

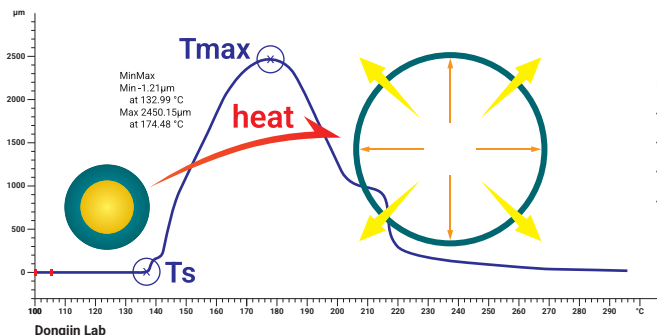
UNICELL-MS Series

Description

UNICELL-MS series are thermally expandable micro-spheres.

They are an unexpanded type consisting of a polymeric shell and a volatile core, with particle sizes ranging from 10 to 100 μm and densities ranging from 1.05 to 1.20 g/cc.

Structure and Expansion Mechanism



Features:

- Excellent expandability and thermal stability
- Excellent solvent resistance
- A wide range of grades
- Suitability for customer requirements

When UNICELL-MS is heated to the Tg of its shell, it begins to expand dramatically. This point is referred to as Ts. With further heating, it expands volumetrically by approximately 40–50 times. As the shell becomes critically thin, a hollow sphere is formed. This point is referred to as Tmax. If heated above Tmax for an extended period, the particles may shrink or collapse.

Products

Dry type

Item	Specification			Application
	APS (μm)	Ts($^{\circ}\text{C}$)	Tmax($^{\circ}\text{C}$)	No.
MS140DS/D	15 $\pm$ 5 / 25 $\pm$ 5	90 $\pm$ 5	120 $\pm$ 5	1
MS145DS/D	12.5 $\pm$ 3.5 / 20 $\pm$ 4	100 $\pm$ 5	140 $\pm$ 5	1
MS2002	25 $\pm$ 10	115 $\pm$ 5	168 $\pm$ 5	2
MS4004A	20 $\pm$ 3	122.5 $\pm$ 7.5	167.5 $\pm$ 7.5	1,5
MS4600FSS	7.5 $\pm$ 2.5	138 $\pm$ 5	160 $\pm$ 5	4.7
MS4600FS	14.5 $\pm$ 3.5	130 $\pm$ 5	170 $\pm$ 5	2,4
MS4600X	22 $\pm$ 4	125 $\pm$ 5	170 $\pm$ 5	5
MS4002	13.5 $\pm$ 3.5	130 $\pm$ 5	173 $\pm$ 5	2,4
MS4002A	20 $\pm$ 3	122.5 $\pm$ 7.5	180 $\pm$ 5	2,4
MS4600	25 $\pm$ 5	122.5 $\pm$ 7.5	175 $\pm$ 5	5
MS4600F	37 $\pm$ 5	120 $\pm$ 5	180 $\pm$ 5	3,5
MS4703F	32 $\pm$ 5	120 $\pm$ 5	183 $\pm$ 5	2
MS4801F	33 $\pm$ 5	123 $\pm$ 5	183 $\pm$ 5	3
MS198D	25 $\pm$ 5	165 $\pm$ 5	200 $\pm$ 5	3
MS197D	24 $\pm$ 4	169 $\pm$ 3	193 $\pm$ 3	3
MS200	30 $\pm$ 4	140 $\pm$ 5	200 $\pm$ 5	3
MS3001	34 $\pm$ 6	161 $\pm$ 5	214 $\pm$ 6	7

*APS (Average Particle Size) can be selectable

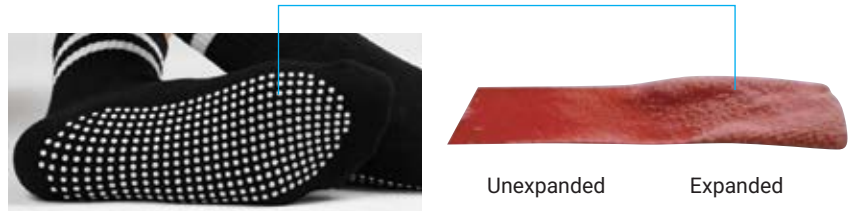
Wet type

Item	Specification				Application
	APS (μm)	Ts($^{\circ}\text{C}$)	Tmax($^{\circ}\text{C}$)	Moisture(%)	No.
MS140WS/W	15 $\pm$ 5 / 25 $\pm$ 5	90 $\pm$ 5	120 $\pm$ 5	20 $\pm$ 1	1
MS145WS/W	12.5 $\pm$ 3.5 / 20 $\pm$ 4	100 $\pm$ 5	140 $\pm$ 5	20 $\pm$ 1	1
MS3000A	53 $\pm$ 4	190 $\pm$ 7	210 $\pm$ 5	20 $\pm$ 1	6

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Applications

1. Acryl Binder for Textile



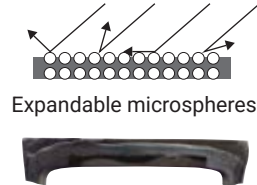
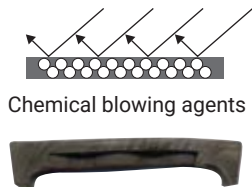
2. PVC Wallpapers



3. Shoe-sole of PVC, TPR, EVA

Key Characteristics of UNICELL-MS:

- Reduced weight
- Elegant matte surface
- Fine isolated cell structure
- Superior shape stability
- Good resilience



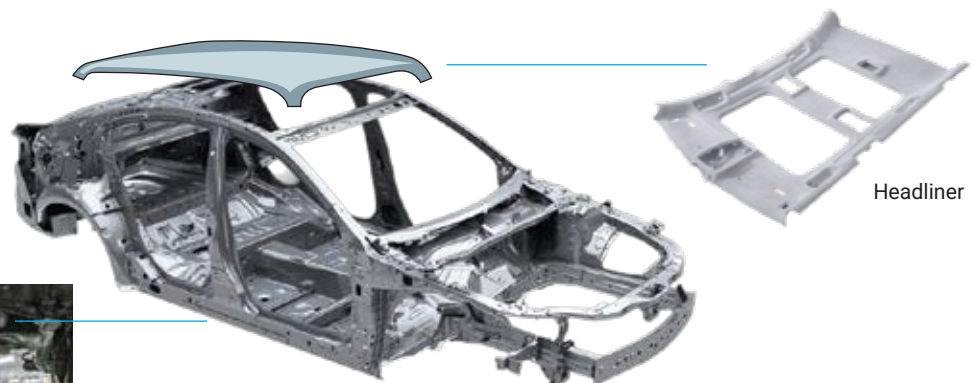
4. Artificial Leather with PU Coating



5. Underbody Coatings



6. PP/GF Reinforcement Materials



7. Others: Mat, Floorings, Cushion Tape ETC.