Science. Applied to Life.™

3M Advanced Materials Division

3M™ Ceramic Microspheres

Introduction

3M™ Ceramic Microspheres are unique, semi-transparent, white-colored, fine particle size, high-strength microspheres. Formulating to low VOC is a major driving factor in the coatings industry. Our ceramic microspheres are used by formulators to reduce VOC levels; increase filler loadings; improve hardness; and add burnish, scrub and abrasion resistance to a variety of coating formulations. Due to the ceramic chemistry of these products, they are also UV transparent down to 250 nm and have utility in radiation-curable and thin-film powder coatings.

3M™ Ceramic Microspheres Formulating Information

3M ceramic microspheres are best dispersed by using sand, ball and roller mills. For optimal dispersion, microspheres should be added to the grind stage along with pigments and other filler materials. Use of a dispersant can aid in the wet-out and dispersion of these products.

Product Safety and Handling

Please read and follow the precautions and directions for use in the product label and Safety Data Sheet before using this product. Safety Data Sheets for this product are available from 3M Customer Service at 800-367-8905 or from your local 3M sales representative.

Material Description (Not for specification purposes.)

Property	3M™ Ceramic Microspheres
Shape	Uniquely shaped fillers
Composition	Alkali Alumino Silicate Ceramic
Color, unaided eye	White

Typical Physical Properties (Not for specification purposes.)

Property	3M™ Ceramic Microspheres
True density (g/cc)	2.4 (20.0 lbs/gal)
Bulk density (g/cc)	1.5 (12.6 lbs/gal)
Whiteness ("L" Value)	90+ (Hunter L,a,b scale)
Crush strength, 80% survival by volume (psi)	> 4,200 kg/cm^2 (> 60,000 psi)
pH (at 5 wt% loading in water)	9.0 – 12.0
Hardness	6 (Mohs scale)
Softening point	1,020°C (1,870°F)
Refractive index: Predominant	1.53
Dielectric constant	3.19
UV light transmission	UV Transparent down to 250 nm
Thermal conductivity (W/mK)	2.3

3M Advanced Materials product realization process and manufacturing sites are aligned to ISO 9001 Quality Systems. Test data is generated by following documented procedures and test methods.

Typical Physical Properties (Not for specification purposes.)

Property		3M™ Ceramic Microspheres		
		W-210*	W-410	W-610
Particle size (microns)	90th Percentile	12	21	32
	50th Percentile	6	9	13
	10th Percentile	2	2	2
Oil absorption**		46	44	28

*Supply is limited due to manufacturing capabilities. Contact your 3M representative for more information. 3M reserves the right to discontinue supply of this product grade without notice.
**gm oil/100cc microspheres

Additional Information

3M™ Ceramic Microspheres are supported by global sales, technical and customer service resources, with fully-staffed technical service laboratories in the U.S., Europe, Japan, Latin America and Southeast Asia. Users benefit from 3M's broad technology base and continuing attention to product development, performance, safety and environmental issues.

For additional technical information on 3M ceramic microspheres in the United States, call 3M Advanced Materials Division, **800-367-8905**. For other 3M global offices, and information on additional 3M products, visit our web site at: **www.3M.com/paintsandcoatings**.

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