PTFE
FLUOROPLAST-4
grade DL, DE

HaloPolymer
www.halopolymer.com

Manufacturer:
“HaloPolymer Perm”, OJSC

QMS for production is certified:
ISO 9001:2015, EN 9100:2016, IATF 16949:2016

Chemical name: **Poly(tetrafluoroethylene) (IUPAC)**
Structural formula: $(C_2F_4)_n$
CAS No. **9002-84-0**
HS code **39 0461 0000**

Fluoroplast-4 grades DL and DE are polymerized in an aqueous dispersion to produce agglomerated fine powder dispersion resin. These grades are suitable for forming films with fine pores.

PROPERTIES	UNITS	TYPICAL VALUE		TEST METHOD
		DL	DE	
Appearance	Fine friable white powder without visible inclusions			Visual (internal method[1])
Particle size, average diameter (d50)	µm	400-650	400-650	Laser-diffraction analyses (internal method[1])
Water content, max	% wt	0.02	0.02	internal method[1]
Bulk density	g/l	450-550	450-550	internal method[1]
Density (SSG)	g/sm^3	2,17-2,21	2,18-2,23	internal method[1]
Tensile strength at break, min	MPa	22,5	22,5	internal method[1]
Elongation at break, min	%	350	340	internal method[1]
Extrusion pressure at RR 100 : 1	MPa	7-17	7-17	internal method[1]
Melting point (initial / second), ±5	˚C	344 / 327	344 / 327	ASTM D4894

Note:
1) The parameters are indicated according to GOST (Russian State Standart), because the manufactured products are analyzed in accordance with the GOST 14906-77. The procedure of sample preparation differs from that in ASTM, ISO, DIN.

Main application:
- production of pipe liners, unsintered tapes, electrical tapes for wrapped insulations, tapes and beading for sealing applications, etc;
- suitable for paste extrusion of pipes and rods for chemical, mechanical, electric applications.

Package:
9 kg (net) card boxes on wooden pallet boards. 70 boxes on one pallet. Gross weight per pallet is 730 kg. Plastic drums with 14 kg (net) PE on wooden pallet boards.

Guarantee storage life:
24 months from the date of manufacture.

LIMITED LIABILITY COMPANY
Trading house HaloPolymer
Moscow, Russian Federation
tel.: +7 (495) 725 44 00

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Processing:

Fluoroplast-4 grades DL and DE are fabricated by paste extrusion, where PTFE powder is first blended at temperatures below 19°C with a hydrocarbon lubricant which acts as an extrusion aid. After ageing at about 30°C it is then formed into a cylindrical preform at a fairly low pressure and placed inside the barrel of a paste extruder where it is forced through a die with a constant extrusion rate at 30-50°C.

The extrudate is passed through multiple ovens and a cooling device where it is first dried, then sintered, and finally cooled. Drying and sintering can be performed continuously “in line” with the extrusion or in separate drying and sintering ovens.

Storage and handling:

Storage and handling preforming is the easiest when the resin is uniformly between 21–27°C (70–80°F). As the temperature declines below this range, the resin will be increasingly difficult to mold without cracks and problems with condensed moisture. Higher temperatures inhibit flow and promote lumping. Storage conditions should be set accordingly.
Cleanliness is a critical requirement for successful usage of PTFE. The white resin and high sintering temperatures cause even very small foreign particles to become visible in finished moldings. Keep resin boxes closed and clean. Good housekeeping and careful handling are essential.

PFOA FREE

Quality data:

HaloPolymer does not use PFOA/APFO or its salts/LCPFAC in the process of polymerization of TFE.
HaloPolymer PTFE is compliant with RoHS Directive 2011/65/EU
FDA 21 CFR 177.1380 & FDA 21 CFR 177.1550
Class VI acc. USP 35 ‹88›
3-A Sanitary Standard for Multiple-Use Plastic Materials 20-27

Safety Precautions:

WARNING! VAPORS CAN BE LIBERATED THAT MAYBE HAZARDOUS IF INHALED.
Before using Halopolymer Fluoroplast-4 (PTFE) read the Material Safety Data Sheet.
Open and use containers only in well-ventilated areas using local exhaust ventilation. Vapors and fumes liberated during hot processing or from smoking tobacco or cigarettes contaminated with Halopolymer Fluoroplast may cause flu-like symptoms (chills, fever, sore throat) that may not occur until several hours after exposure and that typically pass within 24 hours. Vapors and fumes liberated during hot processing should be exhausted completely from the work area; contamination of tobacco with polymers should be avoided. Mixtures with some finely divided metals, such as magnesium or aluminum, can be flammable or explosive under some conditions.

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