

## Melt Flow Rate (MFR)



### Principle

MFR (Melt Flow Rate) measures the outflow rate of a thermoplastic material through a capillary with a predetermined temperature and speed. The result is expressed in g/10 min. MVR (Melt Volume Rate) is expressed in cm<sup>3</sup>/10 min.

Melt flow rate is inversely proportional to viscosity of the melt at the conditions of the test, though it should be borne in mind that the viscosity for any such material depends on the applied force. Ratios between two melt flow rate values for one material at different gravimetric weights are often used as a measure for the broadness of the molecular weight distribution.

Melt flow rate is very commonly used for polyolefins, polyethylene being measured at 190 °C and polypropylene at 230 °C.

It is a limited rheological characterisation providing limited information about viscosity, because it lacks different shear rates. More information is provided by means of a capillary rheometer.

### Method

Approximately 10 gram of granulate is placed in a heated cylinder. The plastic is molten and compressed with a predetermined pressure. The material is pressed through a calibrated opening. The time needed for a determined path is registered. The weight of each extruded material is registered.

### Applications

- Raw material entry control
- Determination of the flow behaviour
- Tracing of possible degradation in processing
- Comparison between materials
- Ranging different formulations of the same plastic

