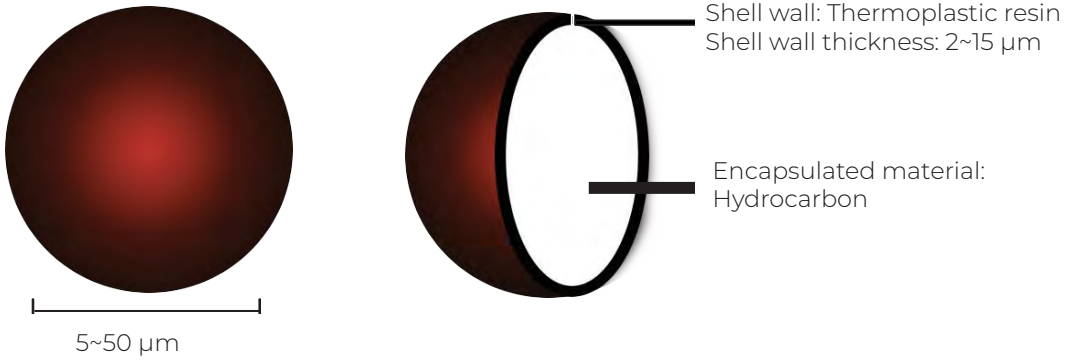

dualite®
MICROSPHERES
A Polymer that lets you do more with less

WHAT ARE MICROSPHERES?

Dualite® Microspheres are microscopic ultra-lightweight fillers made from a flexible polymer shell. The microspheres come in 2 forms: **Unexpanded microspheres** that can expand in process as an alternative to blowing agents, and **Pre-expanded microspheres.**

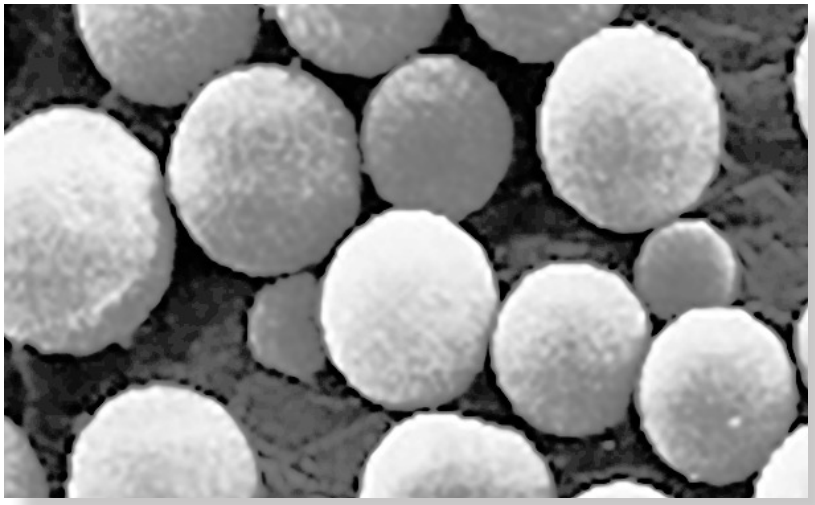
Dualite® **can be added to plastics, resins, adhesives, and composites.** Their inclusion produces a number of benefits depending on the application, including lower density, reduced cost, improved insulation, VOC reduction and improved machining.



