Casiflux
the versatile wollastonite filler in coating applications

Introduction

Wollastonite is a naturally occurring mineral with many unique characteristics. Through advanced processing, it has become one of the most versatile functional fillers in the marketplace. Wollastonite increases the performance of many products including plastics, paints and coatings, construction materials, friction, ceramic and metallurgical applications to name a few.

Wollastonite is an industrial mineral comprised chemically of calcium, silicon and oxygen. Its molecular formula is $\text{CaSiO}_3$ and its theoretical composition consists of 48.28% CaO and 51.72% $\text{SiO}_2$. Natural wollastonite may contain traces or minor amounts of various metal ions such as aluminium, iron, magnesium, potassium and sodium.

High acicularity

Wollastonite is the only white extender that is acicular in shape with aspect ratios ranging from 3:1 to 20:1. This high acicularity is of considerable value in the cohesive reinforcement of coating films and has led to coatings with better mechanical strength and improved durability and weathering. In addition, fine acicular particles act as a good flattening agent and provide improved resistance to cracking and excellent scrub resistance of the coating. The acicular structure and alkaline nature of wollastonite make it also ideal auxiliary filler in industrial coatings and primers for improved corrosion resistance by anodic and alkaline passivation. Wollastonite can also act as a pH buffer for improved in-can paint stability over long periods of time.

Optimum performance is created by properly matching the correct coupling to the polymer binder by use of silane chemistry. Overall, the benefits of a surface modified wollastonite include improved physical properties, improved processing along with improved dispersion in the resin.
Casiflux benefits

The following benefits are provided by use of Casiflux in paints and coatings:

**Industrial Coatings**
- Improves mechanical properties by reinforcement and film cohesion
- Enhances alkaline oxidative passivation of metal substrates to improve anti-corrosion
- Is synergist to anti-corrosion inhibitors
- Improves coating film integrity and reduces cracking
- Surface treatment improves wetting, dispersion and coupling in the resin

**Architectural Coatings**
- Improves durability by reinforcement and film cohesion
- Improves sag resistance
- pH buffer for improved in-can stability
- Prevents mud-cracking in thick layer coatings
- Effective as gloss control additive
- Prevents in-can and nail-head corrosion

**Powder Coatings**
- Improves crack and chip resistance
- Effective gloss reduction additive
- Texture surface effects
- Good chemical resistance and heat stability
- Improves adhesion and recoatability by micro texture.
Sibelco supplies both, block and fibrous wollastonites under the trade name of Casiflux. Both surface treated and untreated grades are available.

Sibelco supplies the following wollastonite grades to the paint & coating industry:
Surface treated versions are available on request.

<table>
<thead>
<tr>
<th>Product</th>
<th>Casiflux G20</th>
<th>Casiflux G38</th>
<th>Casiflux FG20</th>
<th>Casiflux F75</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>block</td>
<td>block</td>
<td>fiber</td>
<td>fiber</td>
<td></td>
</tr>
<tr>
<td>Brightness, L*</td>
<td>96</td>
<td>96</td>
<td>93</td>
<td>92.6</td>
<td>DIN 53163</td>
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<tr>
<td>Particle size ($D_{50}$), μm</td>
<td>10.5</td>
<td>18</td>
<td>18</td>
<td>30</td>
<td>Laser diff.</td>
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<tr>
<td>Loose apparent density (g/cm³)</td>
<td>0.7</td>
<td>0.8</td>
<td>0.25</td>
<td>0.4</td>
<td>ISO787/11</td>
</tr>
<tr>
<td>Oil absorption (g/100 g)</td>
<td>30</td>
<td>28</td>
<td>70</td>
<td>59</td>
<td>ISO787/5</td>
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</tbody>
</table>

Figure 3 SEM of block wollastonite Casiflux G20
Figure 4 SEM of fiber wollastonite Casiflux F75
Our companies are ISO-certificated