

POLYESTER PUTTY

WITH EXPANDABLE MICROSPHERES

Make a price competitive putty that is easy to apply,
with extraordinary sanding properties



OVERVIEW

Product Type

Expanded microspheres
Pre-wetted expanded
microspheres

Main Benefits

Easy to apply
Easy to sand
No pinholes
Reduced cracking &
shrinkage
Smooth surface finish

Applications

Automotive bodyfiller
Fairing compounds for boat &
surfboard repairs

Expandable Microspheres

Expanded microspheres have been successfully used
in polyester **putties** for **many years**.

There are microsphere grades available with good
solvent resistance making them suitable for **mixing
temperatures** over 40°C and for long **storage times**,
and grades for when better pressure resistance is
required.

Adding a **small quantity of** the spheres gives a large
reduction in density and a large **increase** in product
volume to give a putty which is **competitively priced**.

The putty has **exceptional sanding** properties, with less
irritating dust and less wear on tools than glass
microspheres.

Boud Minerals produce dry expanded microspheres in
the **United Kingdom**. From them we produce blends,
including our **pre-wetted** and completely **dust-free
Microspheres 939** and **Microspheres 941**.



Mixing, Curing & Storage

Expanded microspheres can be used on their own in polyester putty, or in combination with mineral fillers.

A **lightweight** polyester **putty** containing expanded microspheres can be produced with **mixing** equipment normally used for producing putties, such as dissolvers, butterfly or planetary mixers.

It is necessary to **de-aerate** the putty under vacuum, during or after mixing (about 30 mm Hg absolute pressure = 0.4 atm = 4 kPa = 0.58 psi), to give a compact filler with **no air bubbles**, resulting in **no pinholes** when used.

Tests have shown expanded microspheres are unaffected in polyester putties after mixing with a dissolver disc for 20 minutes at 2000 rpm. However, **high shear forces** can damage microspheres in high viscosity systems.

Dibenzoylperoxide systems with amine accelerators give a **stable curing** and **low gel time** drift when expanded microspheres are used. MEK-peroxide systems and cobalt accelerators, and cyclohexanoneperoxide systems with cobalt octate accelerators, can be used to cure putties containing the spheres.

Tests have shown putty of density 1 g/cm³ containing expanded microspheres of density 0.025 g/cm³ may be **stored** for 3 months at 50°C. With no sedimentation of heavy fillers, flotation of the spheres or flotation of the unsaturated polyester resin significant **improvement** was shown **over conventional putties**.

Application Ideas

For polyester putty with expandable microspheres



The **ultra-light density** of expanded microspheres makes it possible to **add large amounts**, by volume, to polyester resin, reducing **density** and making the volume **price** of the putty competitive.

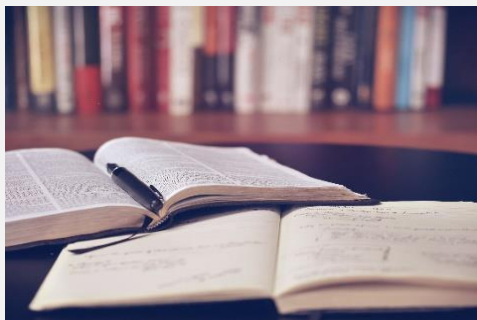
By adding **1% w/w** microspheres with a density of 0.025 g/cm³, it is possible to **reduce density** by almost **50%**. Volume % of resin decreases.

The soft polymer shell and spherical shape of the microspheres makes the putty **easier** and **quicker to sand**, and **less abrasive** to sanding equipment.

The spheres are hydrophobic, with a small particle size and excellent adhesion with polyester resin, the **porosity** of the putty is infinitely small and **water** will **not penetrate** a surface filled with such a putty.

When a putty contains glass microspheres, pinholes can be a problem and the surface finish is harder. Using the smaller particle expanded microspheres will **not** result in **pinholes**, and the putty has a **lower surface hardness**. Final hardness of the putty can be controlled through choice of resin.

Buttery consistency is an admired property of a putty containing expanded microspheres, making it **easy to apply**, with almost **no after-sinking**. The elasticity of the spheres **compensates** for **shrinkage** in the putty during curing.



Further Reading

Our **Case Study – Fairings Compounds with Expandable Microspheres** shows you a different way this type of product can be used.

Discover the unique properties of expandable microspheres and the benefits of using them in our **Technical Guide – Properties of Expandable Microspheres**.

For guidance on the best way to handle and mix dry expanded microspheres take a look at our **Technical Guide – Handling Expandable Microspheres**.

What's Next?



Do you need help **choosing the right grade** for your application, **more information** or a **sample** to try?

We are always happy to help and answer any questions you may have. Please do not hesitate to contact us:

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Something to Note

The information contained in this guide is a result of our experience and research. It is given in good faith but under no circumstances does it constitute a guarantee on our part, nor does it hold us responsible, particularly in the case of legal action by a third party.