MAIN BENEFITS

Cost Savings **Sound Dampening** **Lightweight**

EXPANDED VS UNEXPANDED MICROSPHERES

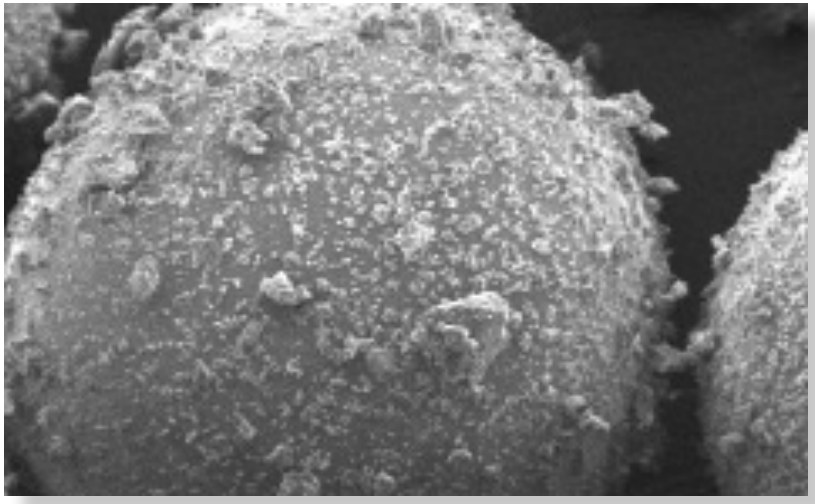


Unexpanded Microspheres

- Unexpanded microspheres use the heat of the process to expand.
- When exposed to a sufficient amount of heat, the polymer shell softens while at the same time the encapsulated blowing agent exerts an outward pressure on the shell wall, thus causing expansion.
- For example U010-185D, the unexpanded microspheres start with a density of around 1.0 g/cc and when expanded can reach densities as low as 0.010 g/cc. The particle size changes from 25 microns to 140 microns.

Important process parameters to help you choose which Dualite Microspheres are right for your application

1. Process temperatures
2. How aggressive is your mixing, blending, pumping and conveying process?
3. Application type



Expanded Microspheres

- Expanded microspheres are used in applications where there isn't enough heat in the process to use unexpanded products.
- We blend unexpanded microspheres with calcium carbonate and expand them using a patented process.

Important process parameters to help you choose which Dualite Microspheres are right for your application

1. Determine particle size and density requirements
2. How aggressive is the manufacturing process (shear, heat, pressures, chemical exposure)?
3. Finished product type, application, and requirements.

“ENVIRONMENTAL BENEFITS”

- **REDUCE WEIGHT** -Use less raw materials (adding 1-3% by weight of Dualite can reduce weight by 15-20%) **LOWERING SHIPPING COSTS.**
- **VOC’S** - Impedes solvent migration during mixing/manufacturing process.
- **R VALUE** - Increased when using Dualite
- **ENERGY** - Water based system can dry faster since Dualite takes up more space in mix
- **BLOWING AGENTS** - You can replace chemical blowing agents with unexpanded microspheres giving your a safer workplace
- **IMPROVED FUEL EFFICIENCY** - Dualite products make sealants and coatings lighter improving the fuel efficiency of the vehicles that they are used in
- **SOUND DAMPENING** - Helps reduce vibration and sound emissions mean quieter spaces inside vehicles and less noise pollution

COST SAVING

Using **Dualite® E** & **Dualite® U** can result in significant cost savings for your formula. Because of its extremely low density, Dualite® E volumetrically replaces other more expensive raw materials. The volume replacement ability of Dualite® E means that you must understand the volume costs of your current product.

To calculate the volume cost of your formula, simply multiply the weight per gallon (WPG) by the dollars per pound of the formula.

Example: A formula at 12 pounds/gallon (7 kg/liter) with a cost of $0.92/pound ($2 kg) would have a volume cost of $11/gallon ($2.9/liter).

FORMULA:

(pounds / gallon) x ($ / pound)= $/gallon

(kg/liter)x($/kg)=$/liter

To calculate your own formula savings, Chase can supply a spreadsheet math model that allows you to enter your own formula, raw material cost, and specific gravities.

Dualite® provides cost savings by replacing expensive raw materials, but it can also help reduce shipping expenses and energy consumption.

! Scan the QR code to access to our online cost savings calculator

! or visit www.info.chasecorp.com/ dualite-cost-savings-calculator-tool

WEIGHT REDUCTION

Using **Dualite® E** & **Dualite® U** can result in a considerable weight reduction of your product. Because of its extremely low density, Dualite® volumetrically replaces other more dense raw materials.

The reduction of weight of your product achieved when using **Dualite®** can lead to easier handling, both internally and by your customers. This weight reduction can also have other benefits, such as freight savings.

To better understand the potential weight reduction achievable when using **Dualite®**, you must know the specific gravity of your current product.

To calculate your own weight reduction, Chase can supply a spreadsheet math model that allows you to enter your own formula, raw material cost, and specific gravities.

