FKM Ultra-Low-Temp 90P

FKM-ULT90P-01 · FKM · 90 Shore A · Peroxide cure · −55 °C to +200 °C

HPHT HPLT

Our coldest fluoroelastomer: designed to seal at −55 °C.

READ THE CODE FKM-ULT90P-01 = FKM, ULT duty (ultra-low temperature, sealing at −55 °C or below), 90 Shore A, P for peroxide cure, recipe 01.

DEVELOPMENT TARGETS: NOT MEASURED RESULTS. Every value on this sheet is a design target or a release limit for development. Replace targets with measured typical values (mean of production lots, with the number of lots) and the test report reference before external use.

Description

A 90 Shore A fluoroelastomer for the coldest HPLT duties: TR10 at or below −40 °C and a design target of sealing at −55 °C, with FKM chemical resistance to 200 °C.

POLYMER	FKM (fluoroelastomer)
DUTY	ULT: ultra-low temperature
CHEMISTRY	Peroxide-cured low-temperature fluoroelastomer, high PMVE content
CURE	Peroxide
HARDNESS	90 Shore A nominal
DESIGN RANGE	−55 °C to +200 °C
COLOUR	Black
PORTFOLIO	Wave 2, probable
POLE MARKS	HPHT + HPLT

Applications

- Arctic wellheads and valves (API 6A temperature class L and colder duties, where testing supports them)
- Hydrogen and gas equipment at very low temperature
- Low-temperature fuel and hydraulic seals in energy equipment
- Cold-stored emergency and intervention equipment

Properties: targets and release limits

PROPERTY	TARGET	RELEASE LIMIT	UNIT	TEST METHOD
Hardness	**90**	**85 to 95**	Shore A	ASTM D2240 / ISO 48-4, 1 s
Specific gravity	**1.80**	**±0.02 of approved value**	—	ASTM D297 / ISO 2781
Tensile strength	**12**	**min 10**	MPa	ASTM D412 die C / ISO 37 type 2
Elongation at break	**120**	**min 90**	%	ASTM D412 die C / ISO 37 type 2
Modulus at 100 %	**9**	**7 to 12**	MPa	ASTM D412 die C / ISO 37 type 2
Compression set, 22 h at 200 °C	**22**	**max 30**	%	ASTM D395 method B, button
TR10	**−42**	**max −40**	°C	ASTM D1329 / ISO 2921
Low-temperature sealing (product test)	**−55**	**no leak at −55**	°C	Product-configured O-ring test at pressure
IRM 903, 168 h at 150 °C, volume change	**+5**	**max +12**	%	ASTM D471 / ISO 1817

Qualification plan

The grade code says what this compound is designed for. This table says what it has passed: a duty is claimed only once its report is on file. Evidence for the ULT duty: TR10 (ASTM D1329) and a low-temperature sealing test at the rated temperature.

TEST	STANDARD OR METHOD	CONDITIONS	STATUS
Low-temperature sealing	Product-configured O-ring test (method published with the report)	Sealing at −55 °C at rated pressure; leak onset temperature reported with TR10 of the same lot	Planned
Rapid gas decompression	ISO 23936-2 Annex B / NORSOK M-710	90/10 CH4/CO2, 15 MPa, 100 °C, 8 cycles, about 2 MPa/min decompression; 5.33 mm and 6.99 mm sections; target rating 0000 to 1111 (0 to 3 passes)	Planned
Sour ageing and life prediction	ISO 23936-2 Annex A / NORSOK M-710	Sour multiphase fluid (hydrocarbon liquid, water, gas with H2S) at three temperatures; Arrhenius extrapolation to service temperature	Planned
Elastomer immersion	API 6A Annex F, material class FF/HH	10 % H2S / 80 % CO2 / 10 % CH4 gas phase, at least 6.9 MPa, at least 160 h at 177 °C; NORSOK-style acceptance limits	Planned
Hydrogen decompression (optional)	ISO 23936-2 Annex B adapted to 100 % H2	As for HNBR H2 80P	Planned

Processing

Press cure guide: 10 min at 177 °C. Post-cure guide: 4 h at 230 °C. Confirm on the rheometer curve for each lot.

Storage and lot record

Target 6 months at or below 25 °C. Every lot ships with its Passport: results against these limits, the rheometer cure curve and the raw-material lots.

How to read this sheet

Target: the value the compound is designed to reach, used until measured data exists.

Typical: the mean of measured production lots, stated with the number of lots. Replaces the target.

Release limit: the window every lot is tested against. A lot outside it does not ship.

Method: the standard, specimen and conditions behind each number.

Supply

Supplied as uncured compound by the batch, with the lot Passport. Test slabs, buttons and trial quantities are available for qualification.

Tell us the fluid, the temperature range, the pressure and the seal design, and we will say whether this grade fits, and which one does if it does not.

Pole marks on this grade

HPHT: designed for high-pressure duty (rapid gas decompression, extrusion or sour gas at pressure) at 160 °C or above. HPLT: designed to seal under pressure at −30 °C or below. Neither term has an industry-wide definition. These are Pascalor rules, and every datasheet states the actual numbers.

Typical values are indicative and are not a warranty. Targets are design values, not measured results. The user is responsible for confirming suitability in the actual application. Pascalor · Compounds with a paper trail.