



# Zeeospheres™

## Ceramic Microspheres

### Gray Grades

#### Introduction

3M™ Zeeospheres™ Gray Ceramic Microspheres are unique, semi-transparent, gray-colored, fine particle size, high-strength microspheres. These products are typically used 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 25 nm and have found utility in radiation curable and thin-film powder coatings.

#### Material Description

Properties	3M™ Zeeospheres™ Gray Microspheres
Shape	Hollow spheres with thick walls
Composition	Silica-Alumina Ceramic
Color, Unaided Eye	Gray

#### Typical Physical Properties

Not for specification purposes

Properties	3M™ Zeeospheres™ Gray Microspheres	
Grayness (“L” Value)	64-69*	
Crush Strength	> 4,200 kg/cm <sup>2</sup> (> 60,000 psi)	
pH	3.0 minimum	ASTM E 70
Hardness	7	Mohs Scale
Softening Point	1,020°C (1,870°F)	
Dielectric Constant	3.7–4.6	
Thermal Conductivity	2 W/mK	

\* G-850 = 50+

Properties	3M™ Zeeospheres™ Gray Microspheres				
	G-200	G-400	G-600	G-800	G-850
True Density (gm/cc)	2.5	2.4	2.3	2.2	2.1
Particle Size (microns)	95 <sup>th</sup> Percentile	12	24	40	200
	90 <sup>th</sup> Percentile	9	14	24	100
	50 <sup>th</sup> Percentile	4	5	6	18
	10 <sup>th</sup> Percentile	1	1	1	2
Surface Area (m <sup>2</sup> /cc)	6	5	4	3	2
Oil Absorption*	70	60	60	60	70

\*gm oil/100cc microspheres

## 3M™ Zeeospheres™ Gray Ceramic Microspheres Formulating Information

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

### Product Safety and Handling

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Please refer to the Material Safety Data Sheet and product label before using this product. Material Safety Data Sheets for this product are available from 3M Customer Service at 800-367-8905 or from your local 3M sales representative.

### Resources

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Zeeospheres 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 Zeeospheres microspheres in the United States, call 3M Specialty Materials Division, 800 367 8905.

For other 3M global offices, and information on additional 3M products, visit our web site at: [www.3m.com/specialtymaterials](http://www.3m.com/specialtymaterials)

#### United States

3M Specialty Materials  
3M Center, Building 223-6S-04  
St. Paul, MN 55144-1000  
**800 367 8905**  
**800 810 8514** (Fax)

#### Europe

3M Specialty Materials  
3M Belgium N. V.  
Haven 1005, Canadastraat 11  
B-2070 Zwijndrecht  
**32 3 250 7874**

#### Canada

3M Canada Company  
Specialty Materials  
P.O. Box 5757  
London, Ontario  
N6A 4T1  
**800 364 3577**

#### Japan

Sumitomo 3M Limited  
33-1, Tamagawadai 2-chome  
Setagaya-ku, Tokyo  
158-8583 Japan  
**813 3709 8250**

#### Asia Pacific and Latin America

Call (U.S.) **651 736 7123**

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#### 3M Specialty Materials

3M Center, Building 223-6S-04  
St. Paul, MN 55144-1000

[www.3m.com/specialtymaterials](http://www.3m.com/specialtymaterials)

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