

Waytop Microspheres

Lightweight Body Filler Formulation with Expanded Microspheres

T e c h n i c a l G u i d e

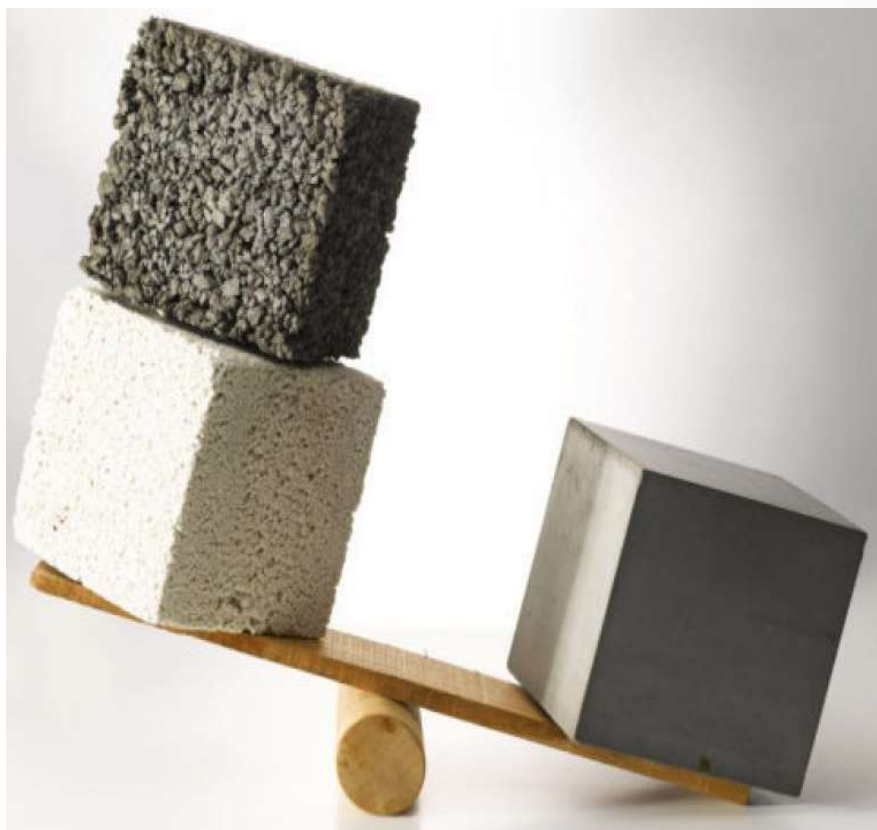
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Subjects

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- Introduction of Expanded Microspheres
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- Basic Formula & Recommendations
- Microspheres Grades to Choose
- Mixing Suggestions

Introduction of Lightweight Body Filler



Lightweight body fillers are materials used in automotive repair to fill dents, scratches, and other imperfections on vehicle surfaces before painting.

Composition

- Lightweight body fillers are typically made of polyester resin mixed with talc and lightweight fillers, for example, expanded microspheres.

Benefits

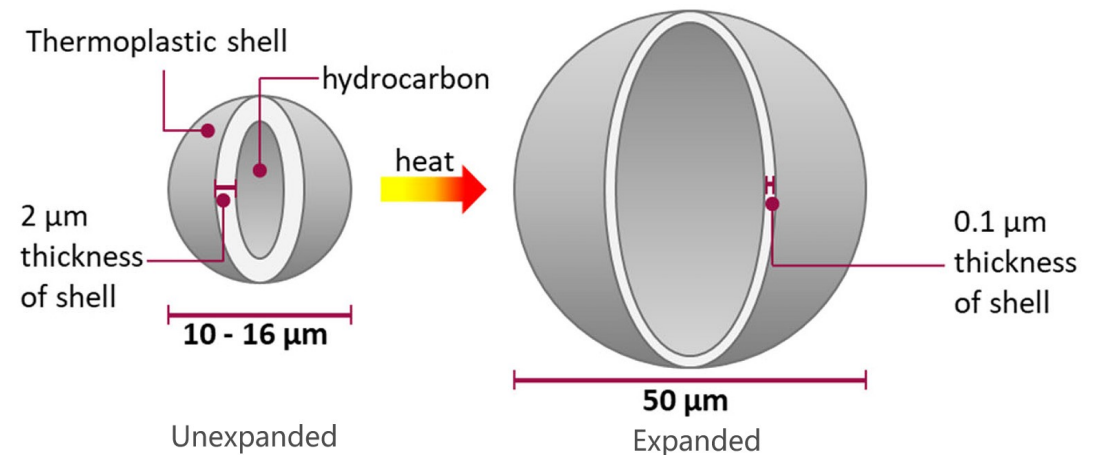
- Ease of Sanding: They sand easily, allowing for a smooth finish with minimal effort.
- Low Density: The fillers are lighter than traditional body fillers, reducing the added weight to the repaired area.
- Quick Drying: They cure quickly, speeding up the repair process.



