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(4 pages)

This recommendation has been prepared by the Technical Commission of EUROMAP.

1 Scope

This recommendation is intended for the determination of the plasticizing capacity under defined conditions for comparison reasons.

2 Definition

2.1 Plasticizing capacity

Value (g/s) determined by method described below.

3 Measuring method

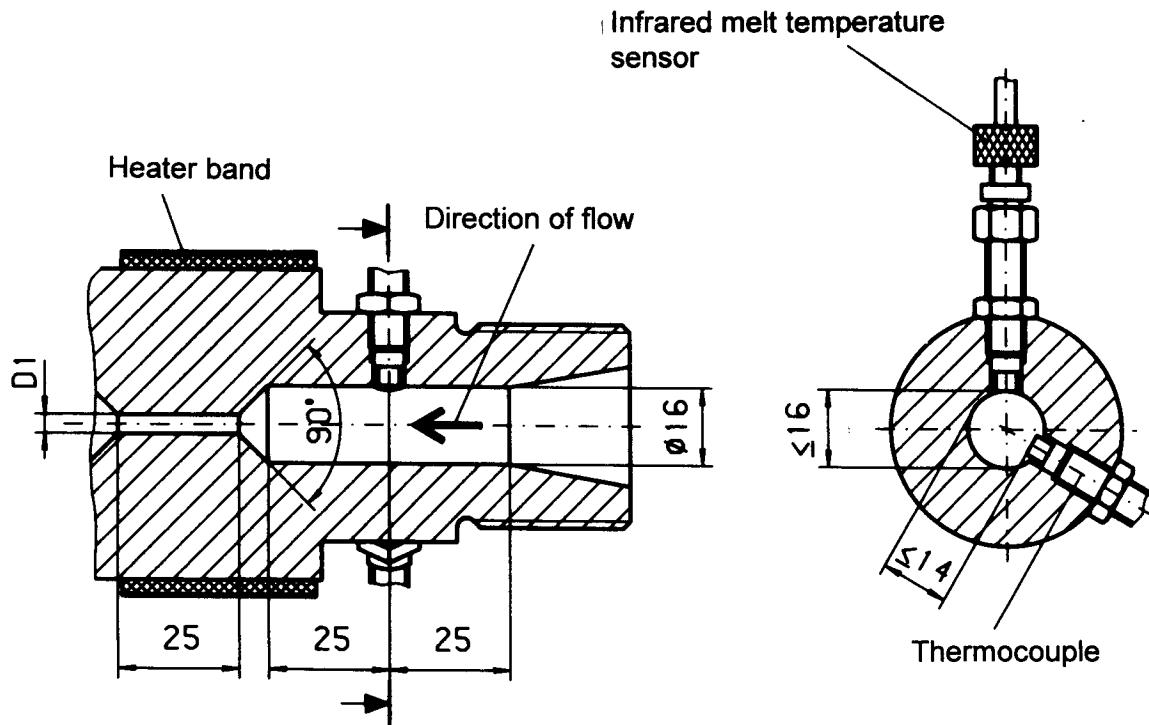


Figure 1: Test nozzle

3.1 Measuring apparatus

The measuring apparatus consists of a heated test nozzle (see figure 1) containing a thermocouple to measure the melt temperature (to avoid calibration problems with the infrared temperature sensor); a infrared temperature sensor to measure the temperature variation of the melt; a temperature recorder and instruments to measure mass and time. The infrared temperature sensor and the temperature recorder shall have response times < 20 ms.

The nozzle diameter shall be selected according to table 1.
The heater band of the nozzle shall be at a temperature of 240 ± 5 °C.

3.2 Test material

The test shall be carried out with unmodified and uncoloured HDPE with a melt index MFR 190/2,16 = 3...4 g/10 min or MVR 190/2,16 = 3,9 ...5,2 cm³ /10 min (see ISO 1133).

3.3 Melt temperature

The temperature of the melt shall be 240 ± 5 °C when starting the measuring, measured with the thermocouple.

3.4 Melt quality

The melt shall show no visual inhomogeneties, gassing or degradation.
The recorded temperature variation of the melt during the complete measuring time shall not exceed 5 °C, measured with the infrared sensor.

3.5 Shot size

The shot size shall be 50 % of the calculated injection volume (see EUROMAP 1).
At the end of the shot the screw shall be in the most forward position.

3.6 Ejection rate

The ejection rate shall be within the limits indicated in table 1.

Calculated injection volume cm ³	D ₁ mm	Ejection rate ± 10 % cm ³ /s
≤ 250	2	25
$> 250 ; \leq 1000$	3	70
$> 1000 ; \leq 3000$	4,5	140
$> 3000 ; \leq 5000$	6	190
$> 5000 ; \leq 10000$	8	230
> 10000	12	260

Table 1: Ejection rate

3.7 Test cycle

The screw rotating time to achieve the specified shot size and the specified melt quality shall be measured and the duration of the cycle adjusted to equal three times this time.

NOTE : Screw speed and back pressure may be selected to minimize the screw rotating time.

3.8 Other machine operating conditions

To avoid dripping a shut off nozzle may be used. A fully automatic operation (see EUROMAP 61) of the machine is preferred.

3.9 Measurement

When all conditions are stabilized the melt temperature variation shall be recorded for 10 consecutive air shots.

The mass of the 10 shots shall be determined and the total screw rotating time for the 10 shots shall be measured.

4 Validation

The plasticizing capacity shall be calculated by dividing the mass of the 10 shots by the total screw rotating time.

5 Indication of values

In technical documents the plasticizing capacity shall be given for comparison reasons only.

Example: Plasticizing capacity (EUROMAP 19) : 71 g/s

EUROMAP

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maschinen

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