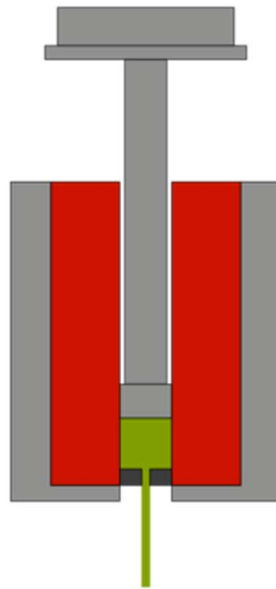


# Determination of Melt Flow Index (MFR and MVR)



The melt flow index measurement is a standardized test method to characterize the flowability of plastics at a defined temperature and constant force with a plastometer.

A thermoplastic material is melted in a heated test barrel. The application of a weight causes a constant pressure on the polymer melt. At the lower end of the test barrel is a standardized capillary through which the polymer melt is extruded. The test starts after a specified melting time. During the test, the amount of material pressed through the capillary per unit of time is measured. The test temperature and the piston-load are always part of the reported test result and depend on the material. The test conditions are typically specified by the material manufacturer in a material standard.

The determination of the melt index is very often used in the incoming goods inspection of plastics processors. The melt index is used as a quality criterion. Even minimal fluctuations in the molecular weight distribution can be identified.

The test method is standardized in the common test standards **ISO 1133** and **ASTM D1238**. Both standards describe basically similar tests. However, some details are different. The two basic tests of the two standards are described below.

## Determination MFR according to ISO 1133 Procedure A / ASTM D1238 Procedure A

When determining the melt flow rate (MFR) according to procedure A, the extruded material strand is cut off at constant time intervals. Using a laboratory balance, the strand sections are weighed and the resulting mass per unit time is given in g/10 min. With this method, the operator must remain with the machine during the test, collecting the strands and then weighing them.

## **Determination MFR/MVR according to ISO 1133 Procedure B / ASTM D1238 Procedure B**

When determining the Melt Volume Rate (MVR) according to procedure B, the extruded volume per unit of time in  $\text{cm}^3/10 \text{ min}$  is determined by the speed of the piston. The melt density used to convert between MVR and MFR can be measured simultaneously.

All plastometers sold by GÖTTFERT are equipped with a sensor to determine the speed of the piston. The measurement is therefore fully automatic.

**We generally recommend the use of method B.** The higher degree of automation makes the test execution easier and more comfortable. The results are more repeatable due to the reduced user influence.

Source: [www.goettfert.com](http://www.goettfert.com), 07.02.2023