

Lightweighting re-imagined.

3M™ Glass Bubbles

For lightweight sheet-molded and bulk-molded composites

Advances in materials and processing technologies have made low-density sheet molded composites (SMCs) an increasingly practical and cost-effective alternative to metal and standard composites in automotive applications. SMCs can reduce part weight and still retain the physical properties needed for automotive applications.

A key element in the evolution of SMCs is the use of low density additives such as 3M™ Glass Bubbles – hollow glass microspheres made from water-resistant and chemically-stable soda-lime borosilicate glass.

A new generation of low density/high performance options

3M offers compounders, molders, and automotive manufacturers a new generation of lightweighting options with glass bubbles. They enable standard to ultra-light SMCs, allowing you to tailor the optimal balance of performance and cost for your application.

3M glass bubbles have a proven record in helping to pave the way for SMC lightweighting. These low-density additives have enabled lightweight SMC parts with a density of 1.2–1.4 g/cc, for a total part weight reduction of up to 30% compared to standard SMCs.

Thanks to a recent material innovation from 3M, our expanded glass bubbles portfolio features a grade capable of reducing SMC density to below 1.0 g/cc, with a total component weight reduction up to 40%, all while achieving a Class A paintable surface finish! The new grade, 3M™ Glass Bubbles S32HS, is one more example of 3M's continuing commitment to innovation – and to meeting the needs of the ever-changing automotive industry.

Now there's a 3M™ Glass Bubble solution for all your SMC lightweighting applications:

ULTRA-LIGHT Weight SMC



Made with
NEW 3M™
Glass Bubbles
S32HS



LIGHT
Weight SMC

STANDARD Weight SMC

1.7
g/cc



Lightweight SMCs made with 3M™ Glass Bubbles are the cost-effective alternative to aluminum, magnesium and conventional SMCs.

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Designing Vehicles for a Lighter Future

A typical automobile has about 300 kg of composite parts that contribute to vehicle weight. With electric and high efficiency vehicles becoming more popular, reducing that weight is the key to staying competitive. By integrating 3M™ Glass Bubbles into sheet and bulk molded composite parts, customers can improve a vehicle's fuel economy or battery range. Using ultra-light composite parts may even be more cost effective than aluminum or steel in the right applications.

Visit 3M.com/SMC to learn more about 3M glass bubbles in SMC applications.

Recommended Products: Typical Benefits and Properties

The grades listed below are optimized for SMC/BMC formulations. All end part properties are dependent on formulation and application. All 3M glass bubbles can be surface treated for added benefits. For specific recommendations on your application, contact your 3M representative.

Product Grade	Composite Properties			Glass Bubble Properties				
	SMC Weight Class	Part Density, g/cc	Average Part Weight Reduction	True Density, g/cc	Isostatic Crush Strength, psi	Minimum Survival Rate by volume	Particle Size 50th Percentile, microns by volume	Particle Size 95th Percentile, microns by volume
Class A Surface Finish								
S32HS	Ultra Lightweight	<1.0	40%	0.32	6,000	90%	25	45
iM16K	Lightweight	1.2–1.4	30%	0.46	16,000	90%	20	40
Structural SMCs								
S32HS	Ultra Lightweight	<1.0	40%	0.32	6,000	90%	25	45
S38HS	Lightweight	1.3–1.4	30%	0.38	5,500	80%	45	90
S28HS	Lightweight	1.2–1.4	30%	0.28	3,000	90%	30	60

Customer results may vary depending on formulation and application technique. All 3M glass bubbles can be surface treated for added benefits. For questions regarding Glass Bubbles in Automotive applications, contact 3M technical support at 1-800-367-8905.

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