maag
a DOVER company

gala automatik
underwater
pelletizers

EXPANDABLE APPLICATIONS EPS TECHNOLOGY

Pellet Processing Systems for the Plastics Industry

Gala began producing micropellets in 1980, and began working with expandable polymers shortly thereafter. We have placed pelletizing systems in the field for customers to produce expandable polystyrene (EPS). These systems are being used successfully in production today. Gala saw the need to increase our level of research in expandable applications; thus, we have significantly improved our technology in this ever-changing market. Gala now has a team dedicated to expandable applications, which includes the manufacturing and development of EPS.

Your benefits

- Can more economically process smaller batch size runs
- Increased production rate over strand pelletizing systems
- Low energy consumption
- More uniform size pellets than reactor beads
- Greater flexibility to make pellets with a wider variety of formulations (colors, additives and raw base materials) via the extruder process
- Can make reactor seeds or blowing agent containing pellets via the same system
- Same system to produce standard size pellets, minipellets or micropellets

EXPANDABLE APPLICATIONS – EPS TECHNOLOGY

Pellet Processing Systems for the Plastics Industry

To produce EPS, additives are mixed into the base polystyrene with a blender or are fed directly into the extruder. The formulation is compounded to form a melt. Blowing agent, such as Pentane, is injected and mixed into the melt under pressure inside the extruder to keep the pentane in a liquid state. The melt then passes through a filtration system to the die. As the material passes through the die, it enters the pelletizer's cutting chamber, where the EPS is cut in water under pressure to form an expandable pellet (bead).

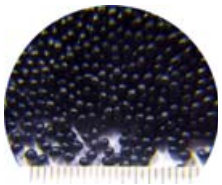
The pellets and process water mix in the cutting chamber. This slurry is pumped to the centrifugal dryer, where the pellets are separated from the water and are dried. The excess water flows back into the tempered water system. The process water is continually cycled back through this closed-loop system to the cutting chamber to cool and convey more pellets.

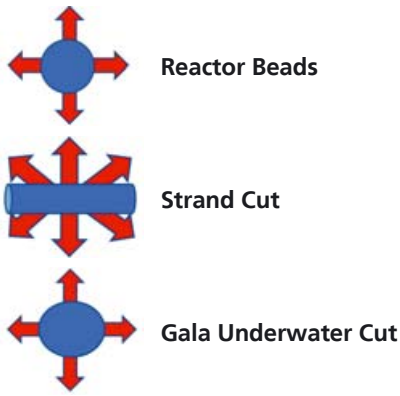
The dry pellets are packaged in special bags to keep the blowing agent in the pellet. They are shipped to the molder, where the pellets are pre-expanded and placed into a mold to make the final desired product.

Gala's EPS Systems are customized to produce the specific pellet size and output rate to fit the customer's needs. Pellet size and rate can be altered in many cases by a simple die plate or cutter hub change or by varying pelletizer speed. Gala Underwater Pelletizers can be used to produce EPS micropellets as small as 0.7 mm, depending on formulation, and even smaller in special applications.

Gala Underwater Pelletizing Systems are ideal to cut EPS pellets because these systems are very flexible. It is much easier to change formulations to make smaller custom runs for specific customers, unlike the Reactor Bead Process that is limited to long cycle times and large batches to be cost-effective. The Reactor Bead Process is also limited in the additives (such as color) that can be added to the material because of the labor-intensive cleaning process between formulations.

Pellets that are cut on strand lines are limited in production rate and need to be consistently monitored for broken strands while the system is running. Strand cut pellets do not expand as consistently as reactor beads and underwater cut pellets, and this can cause poor fusion and a weaker finished product.





	Reactor Beads	Gala Underwater Cut	Strand Cut
Shape	Perfectly Round	Somewhat Round	Cylinder
Equipment Cost	Very Expensive	Moderate	Inexpensive
Process	Batch	Continuous	Continuous
Rate	Reactor Size	System Dependent	System Dependent
Size Distribution	Varied	Good	Good
Flexibility	Formula Dependent	More Flexible	Flexible
Moldability	Good	Good	Moderate
Cell Structure	Excellent	Excellent	Moderate
Small-Size Pellets	Excellent	Moderate	Poor

SAMPLE 1 (Weight of Sample 0.2 lbs)

mm	Mesh	Screen Weight (lbs)	Total Weight (lbs)	Weight of Pellets (lbs)	% of Distribution
1.4	14	0.994	0.994	0.000	0.00%
1.18	16	0.912	0.912	0.000	0.00%
1	18	0.981	0.981	0.000	0.00%
0.85	20	0.896	0.917	0.021	10.50%
0.7	25	0.949	1.127	0.178	89.00%
0.6	30	0.887	0.887	0.000	0.00%
Pan		0.807	0.807	0.000	0.00%
		Total Weight:		0.20	99.50%

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Global contacts, see **www.maag.com**
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