preservative</b>	1	0.1
Water	116	13.9
Ethylene glycol	25	3.0
<b>DARVAN® 7-N</b> Dispersant	10	1.0
Antifoamer	4	0.4
Titanium dioxide	200	5.8
<b>4 Hegman, low oil absorption, talc</b>	75	3.2
<b>VANSIL® W-30</b> Wollastonite	75	3.1
<u>Reduction</u>		
Water	130	15.6
PVA latex	264	29.6
4% <b>VEEGUM T</b> water gel	50	5.9
Wetting agent	20	2.4
	<u>1104</u>	<u>100.0</u>

	Pounds	Gallons
<u>Pigment dispersion, Cowles Dissolver</u>		
1.5% Sodium CMC	134	16.0
<b>In can preservative</b>	1	0.1
Water	116	13.9
Ethylene Glycol	25	3.0
<b>DARVAN 7-N</b>	10	1.0
Antifoamer	4	0.4
Titanium dioxide	200	5.8
<b>4 Hegman, low oil absorption, talc</b>	150	6.4
<b>VANSIL W-30</b>	150	6.2
<u>Reduction</u>		
Water	78	9.3
PVA latex	264	29.6
4% <b>VEEGUM T</b> water gel	50	5.9
Wetting agent	20	2.4
	<u>1202</u>	<u>100.0</u>

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**VEEGUM® T in Acrylic Latex Paint, No.1245**

	<u>Pounds</u>	<u>Gallons</u>
Pigment dispersion, Cowles Dissolver		
1.5% Sodium CMC	134	16.0
<b>In can preservative</b>	1	0.1
Water	105	12.6
Ethylene Glycol	25	3.0
<b>DARVAN® 7-N</b>	10	1.0
Antifoamer	4	0.4
Ammonium hydroxide 28%	2	0.2
Titanium dioxide	200	5.8
<b>4 Hegman, low oil absorption, talc</b>	112.5	4.8
<b>VANSIL® W-30</b>	112.5	4.7
<u>Reduction</u>		
Acrylic latex	322	37.2
4% <b>VEEGUM T</b>	100	11.8
Wetting agent	<u>20</u>	<u>2.4</u>
	1148	100.0

**VEEGUM T in Dripfree Acrylic Latex Paint, No. 1246**

**VEEGUM T in Dripfree Acrylic Latex Paint, No.1247**

	<u>Pounds</u>	<u>Gallons</u>
<u>Pigment dispersion, Cowles Dissolver</u>		
1.5% Sodium CMC	200	23.9
<b>In can preservative</b>	1	0.1
Ethylene glycol	25	3.0
<b>DARVAN 7-N</b>	10	1.0
Antifoamer	4	0.4
Ammonium hydroxide 28%	2	0.2
Titanium dioxide	200	5.8
<b>4 Hegman, low oil absorption, talc</b>	112.5	4.8
<b>VANSIL W-30</b>	112.5	4.7
<u>Reduction</u>		
Acrylic latex	327	37.7
4% <b>VEEGUM T</b>	136	16.0
Wetting agent	<u>20</u>	<u>2.4</u>
	1150	100.0

	<u>Pounds</u>	<u>Gallons</u>
<u>Pigment dispersion, Cowles Dissolver</u>		
1.5% Sodium CMC	200	23.9
<b>In can preservative</b>	1	0.1
Ethylene Glycol	25	3.0
<b>DARVAN 7-N</b>	10	1.0
Antifoamer	4	0.4
Ammonium hydroxide 28%	2	0.2
Titanium dioxide	200	5.8
<b>4 Hegman, low oil absorption, talc</b>	112.5	4.8
<b>VANSIL W-30</b>	112.5	4.7
<u>Reduction</u>		
Acrylic latex	260	30.0
4% <b>VEEGUM T</b>	202	23.7
Wetting agent	<u>20</u>	<u>2.4</u>
	1149	100.0

**PAINT PROPERTIES**

<u>Paint Number</u>	<u>1242</u>	<u>1243</u>	<u>1245</u>	<u>1246</u>	<u>1247</u>
Consistency, immediate KU	67	93	79	90	93
Consistency, one day KU	75	97	82	94	96
Consistency, one week KU	79	97	83	94	96
Consistency, one month KU	81	97	84	95	96
Pigment volume concentration	46	57	50	49	55
Percent solids by weight	45	54	51	51	49

**PAINT PREPARATION:** A Cowles Dissolver, or equivalent, is recommended for making these paints. Weigh the CMC gel into the container and place on the Cowles. Start the agitation and add the remaining ingredients listed under "Pigment Dispersion" one at a time in their order of appearance in the formula. Continue mixing until sufficient dispersion is attained. Lower the mixer speed (for laboratory batches a Lightnin®-type mixer is advised). Add the reduction ingredients in their order of appearance in the formula, except for the wetting agent. Mix for one half hour. Then add the wetting agent and mix just long enough to incorporate it.