The chart demonstrates the percent weight reduction for formulas with initial specific gravities of 10, 12, and 14 pounds/gallon (1.2, 1.4, and 1.7 kg/liter) at different loading levels of Dualite® E065-135D.

Scan the QR code to access to our online cost savings calculator

or visit www.info.chasecorp.com/ dualite-cost-savings-calculator-tool

Dualite® E Grade - Typical Properties

Product Name	Nominal Density (g/cc)	Particle Size Mode (Peak)	Shear Stability
E030	0.030 +/- 0.005	125-145 µm	Good
E035-FR	0.035 +/- .015	70-100 µm	Better
E055	0.055 +/- 0.005	145-165 µm	Good
E065-135D	0.065 +/- 0.005	125-145 µm	Good
E130-055D	0.130 +/- 0.015	45-65 µm	Better
E130-095D	0.130 +/- 0.015	85-105 µm	Best
E130-105D	0.130 +/- 0.015	95-115 µm	Good
E135-040D	0.135 +/- 0.015	30-50 µm	Better

Dualite® U Grade - Typical Properties

Product Name	Expansion Starting Temp (°C)	Optimum Expansion Temp (°C)	Maximum Final Density (g/cc)
U011-128W & U011-128D	90-95	125-135	0.011
U018-130W & U018-130D	90-95	130-140	0.018
U010-130W & U010-130D	90-95	135-145	0.01
U015-135W & U015-135D	95-100	135-145	0.015
U024-145W & U024-145D	115-120	145-155	0.024
U025-175D	130-150	165-185	0.025
U017-175W & U017-175D	140-145	175-185	0.017
U010-185W & U010-185D	145-150	145-150	0.01
U005-190W & U005-190D	130-135	190-200	0.005

Access to Technical Library

https://info.chasecorp.com/dualite-technical-libary

Dualite® MB Grade - Typical Properties

Product Name	Expansion Starting Temp (°C)	Optimum Expansion Temp (°C)	Particle Size Expanded
MB80 Pellets	135-150	185-205	70-80 µm
MB120 Pellets	120-135	190-210	100-120 µm

Product Stability: The performance of DUALITE® is dependent on the cumulative effects of temperature, pressure and chemical environment. Since Chase Corporation is not able to exhaustively test all combinations of these variables, this data is furnished as a guideline for selection of an appropriate grade of DUALITE®.

MICROSPHERES FOR THE TRANSPORTATION INDUSTRY

Features & Benefits

- Density
- Price Reduction
- Lightweight
- Sound Dampening

Dualite® Products are created through a patented process that controls expansion and coating application, **resulting in lightweight filler with a range of particle sizes, densities, and materials.** Dualite Polymer Microsphere products offer unique solutions to meet the needs of numerous industries and a broad spectrum of end-use applications.

Applications

- Aerospace
- Trains
- Marine
- RV and OHRV's
- Commercial Vehicles

MICROSPHERES FOR CONSTRUCTION PRODUCTS

Dualite® E series product uses

- Portland cement adhesives
- Roof coatings
- Sealants
- Polyurethane and other adhesives
- Epoxies
- Patching compounds
- Polyesters & Vinylyesters
- FRPs
- and many more

