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VANDERBILT Report

# VANSIL® W
# Wollastonite

R.T. Vanderbilt Company, Inc.
30 Winfield Street, P.O. Box 5150, Norwalk, CT 06856-5150
Telephone: (203) 853-1400
Fax: (203) 853-1452, Web Site: www.rtvanderbilt.com

TECHNICAL DATA

# VANSIL® W

Wollastonite

Rubber and Plastics Department

**Description:**

**VANSIL W** is wollastonite, a calcium metasilicate mineral, available for plastics applications in selected grades based on particle size distribution, surface area and surface treatment. Wollastonite's acicular shape, even in low aspect ratio grades, imparts improved physical and mechanical properties. Products containing **VANSIL W** also provide good color, low resin demand, low water absorption, good thermal stability, low coefficient of thermal expansion and high dielectric strength. **VANSIL W** is recommended for use in polypropylene, nylon, thermoplastic olefins, thermoplastic urethanes and other thermoplastic and thermoset compounds.

**Grades:**

**VANSIL W30** is a 4.5 micron median product for filled PVC, epoxy potting compounds and other thermoplastic and thermoset compounds.

**VANSIL W40** is a general purpose wollastonite for thermoplastics and thermosets (epoxies, polyesters) where fine particle size is not required. This is a grade with coarser median diameter but finer top size as compared to **VANSIL W30**.

**VANSIL W50** is a nominal 10 micron top size product for applications such as nylon, where fine particle size is essential. Other thermoplastics will benefit from anti-block performance.

| | VANSIL | | |
|---|---|---|---|
| **Typical properties by grade:** | **W30** | **W40** | **W50** |
| Density, g/cm$^3$ | 2.9 | 2.9 | 2.9 |
| pH, 10% slurry (ASTM D 1208) | 10-11 | 10-11 | 10-11 |
| Brightness, G.E. (TAPPI T-646) | 87 | 87 | 87 |
| Oil absorption, rub out (ASTM D 281) | 21 | 26 | 30 |
| Bulk density, loose (lbs./ft$^3$) | 34 | 37 | 37 |
| Bulk density, tapped (lbs./ft$^3$) | 55 | 56 | 51 |
| Screen analysis: | | | |
| Plus 325 mesh, % (45μm) | 0.06 | 0.03 | --- |
| Plus 400 mesh, % (32μm) | --- | --- | 0.001 |
| Median Diameter (μm) - SediGraph | 4.5 | 5.6 | 2.8 |
| Surface Area $N_2$ B.E.T. (m$^2$/g) | 3.7 | 2.7 | 4.2 |

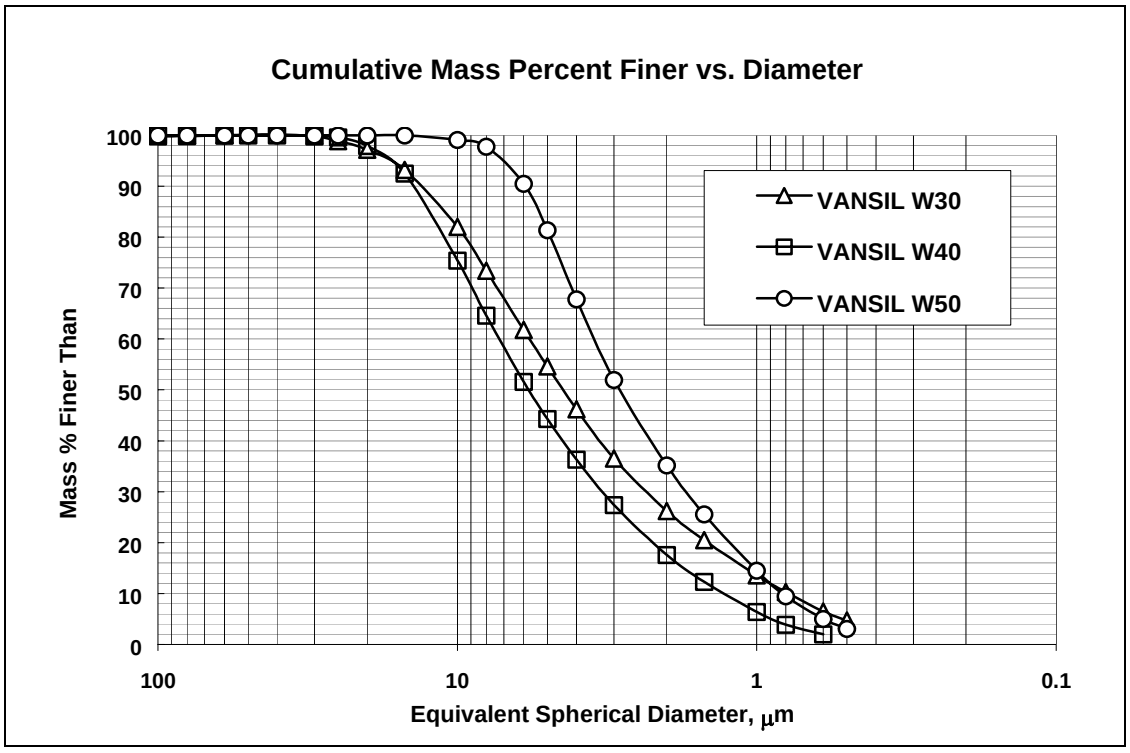
OVER

**Typical chemical analysis (calculated as oxides):**

| | |
|---|---|
| Calcium oxide (CaO) | 44.0% |
| Silicon dioxide ($SiO_2$) (by difference) | 50.0% |
| Aluminum oxide ($Al_2O_3$) | 1.8% |
| Magnesium oxide (MgO) | 1.5% |
| Iron oxide ($Fe_2O_3$) | 0.3% |
| Sodium oxide ($Na_2O$) | 0.2% |
| Manganese oxide (MnO) | <0.1% |
| Ignition loss (1000°C) | 2.2% |

**Particle size distribution - SediGraph 5100:**

| | % Finer than Indicated Size | | |
|---|---|---|---|
| | **VANSIL** | | |
| Diameter (μm) | **W30** | **W40** | **W50** |
| 20 | 97 | 98 | 100 |
| 15 | 93 | 93 | 100 |
| 10 | 82 | 75 | 99 |
| 5 | 55 | 44 | 81 |
| 2 | 26 | 18 | 35 |
| 1 | 14 | 6 | 15 |
| Median Diameter (μm) | 4.5 | 5.6 | 2.8 |




**Storage Note** - Due to the agglomeration of **VANSIL W** during prolonged storage, more than 6 months' inventory is not recommended.

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