SEKISUI

I Want It to Be...

Lighter!

More Flexible!

Elastic!

Less Expensive!

Vibration Dampening!

and Heat Insulating!

Then,
Why Not Expand?

Expand the Particles and Inflate the Material.

Why Didn't Anyone Else Think of It? Sekisui ADVANCELL EM.

What kind of characteristics do you want from a resin?

ADVANCELL EM is comprised of thermo-expandable microspheres (tiny plastic spheres) containing a low-boiling-point liquid hydrocarbon inside a thermoplastic polymer shell. When heated, the shells soften and, at the same time, the hydrocarbon contained inside suddenly expands, forming micro-balloons. Mixing ADVANCELL EM with a resin (base material) adds a variety of desirable characteristics and features to the material, such as reduced weight and enhanced flexibility.

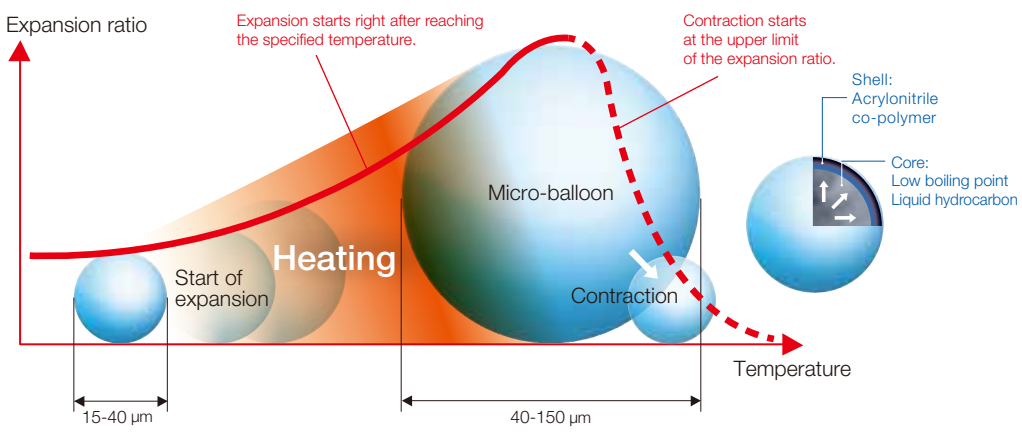
The expansion start temperature and cell size can be optimized by selecting an appropriate grade. Please feel free to contact our company for details.

Particle grade

Master batch grade

"Expansion" solves many issues in a variety of fields.

- **Building materials**
  (Wallpaper, synthetic wood, paint, putty/sealing material, lightweight clay)
- **Automotive parts**
  (Interior material, exterior material, paint)
- **Daily commodities**
  (Shoe soles, synthetic leather, expandable ink, cork)
- **Others**



Expansion ratio of ADVANCELL EM

Expands 3 to 4 times in diameter and 50 to 80 times in volume.

	Before expansion	After expansion
Average particle diameter	15-40 µm	40-150 µm
Density	1.00-1.20 g/cm^3	0.01-0.03 g/cm^3

ADVANCELL®

The high-quality expansion characteristic is one of the great features of ADVANCELL EM.

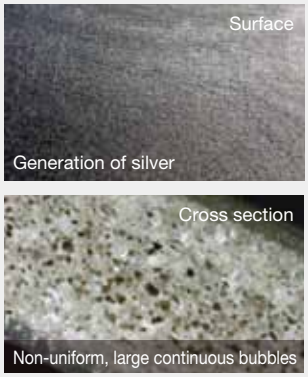
Independent micro-balloons result in a high-quality finish not offered by other chemical foaming agents.

Since ADVANCELL EM is comprised of shells (polymer cells), the micro-balloons feature an independent, closed-cell structure. ADVANCELL EM offers the following advantages over a chemical foaming agent made mainly of ADCA (azodicarbonamide).

- Fine, uniform micro-balloons achieve a smooth surface.
- The sharp particle size distribution achieved by Sekisui's proprietary technology allows the micro-balloon size to be controlled.
- Micro-balloons can be formed even in low-viscosity compositions.

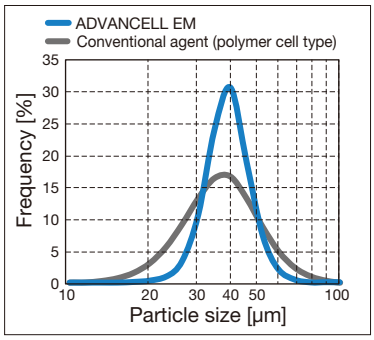
ADVANCELL EM

Chemical foaming agent



Expansion of ADVANCELL EM is more uniform than that of a conventional agent of the same type because of the sharp particle size distribution.

Thanks to Sekisui's proprietary particle dispersion technology (patented), ADVANCELL EM offers more uniform and sharper particle size distribution as compared to those of other expansion type foaming agents of the same type, thus producing a smooth and refined finish. Since ADVANCELL EM maintains a constant amount of heat necessary for expansion and stabilizes the expansion start temperature, it enables easier control of the processing temperature.



Particle size distributions of ADVANCELL EM and conventional agent

ADVANCELL EM

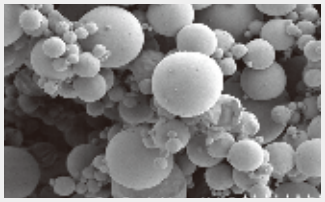
Uniform micro-balloons result in:

- ○ Formation of uniform cells
- ○ Smooth and refined finish
- ○ Reduction of expansion loss so that only a small amount of ADVANCELL EM needs to be added
- ○ Easy to control the processing temperature

Conventional (polymer cell type)

Non-uniform expansion results in:

- × Formation of irregular cells
- × Rough finish
- × Generation of expansion loss due to unexpanded particles
- × Difficulty to control the processing temperature



■ADVANCELL EM Specifications

	Particle grade									Master batch grade (pellets)		
Grade	EML101	EMH204	EHM302	EHM303	EM306	EM403	EM406	EM501	EM504	P403E1	P501E1	P504E1
Average particle size	12 ~ 18μm	36 ~ 44μm	15 ~ 25μm	24 ~ 34μm	20 ~ 30μm	25 ~ 35μm	24 ~ 34μm	21 ~ 31μm	15 ~ 23μm	25 ~ 35μm	21 ~ 31μm	15 ~ 23μm
Expansion start temperature (Ts)	115 ~ 130℃	110 ~ 130℃	130 ~ 140℃	120 ~ 130℃	135 ~ 145℃	150 ~ 170℃	140 ~ 150℃	160 ~ 180℃	160 ~ 180℃	150 ~ 170℃	160 ~ 180℃	160 ~ 180℃
Maximum expansion temperature (Tmax)	155 ~ 175℃	160 ~ 180℃	160 ~ 170℃	160 ~ 170℃	170 ~ 185℃	200 ~ 220℃	180 ~ 190℃	210 ~ 230℃	190 ~ 210℃	200 ~ 220℃	210 ~ 230℃	190 ~ 210℃
True specific gravity after expansion	0.017±0.005	0.013±0.005	0.016±0.005	0.016±0.005	0.016±0.005	0.016±0.005	0.016±0.005	0.016±0.005	0.020±0.005	PE*	PE*	PE*

*Base material

SEKISUI CHEMICAL CO., LTD

HIGH PERFORMANCE PLASTICS COMPANY
SPECIALTY CHEMICALS DIVISION

2-3-17 TORANOMON, MINATO-KU,
TOKYO 105-8450 JAPAN

TEL. +81-3-5521-0929
HP : http://www.sekisui.co.jp/cs/eng/index.html

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