Dualite® U series product uses

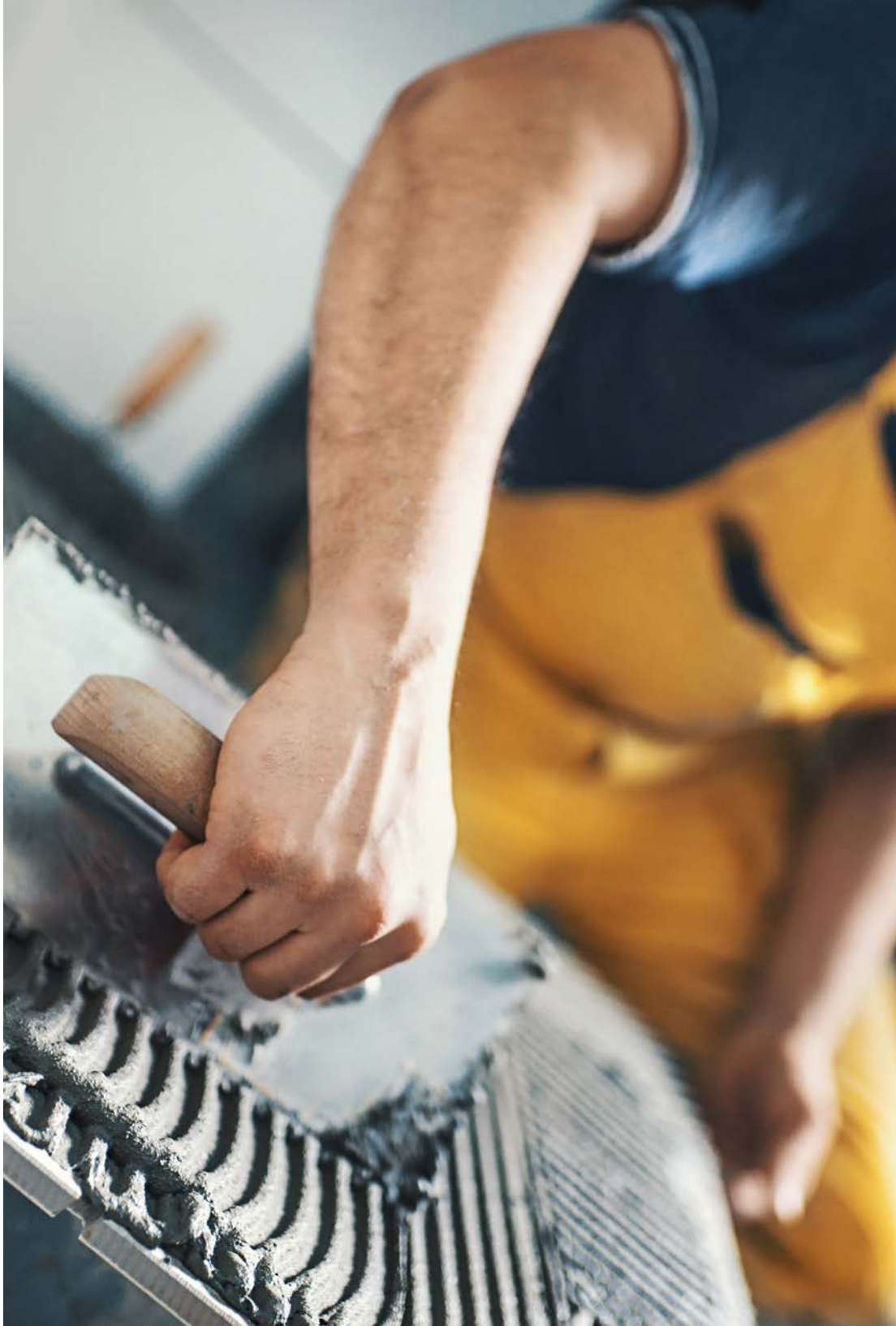
- Insulations
- Sprayfoams
- Flooring underlayments
- Powder coatings
- and many more

MAIN BENEFITS

- Reduces Weight
- Reduces cost
- Thermal Insulating
- Reduces shrinkage
- Faster drying
- Increases trowelability
- Reduces VOCs
- Sound dampening

PRODUCT FEATURES

- Sprayable
- Non-friable
- Pumpable
- Shear stable
- Compressible
- Flexible



MICROSPHERES FOR COMPOSITES

Composite materials are improving the design process and efficiencies across all industries, from aerospace to energy. Composites continue to replace traditional building materials providing stronger, more durable products with longer life cycles. Integration of microspheres into composite manufacturing processes will improve many desired performance characteristics.

Features & Benefits

- Cost reduction
- Weight reduction
- Thermal insulation
- Sound dampening
- Impact & crack resistance

Markets

- Aerospace & Defense
- Automotive & Transportation
- Marine
- Energy

OTHER MICROSPHERES APPLICATIONS

MICROSPHERES

Contact Us

dualite®

CHASE Corporation

We make a material difference

Dualite Microspheres

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