

GOST / 16338-77

Title : HIGH DENSITY POLYETHYLENE
TECHNICAL CONDITIONS

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HIGH DENSITY POLYETHYLENE
TECHNICAL CONDITIONS
(EXCERPT)

The present standard relates to low pressure (high density) polyethylene obtained by polymerisation of ethylene at low pressure and establishes its specifications.

1. GRADES AND SPECIFICATIONS

1.1. Designation of basic grades consists of the nomenclature "polyethylene" followed by 5 numerals.

The first numeral indicates that ethylene is polymerised using complex organic metallic catalysts at low pressure. The next two numerals denote the serial number of the basic grade and the fourth numeral indicates the degree of homogeneity of the polyethylene.

Density polyethylene is averaged by cold mixing as indicated by the number 0. The fifth numeral determines the density group.

Example of conventional designation of compositions of polyethylene of basic grade and of high quality.

Polyethylene 208-07 high quality GOST 16338-77.

1.2. Characteristics of recipe 07.

1.2.1. Basic grade - any.

1.2.2. Kind of additive - thermal stabilizer, anti-oxidation additive.

1.2.3. Property of composition - It has high resistance to aging by thermal oxidation; it is lightly coloured.

1.2.4. Recommended application - manufacture of engineering articles including electrical items.

Parameters of basic grades of polyethylene

Parameter	Norms for grade	
	20808-024 high quality	21008-075 first quality
Density, g/cm ³	0.949 to 0.954	0.949 to 0.955
Fluidity index in molten state g/10 min.	2.0 to 3.0	5.0 to 10.0
Spread in fluidity index in the molten state within a batch, % not more than	± 10	± 15
Number of impurities, not exceeding	15	50
Ash content, % not more than	0.015	0.025
Resistance to cracking, hours, not less than	24	

1.4. Electrical parameters of composition 07.

1.4.1. Dissipation factor at 10^6 Hz, not more than 0.0005.

1.4.2. Dielectric permeability at 10^6 Hz, not more than 2.4

1.4.3. Dielectric strength (with specimen thickness 1 mm) kV/mm, not less than 40.

2. SAFETY REQUIREMENTS

2.1. Basic grades of polyethylene and compositions based on them do not give off toxic substances into the surrounding medium at room temperature, nor do they have any effect on the human organism in case of direct contact.

Handling them does not call for any special precautions.

2.2. Fine dust may be formed when polyethylene is graded or mechanically processed. When polyethylene is heated to 140°C and over in the course of reprocessing, volatile products of degradation by thermal oxidation may be given off into the atmosphere. These may contain organic acids and carbonyl compounds including formaldehyde, acetaldehyde and carbon monoxide.

2.3. Production areas where polyethylene is reprocessed must have general forced air ventilation system and local exhaust system in operation. Reprocessing should be done strictly according to the technological regime.

2.4. When a naked flame is brought close to it, polyethylene burns without explosion but with a smoky flame; it goes over to the molten liquid state giving off gaseous products.

Combustion temperature of polyethylene is 300°C; spontaneous combustion occurs at 400°C. In the event of its catching fire all known means of extinguishing may be used.

2.5. Powdered polyethylene is capable of forming explosive mixtures with air. The lower limit of explosiveness of fraction dust of 0.215 mm size is 45.0 g/m³; for 0.815 mm fraction containing 5% of 0.274 mm fraction, it is 12.6 g/m³. Powdered polyethylene must be handled in dust-free atmosphere.

2.6. Rules of protection against static electricity demand that equipment must be earthed and that relative humidity in the operating areas must be not less than 50%.

Work places must be furnished with rubber mats.