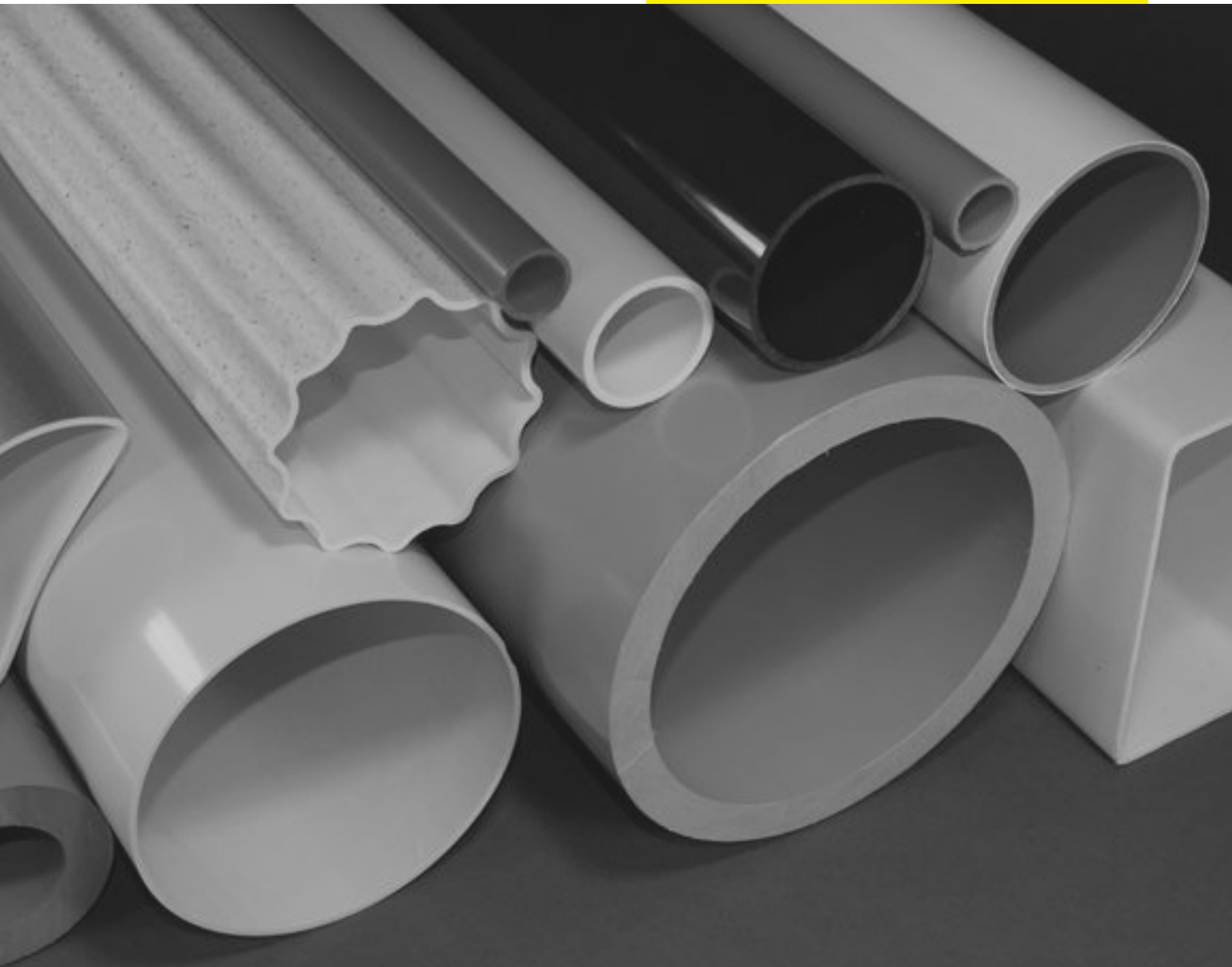


# PVC INJECTION MOLDING: THE BEST PRACTICE DECIPHERED

PREPARED FOR  
FUTURISM  
TECHNOLOGIES

BY  
ANAKIMS VARGHESE



# HISTORY OF POLYVINYL CHLORIDE:

Extraordinary as it may seem, Polyvinyl chloride (PVC) was unintentionally synthesized in 1872, by the German chemist Eugen Baumann when a flask containing Vinyl Chloride had been left exposed to sunlight and the polymer appeared as a white solid.

After numerous failed efforts by scientists over the subsequent decades to utilize this rigid and brittle polymer, it was finally concocted to a form used today by Waldo Semon and the B.F. Goodrich Company, who collectively in 1926 developed a method to plasticize PVC by blending it with additives.

## WHAT IS PVC INJECTION MOLDING?

Due to the incorporation of additives such as plasticizers, lubricants, and heat stabilizers; vinyl is ideal for a variety of construction and industrial applications. Its affordability and durability also make it fit for the production of everyday products such as bottles, clothing, packaging, toiletries, etc.



The injection molding process is the most commonly used method in the production of PVC goods, this process requires the predominant use of an injection molding machine, raw PVC material, and a mold.

To develop the final product without any defects, the material should be processed at the maximum allowable melt temperature without burning. It should be injected at a predefined speed, at the minimum pressure required to fill into the mold details and allowed to remain dormant during the cooling stage.

# A GUIDE THROUGH THE PVC INJECTION MOLDING TECHNIQUE:

**Clamping:** Preceding to the injection of the material into the mold, the two halves of the mold must first be securely fastened by the clamping unit. The hydraulically powered clamping unit actuates the mold halves together and exerts adequate force to keep the mold closed while the material is injected

**Molding Conditions:** Before the material can be injected into the mold, it is crucial to ensure that the melt temperature, cylinder temperature, nozzle temperature, mold, and the injection speed are optimized to the desired level to avoid wastage of material and other related safety hazards

**Injection:** The raw PVC, usually in the form of resin or pellets, is fed into the injection molding machine, and advanced towards the mold by the injection unit during which the plastic is melted by heat and pressure. The molten plastic is then injected into the mold and the buildup of pressure packs and holds the material. The amount of material that is injected is referred to as a shot

**Cooling:** The molten plastic inside the mold promptly begins to cool, and takes the shape of the mold on coming in contact with the mold surfaces. However, there are chances of shrinkage during the cooling of the material. The packing of material in the injection stage allows additional material to flow into the mold and reduce the amount of shrinkage

**Ejection:** Once cooled, the finished product can be ejected from the mold. Any excess material must be trimmed from the part, typically by using cutters. The scrap material that results from this trimming can be recycled by using the regrind machines, which regrinds the scrap material into pellets

## CONCLUSION

Due to the durability and availability of Polyvinyl Chloride, along with the automation of equipment, PVC injection molding is no longer a tedious or manual task. Noticeable advances in resin properties, additives, and molding equipment have allowed molders to take advantage of PVC's favorable economic, flexibility and other such properties, and secure a new era of quality and sustainable lifestyle for the common man.