SP Filler Powders

Introduction

SP fillerpowders are designed to modify the properties of some of the SP liquid solvent-free epoxy resins and so to create a variety of semi-liquid products such as filling and fairing compounds and adhesives. The fillers form three distinct categories: hollow spheres, short fibres, and flow modifiers.

Hollow Spheres

Hollow spheres serve to increase the volume and reduce the density of any resin system and are used to make adhesive mixes and filling & fairing mixes. They are regularly used for producing easily sanded filling & fairing compounds, and can also be used for making low density adhesives for low strain applications. Within this category SP Systems supplies two different types of hollow spheres: microballoons and glass bubbles.

Short Fibres

For adding strength to a resin and hardener mix used as a structural adhesive, short reinforcing fibres are often added which act in a similar strengthening way to the long reinforcing fibres used in composite construction. The fibres also help to prevent resin starvation when bonding porous surfaces. Within this category SP Systems supplies cellulose microfibres.

Flow Modifiers

The most common material for modifying the flow properties of a resin mix is colloidal silica. This is a very fine powder which is added in conjunction with other fillers to 'thicken' mixes and reduce their flow on vertical surfaces (increase thixotropy). Resin systems such as Spabond 120 and Spabond 125 have silica pre-added by specialised equipment. This machinery can provide a high level of dispersion so that less silica is required to achieve the same level of thixotropy than would be achieved by hand mixing.

SP Microballoons

SP Microballoons are hollow phenolic resin spheres which have a distinctive reddish/ brown colouration. This makes them particularly useful for cosmetic fillet joints and fillers in wood construction, as well as structural adhesives for less demanding applications on softer timbers such as cedar. Although not as waterproof as glass bubbles, microballoons are often preferred for their excellent sanding characteristics. Microballoons are not normally used with polyester or vinylester resins because they can be subject to styrene attack which may cause the spheres to collapse.

When storing microballoons, it is particularly important to exclude air as they readily absorb atmospheric moisture which will affect the performance of the filled mix.

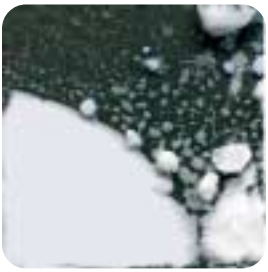
Product Details

Composition:	Phenolic Resin
Appearance:	Red/Brown Powder
Particle Size:	50 microns
Particle Density:	250g/litre
Bulk Density:	100g/litre

Availability

Size	Order Code
0.1 kg (approx. 1 litre)	A225-002
0.3 kg (approx. 3 litres)	A225-003
5.0 kg (approx. 50 litres)	A225-005
13.6 kg (approx. 135 litres)	A225-006

SP Glass Bubbles



SP Glass Bubbles are hollow glass spheres with a more variable particle size than microballoons. Being composed chemically of glass, they are physically harder than microballoons and filled resin mixes are noticeably more difficult to sand. However, glass bubbles produce a more waterproof filler mix and are often used on below-waterline applications on boats. Being significantly less expensive than microballoons they are often preferred if easy sanding performance is not of prime importance. They can be mixed with microballoons in any proportion for colour purposes.

Product Details

Composition:	'C' Glass
Appearance:	White powder
Particle Size:	40 - 80 microns
Particle Density:	200g/litre approx.
Bulk Density:	100-150g/litre approx.

Availability

Resin Size	Order Code
0.12 kg (approx. 1-1.5 litre)	A230-005
0.3 kg (approx. 2-3 litres)	A230-001
5.0 kg (approx. 30-50 litres)	A230-003
30 kg (approx. 200 litres)	A230-004

SP Microfibres

SP Microfibres are very fine wood-cellulose fibres commonly used to create structural adhesives for bonding both wood and grp.

Because any low viscosity resin system is readily absorbed into a porous surface such as wood, an unfilled adhesive may tend to give a 'dry joint'. With their absorbent properties, microfibres can retain a significant quantity of adhesive within a joint and limit resin absorption into the surrounding surface, thus ensuring an adequate resin supply for adhesion. Where the strongest bond is required, e.g. timber scarf joints, microfibres should always be used in preference to hollow sphere-types of filler.

For bonding parallel to the grain with lower density, lower strength timbers, such as cedar or obeche, a microballoon mix is often adequate, and is of lower density.

Product Details

Composition:	Milled bleached cellulose wood pulp
Appearance:	White 'fluffy' fibrous consistency
Particle Size:	200 - 300 microns
Particle Density:	Particles absorb resin
Bulk Density:	100g/litre approx.

Availability

Resin Size	Order Code
0.1 kg (approx. 1 litre)	A215-004
0.5 kg (approx. 5 litres)	A215-003
5.0 kg (approx. 50 litres)	A215-005
20.0 kg (approx. 200 litres)	A215-007

SP Colloidal Silica

SP Colloidal Silica is an agent which is used to control the thixotropy or 'sag' characteristics of a resin system. By adding colloidal silica powder in varying amounts to a resin mix containing the other filler types mentioned, the handling and flow characteristics can be controlled. Relatively small quantities added to a resin mix containing glass bubbles or microballoons will give non-sag properties and impart easier handling.

