



Product Application

CAS-20-4

Anhydrous Calcium Sulfate For Titanium Dioxide Extension

Product Features

- High quality, cost-effective titanium dioxide extender
- Superior whiteness and opacity attributes
- Exceptional weathering resistance
- Ideal for use in thermoplastics color concentrates
- Minimizes abrasion to processing equipment because of its low Mohs hardness.

Applications

In thermoplastics systems, CAS-20-4 Anhydrous Calcium Sulfate:

- Is ideal for use as a partial replacement for titanium dioxide
- Is used for food packaging applications requiring a filler with purity and food acid resistance.

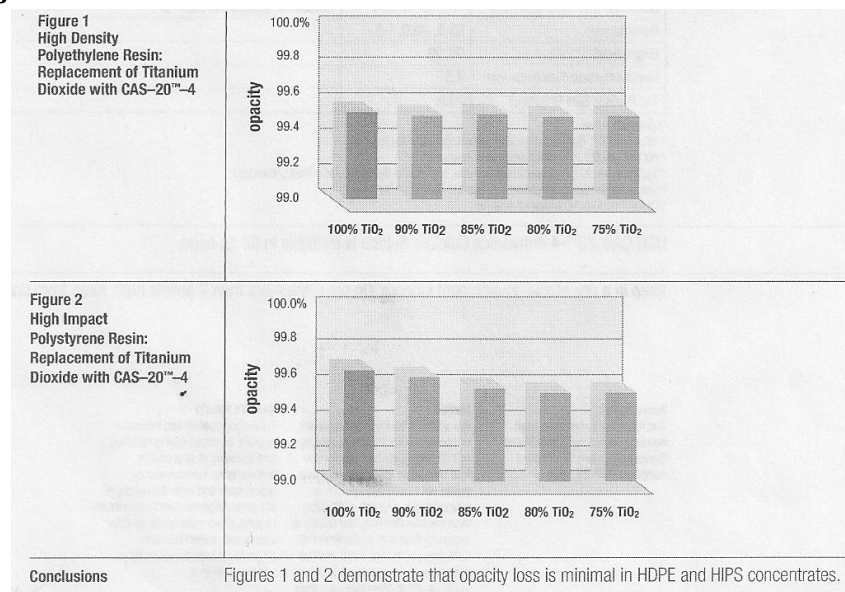
Test Program

The following tests evaluate the efficiency and effectiveness of CAS-20-4 Anhydrous Calcium Sulfate as a spacer for titanium dioxide. The results of these tests demonstrate the outstanding whiteness and opacity that CAS-20-4 Anhydrous Sulfate delivers.

Test Procedure

1. Two color concentrates were prepared: one with high density polyethylene resin (M-5370 manufactured by Alathon), and one in a high impact polystyrene resin (A25E manufactured by FINA Oil & Chemicals).
2. Color concentrate batches were prepared at a ratio of 52% pigment and 48% resin (by weight).
3. The control was 100% titanium dioxide. Test samples were prepared substituting titanium dioxide with CAS-20-4 Anhydrous Calcium Sulfate filler. Replacement levels were at 10%, 15%, 20% and 25%.
4. Batches were extruded on a single screw extruder.
5. Color concentrates were the diluted with the same carrier resin at a 50:1 ratio and molded into test specimens.
6. Color and opacity measurements were made using a Datacolor Spectrophotometer. See Figures 1-4 for result.

Opacity Results





L,a,b Results

Colorant	L	a	b	DE
100% Titanium Dioxide	98.15	-0.71	1.22	0
10% Replacement	97.73	-0.72	1.54	0.53
15% Replacement	97.33	-0.74	1.09	0.83
20% Replacement	97.11	-0.71	1.42	1.06
25% Replacement	96.96	-0.73	1.33	1.20

Figure 3 High Density Polyethylene Resin: Replacement of Titanium Dioxide with CAS-20-4

Colorant	L	a	b	DE
100% Titanium Dioxide	97.38	-0.83	1.70	0
10% Replacement	97.18	-0.81	1.85	0.25
15% Replacement	97.57	-0.79	1.87	0.26
20% Replacement	96.99	-0.74	1.68	0.40
25% Replacement	96.76	-0.77	1.68	0.62

Figure 4 High Impact Polystyrene Resin: Replacement of Titanium Dioxide with CAS-20-4

Conclusions

Figures 3 and 4 demonstrate that L,a,b color readings do not change measurably.

Typical Properties of CAS-20-4

Physical Properties		Chemical Analysis	
Specific Gravity	2.96	CaSO ₄	98.7%
pH – 10% Slurry	10.8	CaCO ₃ . MgCO ₃	0.5%
Mohs Hardness ¹	2-3	CaCO ₃	0.3%
Refractive Index ¹	1.58	Aggregate	0.3%
Oil Absorption ²	24-26	Free Moisture at 45°C ⁶	0.1%
Blaine Surface Area (cm ² /gm)	10,000-14,000	Combined Moisture at 225°C ⁶	0.2%
Reflectance ³	93.6, -0.9,1.3		
Brighthness ⁴	98-99		
Median Particle Size (microns) ⁵	4.3		
Top Particle Size (microns)	20.0		

¹ Literature Value

² ASTM D1483, Gardner Coleman method, gm oil / 100 gm filler

³ Hunter Lab D25-PC2 Colorimeter L,a,b values

⁴ Beckman Model 5260 spectrophotometer, reported in %, relative to a BaSO₄ standard

⁵ Leeds and Northrup SPA Microtrac Particle Size Analyzer

⁶ Computrac Max 50 Moisture Analyzer

Packaging

Cas-20-4 Anhydrous Calcium Sulfate is available in 50 lb bags.

Storage

Keep in a dry, stable environment indoors. Do not stack more than 2 pallets high. Keep from drafts. Rotate stock.