Solid-State Polymerization Systems (SSP) for Recycling PET

Enhance the value of your PET Flake!!

At the present time, post consumer PET bottle recycling is being conducted under the 3R Policy (Reduce Re-use and Recycle) by the Japanese government in order to realize the Circulatory Society. Hosokawa Micron has developed an economical and cost effective SSP process for recycling PET flake as a new recycle application making use of our unique SSP technology. The key word is “Lets enhance the value of PET Flake!”

What is SSP?

SSP stands for Solid State Polymerization. It is well known that post consumer PET bottles are mainly recycled into textiles (or garments), carpets and sheets. The bottle-grade PET has high quality and high performance among the various PET grades, and that presents an opportunity to utilize this high performance in recycled PET products. That leads to enhancing the value of PET flakes. SSP is a process to raise the degree of polymerization (described as I.V.) in order to reinforce the properties of PET. Through the SSP process, the recycled PET flake becomes capable of once again being converted to PET bottles, as well as producing industrial materials and construction materials which require a higher I.V. than PET bottle grade I.V..

Application for “Solid Stated” RPET

I.V.: 0.75–0.85
Bottle (Food Contact)
Bottle (Non-Food Contact)

I.V.: 0.85–1.10
Binding Tape
Engineering Plastic Wire
Others

I.V.: 0.85–1.20
PET Panel
High Intensity Sheet
Others

I.V. = Intrinsic Viscosity, (dl/g)
Hosokawa Micron offers you an innovative and cost effective process for PET recycling.

In Autumn 1999, Hosokawa Micron Corp. installed a state-of-the art RPET SSP pilot plant at its R&D center in Osaka, Japan. We are continually exploring new ways to advance our process capabilities, enhance our RPET quality for use in the PET recycle business. Our test facility is available to process any materials that you wish to study.
Bottle-to-Bottle process is built on Super Washing Technology and SSP Technology. The process enables the manufacture of food contact grade PET bottles from past consumer PET bottles. Hosokawa Micron has developed this process with Mitsui Chemicals Engineering Co., LTD as a strategic alliance.

*Super Washing Technology is developed by Mitsui Chemicals Engineering Co., LTD.

A Bottle-to-Bottle process commercial plant is very cost effective to the processor. The plant is completed with additional Super Washing and SSP systems on the processor's existing PET recycling plant. By enhancing the RPET flake, Hosokawa Micron shows it is committed to making your current recycle business more profitable.

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Introducing a Compact and Versatile Thermal Processor with a High Heat Transfer Rate and a Precise Temperature Control Over a Wide Temperature Range.

Speed-up your new resin and material research projects with the LABOT™-a joint development product from Hosokawa Micron and Matsui Mfg. Co., Ltd.

LABOT™ Torusdisc for Laboratory Use

LABOT™ General

The LABOT™ indirectly heats and cools sample materials through a heat transfer media. This is a valuable tool for conducting studies on heating, drying and chemical reaction when only limited quantities of samples are available. This thermal processing unit is a newly developed TORUSDISC with an effective capacity of 5 liters. It is integrated with a compact circulating and control system for the heating media.

LABOT™ Features

1. System Integration
   Since the heater and the pump for the heating media are built-in, no additional equipment or preparation is required. The unit is ready for operation by connecting it to the specified electrical energy source.

2. Wide Operating Window (120°C to 320°C)
   Experimental studies for a wider range of applications are possible in this unit since the built-in heating media circulating system can operate at up to 320°C.

3. Compact System Design
   No special considerations are required when installing this equipment due to its compact design. The external dimensions of the LABOT™ are 1100mm (W) X 1495mm (L) X 1183mm (H) resulting in considerable savings in expensive laboratory space.

4. Batch and Continuous Operation Capability
   The LABOT™ is equipped with an adjustable weir in the discharge port. Closing the discharge port allows the unit to be operated in a batch mode. Optional feeders and an open discharge port facilitates operating this unit in the continuous mode.

5. First Step to a Commercial Plant
   Reliable R & D results can be obtained with only small quantities of experimental samples with the LABOT™. This is a particularly cost effective first step for validation of a process or scale-up to a production machine. Assistance in scale-up is available at the Hosokawa Technical Development Center at Hirakata in Osaka, Japan and at Minneapolis in Minnesota, USA.
LABOT can feed exhaust gas in batch and continuous operations by a system as shown in the Flow Chart.

LABOT is a joint development product from Hosokawa Micron and Matsui Mfg. Co., Ltd.