Colloidal silica is also used with microfibres to produce a mix suitable for use as a high strength, non-sagging structural adhesive, particularly for non-absorbent materials such as grp. The inclusion of colloidal silica has the effect of increasing the hardness of the resulting mix which will create more difficulty when sanding. For this reason colloidal silica is usually added in the minimum quantities to any mix for which sanding is anticipated. In some applications this feature can be used to an advantage, for example to create a hard wearing edge or surface.

Product Details

Composition:	Silicon dioxide
Appearance:	White powder
Particle Size:	0.012 microns
Bulk Density:	50g/litre approx.

Availability

Resin Size	Order Code
0.05 kg (approx. 1 litre)	A220-002
0.25 kg (approx. 5 litres)	A220-003
2.5 kg (approx. 50 litres)	A220-005
10.0 kg (approx. 200 litres)	A220-006

Adhesive Mixes

For use with SP 106, SP 320, Handipack and Ampreg 20

Description of Mix	Filler Type	Filler Qty. (% by Wt.of R/H Mix)	Filler Qty. (for 1kg R/H Mix)	Silica Addition (% by Wt.of R/H Mix)	Silica Addition (for 1kg R/H Mix)	Approx. Density of Mix	Approx. Vol. of Filler Mix from 1kg R/H Mix
Brown, low density	Microballoons *	15-20%	150-200g	4-5%	40-50g	0.7g/cm^3	1.8l
White, low density	Glass Bubbles *	15-20%	150-200g	5-6%	50-60g	0.6g/cm^3	2l
Opaque, high strength	Microfibres	7-10%	70-100g	3-4%	30-40g	0.9g/cm^3	1.1l

For use with Spabond 120

Description of Mix	Filler Type	Filler Qty. (% by Wt.of R/H Mix)	Filler Qty. (for 1kg R/H Mix)	Silica Addition (% by Wt.of R/H Mix)	Silica Addition (for 1kg R/H Mix)	Approx. Density of Mix	Approx. Vol. of Filler Mix from 1kg R/H Mix
Brown, low density	Microballoons *	13-18%	130-180g	1-2%	10-20g	0.7g/cm^3	1.8l
White, low density	Glass Bubbles *	13-18%	130-180g	2-3%	20-30g	0.6g/cm^3	2l
Opaque, high strength	Microfibres	6-9%	60-90g	0.5-1%	5-10g	0.9g/cm3	1.1l

For use with Spabond 125

Description of Mix	Filler Type	Filler Qty. (% by Wt.of R/H Mix)	Filler Qty. (for 1kg R/H Mix)	Silica Addition (% by Wt.of R/H Mix)	Silica Addition (for 1kg R/H Mix)	Approx. Density of Mix	Approx. Vol. of Filler Mix from 1kg R/H Mix
Brown, low density	Microballoons *	5% max	50g max	-	-	0.9g/cm^3	1.2l
White, low density	Glass Bubbles *	5% max	50g max	-	-	0.85g/cm^3	1.3l
Opaque, high strength	Microfibres	5% max	50g max	-	-	0.95g/cm^3	1.1l

Notes: All filler additions are approximate and can be adjusted by the user to achieve the desired consistency. For conversion of these recipes to volume mixing, use the stated Bulk Density of the filler powders to convert the given filler weights to approximate filler volumes.

*Microfibres are always preferred for load-carrying adhesive joints

Filling and Fairing Mixes

For use with SP 106, SP 320, Handipack and Ampreg 20

Description of Mix	Filler Type	Ease of Sanding of Mix	Water resistance of Mix	Filler Qty. (% by Wt. of R/H Mix)	Filler Qty. (for 1kg R/H Mix)	Silica Addition (% by Wt. of R/H Mix)	Silica Addition (for 1kg R/H Mix)	Approx. Density of Mix	Approx. Vol. of Filler Mix from 1kg R/H Mix
Brown, low density	Microballoons	Easy	Moderate	25-30%	250-300g	2-3%	20-30g	0.6g/cm^3	2.2l
White, low density	Glass Bubbles	Moderate	High	35-40%	350-400g	3-5%	30-50g	0.5g/cm^3	3l

For use with Spabond 120

Description of Mix	Filler Type	Ease of Sanding of Mix	Water resistance of Mix	Filler Qty. (% by Wt. of R/H Mix)	Filler Qty. (for 1kg R/H Mix)	Silica Addition (% by Wt. of R/H Mix)	Silica Addition (for 1kg R/H Mix)	Approx. Density of Mix	Approx. Vol. of Filler Mix from 1kg R/H Mix
Brown, low density	Microballoons	Easy	Moderate	25-30%	250-300g	0.5-1%	5-10g	0.6g/cm^3	2.2l
White, low density	Glass Bubbles	Moderate	High	35-40%	350-400g	1-1.5%	10-15g	0.5g/cm^3	3l

Notes: Spabond 125 is not recommended for filling and fairing due to its high silica loading which makes it hard to sand. For conversion of these recipes to volume mixing, use the stated Bulk Density of the filler powders to convert the given filler weights to approximate filler volumes. All filler additions are approximate and can be adjusted by the user to achieve the desired consistency.

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