**COMMENTS ON PAINT PREPARATION:** In making the pigment dispersion, the Cowles Dissolver (or equivalent) should be run at high speed. However, when incorporating the reduction ingredients, a much lower speed is required: even the lowest speed of the laboratory Cowles Dissolver is too fast. It is therefore advisable that an electric stirrer of the Lightnin type be used for laboratory batches. Larger batches may be handled satisfactorily with the Cowles Dissolver (or equivalent) at reduced speed.

Although paint may be made with freshly prepared **VEEGUM® T** gel and CMC gel, it is preferable to make these gels one day in advance. This allows time for complete hydration of the thickeners and for the release of foam generated during the preparation of the CMC gel. It will be noted that the **VEEGUM T** gel does not foam even during violent agitation.

Unlike CMC, **VEEGUM T** is not subject to attack by microorganisms. However, when making the gels, some preservative must be incorporated to inactivate the bacteria in the water. The amount of preservative suggested in the formulas has been found to be sufficient for preservation of the finished paints.

The sodium CMC gel is prepared as follows (a Cowles Dissolver or equivalent is satisfactory): weigh the water and preservative into the mixer, start the Cowles, and feed in the CMC as fast as the mixer will take it. Stir for about fifteen minutes.

Both CMC and **VEEGUM T** gels can be made with ordinary cold tap water. However, quicker gelling and hydration will occur with warmer water.

**NOTE:** It is strongly urged that these formulations be made exactly as described in order to achieve the full quality and characteristics of the properly made paints. However, these paints can be made with dry CMC and dry **VEEGUM T**; that is, without pre-gelling the thickeners. To do this, start with the water present in the dispersion step (the water in the CMC gel plus any free water). **VEEGUM T** is added as the second ingredient. After mixing at high speed for ten minutes, add the remaining ingredients of the dispersion step. CMC may be added before or after the pigments, allowing fifteen minutes of high speed mixing for dissolution and the development of uniformity. Use reduced speed during the reduction step--slowly adding free water and/or the water from the **VEEGUM T** gel, latex and wetting agent. The full thixotropic effect of **VEEGUM T** usually develops within 24 hours.

**COMMENTS ON THE FORMULAS:** The above formulas illustrate the use of **VEEGUM T** in the popular types of latex paint binders. The combination of **VEEGUM T** and sodium CMC imparts a smooth creamy consistency that is thick, yet flows easily. This leads to easy application by brush or roller, yielding films of good leveling ability. This type of consistency also assures excellent in-can stability without pigment settling or supernatant liquid. These comments apply particularly to Formulas 1246 and 1247, which are examples of exceptionally thick latex paints of the "dripfree" type. Formula 1247 is a modification of Formula 1246 (higher PVC, lower cost).

The ingredients listed are those actually used in developing these formulas, but similar materials might prove satisfactory. The formulas may be varied to provide different levels of properties and costs (e.g. Formulas 1246, 1247).

**PREPARATION AND PROPERTIES OF THE VEEGUM T WATER GEL:** A high shear type of mixer such as the Cowles Dissolver is necessary to satisfactorily prepare the 4% water gel of **VEEGUM T** in a reasonable length of time. The preparation of this gel is a simple three step operation:

**Step 1** - Charge the container with water.

**Step 2** - Start agitation at moderate speed and add **VEEGUM T** slowly.

**Step 3** - When the **VEEGUM T** has been wetted, increase the mixer speed for maximum agitation and maintain speed until dispersion is complete.

To test for wetting and dispersion, spread the gel in a thin film on a spatula, using a fingertip. At first, small lumps of **VEEGUM T** may be observed. Continued vigorous agitation will wet and disperse the **VEEGUM T** and a subsequent test will show a smooth dispersion except for a few small specks.

A 4% **VEEGUM T** water gel is homogeneous, foam-free and buff-colored. When freshly made, the gel is fluid, but after aging 24 hours it becomes thixotropic. This is evidence of the complete hydration of the **VEEGUM T** and the reason for aging the gel before use. A freshly made gel of **VEEGUM T** may be used to make paints, but allowance should be made for an increase in paint consistency due to an increase in viscosity of the **VEEGUM T** gel as it completes its hydration in the paint.

If preferred, a water gel with a higher concentration of **VEEGUM T** may be prepared. For example, a 5% **VEEGUM T** gel is readily prepared according to the above procedure. When fresh, it is easily handled; however, after 24 to 48 hours, when hydration is complete, the 5% gel will be thixotropic and may be rather difficult to handle.

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