

Melt Flow Index (MFI) Melt Flow Rate (MFR)

ASTM D1238 (Procedure A), D3364

Scope:

Melt Flow Rate measures the rate of extrusion of thermoplastics through an orifice at a prescribed temperature and load. It provides a means of measuring flow of a melted material which can be used to differentiate grades as with polyethylene, or determine the extent of degradation of the plastic as a result of molding. Degraded materials would generally flow more as a result of reduced molecular weight, and could exhibit reduced physical properties. Typically, flow rates for a part and the resin it is molded from are determined, and then a percentage difference can be calculated. Alternatively, comparisons between “good” parts and “bad” parts may be of value.

Test procedure:

Approximately 7 grams of the material is loaded into the barrel of the melt flow apparatus, which has been heated to a temperature specified for the material. A weight specified for the material is applied to a plunger and the molten material is forced through the die. A timed extrudate is collected and weighed. Melt flow rate values are calculated in g/10 min.

Test specimen size:

At least 14 grams of material is needed.

Data:

Flow rate = (600/t x weight of extrudate)

t = time of extrudate in seconds

Melt flow rate = g/10 min.