Introduction of Expanded Microspheres

Expanded Microspheres is a super lightweight filler, which will add volume dramatically with small dosage in weight, without losing much of the original properties of your products. Our lightweight fillers allow you to substitute heavier substances with small portions of microspheres and achieve better overall results, saving raw material costs in the process..

- Extremely low density, 20kg/m³;
- Free-flowing white powder, hollow spheres;
- Thermoplastic polymer shell and hydrocarbon gas inside;



Benefits of Expanded Microspheres in Body Filler

Expanded Microspheres applying in body filler have the following advantages:

- Lower Density
- Easy Sanding
- Excellent Water Resistance
- Low Permeability
- Good Processing
- Low Volume Shrinkage
- Shorten processing time
- ...

Benefits of Expanded Microspheres in Body Filler

- **Density Reduction**

Thanks to the exceptionally low density of microspheres, incorporating them into body filler can not only drastically reduce the body filler's density but also substantially increase their volume, allowing them to cover more surface area and enhancing their cost-effectiveness.

| Items | Weight (Formula1) | Weight (Formula2) | Weight (Formula3) |
|---------------------|-------------------|-------------------|-------------------|
| Unsaturated resin | 31% | 41% | 97 |
| Inorganic filler | 69% | 58% | 0 |
| Microspheres(WP40D) | 0% | 1% | 3 |
| Total Weight | 100% | 100% | 100 |
| Final Density | 1.8kg/dm3 | 1.00kg/dm3 | 0.48kg/dm3 |

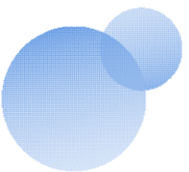
Benefits of Expanded Microspheres in Body Filler

- **Easy Sanding**

Expanded microspheres are soft thermoplastic shells with a spherical shape, which means that body filler containing expanded microspheres has a lower surface hardness compared to putty with traditional fillers. This makes the body filler easier to sand, reducing sanding time and causing less wear on sanding equipment.

- **Excellent Water Resistance**

Microspheres are closed cells with gas-tight properties, crucial for enhancing the water resistance of body filler. Additionally, their small particle size allows them to nearly fill all gaps, making it challenging for water to permeate the surface of body filler.



Benefits of Expanded Microspheres in Body Filler

- **Good Processing**

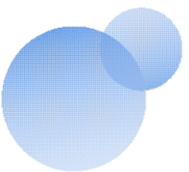
Expanded microspheres possess high elasticity and can endure machine processing without sustaining damage during the production and application of polyester putty.

- **Low Volume Shrinkage**

Expanded microspheres are highly elastic and compressible particles. Polyester putties containing microspheres exhibit lower volume shrinkage compared to standard formulations.

- **Storage stability**

Expanded Microspheres will not compromise the storage stability of the polyester putty.





Basic Formulation & Recommendations

- Recommended addition of microspheres: 1 to 4%.
- 1% dosage by weight of microspheres equals density reduction by approx 30%.

| Items | PHR |
|---------------------------------|------|
| Unsaturated resin | 100 |
| Antisetting agent | 1 |
| Wetting agent | 1.45 |
| Titanium dioxide | 4.5 |
| Thixotropic agent | 1.5 |
| Styrene | 10 |
| Dolomite (5–10 um) | 55 |
| Talc (5–10 um) | 70 |
| Lightweight filler (Waytop 40D) | 2.5 |





Expanded Microspheres Grades to Choose

Expanded microspheres are catagorized into several grades according to different particle sizes and heat resistance. You should choose the suitable microspheres according to your needs in body filler.

| Grade | Average Particle Size (μm) | Softening Temp (°C) | Density kg/m3 |
|--------|----------------------------|---------------------|---------------|
| WP20D | 20-30 | 110±5 | 30-40 |
| WP40D | 30-50 | 100±5 | 20-30 |
| WP80D | 70-90 | 120±5 | 15-25 |
| WP100D | 90-110 | 85±5 | 13-18 |



Mixing Suggestions



Here are some suggestions on mixing expanded microspheres in body fillers:

1. Mixing machine: dissolvers, butterfly mixers, or planetary mixers, powder conveying equipment.
2. Mix at high rotational speed to ensure sufficient dispersion of the expanded microspheres.
3. Mix at least 30 minutes for a homogenous putty;

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Thank You!

If you want to learn more, please contact us.

www.expandablemicrosphere.com