

Leak Detection Fundamentals:

Leak Testing PET Containers Produced by the Injection Blow Molding (IBM) Process

Maintain production efficiency while ensuring the integrity of each container you produce

Injection Blow Molding (IBM) is a standard method of producing large quantities of small hollow glass or plastic containers at high speed. Two other main blow molding methods are stretch blow molding (SBM) and injection stretch blow molding (ISBM). The least-used of the three blow molding processes, IBM is typically used to produce small medical and single-serve containers.

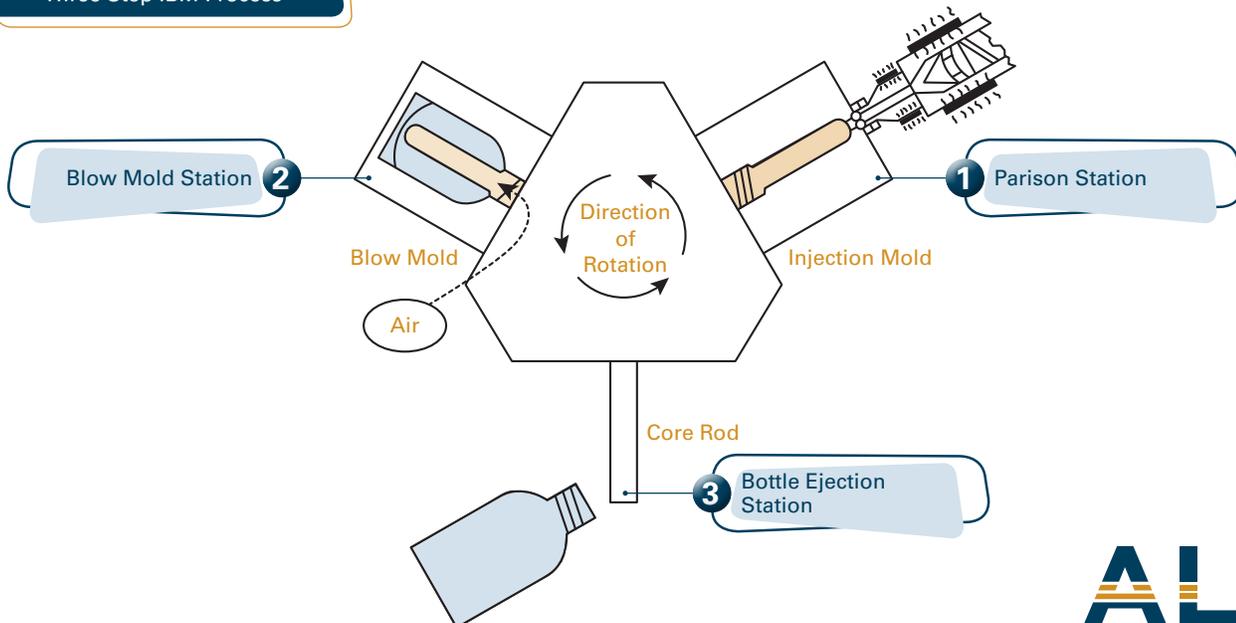
The process can be separated into three steps: injection, blowing, and ejection. The injection blow molding machine is based on an extruder barrel and screw assembly, which melts a polymer, such as PET (polyethylene terephthalate). The molten polymer is fed into a manifold where it is injected into a hollow, heated preform mold. The preform mold provides the external shape of the desired final container, while the core rod (or mandrel) forms the internal shape. The preform consists of a fully-formed and threaded container neck with a thick tube of polymer attached; the attached material will form the container body.

Fundamental Fact

Common Defect Types in IBM PET Containers:

- **Bottom Blow-Outs** are gross leaks in the container base.
- **Short Shots** result when not enough material is used to form a container, and normally means the neck and/or threads are not fully formed.
- **Stretched Necks** are extended container necks caused by problems in the molding process on certain machine types.
- **Contamination Defects** are caused by impurities in the raw material.

Three Step IBM Process



Types of Containers Produced via IBM

The IBM process is ideal for small containers that require precise neck finishes and is commonly used to produce tablet or pill bottles, liquid medicine bottles, dropper bottles, injectables, jars, ovals, cylinders, Boston rounds, roll-on deodorant and mascara containers. A variety of materials may be formed, including HDPE, polypropylene and PET. Injection blow molding rates typically run up to 120 bottles per minute (BPM) or faster: bottle sizes become smaller as molding speeds increase.



A variety of commonly-produced HDPE IBM containers

How Can ALPS Help?

No matter the final purpose of the containers, ensuring consistent quality is key to protecting your inventory and the investment it represents. ALPS offers several lines of leak testing equipment designed to integrate with your IBM production line, enabling you to maintain production efficiency while ensuring the integrity of each container you produce.

When you incorporate ALPS leak detection equipment into your production line, you ensure that each container leaving your line is of the highest integrity. Providing packaging of consistent, high quality protects your reputation as a supplier, as well as the reputation of your customer; it also protects your financial investment by preventing waste and protecting inventory.

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ALPS understands the IBM process and will work with you to understand your individual inspection needs. With several machine types to choose from and a range of targeted testing and handling options to meet the leak testing needs of almost any line or container type, ALPS has the right leak tester for your Injection Blow Molding production line.

Common Defect Types in IBM PET Containers

There are a wide range of defects that can occur during PET container production. Even the smallest defect can produce negative outcomes, including poor or inconsistent product quality and brand reputation. Early identification of defects can help protect your inventory by correcting production errors and avoiding unnecessary waste during the production process. For more information about the different defect types in IBM PET container. ALPS Inspection leak testing equipment is engineered to identify the following types of defects commonly seen in PET IBM container production:

- **Bottom Blow-Outs** are gross leaks in the container base. These are easy to detect with leak testing.
- **Short Shots** result when not enough material is used to form a container, and normally means the neck and/or threads are not fully formed. Detected by sealing on each container for the leak test. If the seal does not form a leak tight connection, the container is rejected. Inspection sensitivity can be fine-tuned by adjusting the Probe Pressure (sealing force) and Seal Durometer (hardness). Short shots that result in short containers with a level seal surface may be detected by using a bottle height inspection option.
- **Stretched Necks** are extended container necks caused by problems in the molding process on certain machine types. This type of defect can be detected during a sealing test (if the neck is not level) or by using height inspection option.
- **Contamination Defects** are caused by impurities in the raw material. If the contamination results in a leak, it can be detected by leak inspection equipment; if the contamination results in a cosmetic defect, rather than a leak, vision inspection is required.

Look to ALPS Inspection for expert advice and state-of-the-art leak inspection solutions that seamlessly integrate into your IBM line.

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to discuss the right solution for
your production needs.