HNBR Packer 90P

HNBR-PKR90P-01 · HNBR · 90 Shore A · Peroxide cure · −20 °C to +160 °C

HPHT

The hard ends that keep a packer element where it belongs.

READ THE CODE HNBR-PKR90P-01 = HNBR, PKR duty (packer elements), 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 high-modulus peroxide HNBR for packer end elements, anti-extrusion rings and back-ups, where the job is to stop the softer centre element extruding through the gap under differential pressure.

Applications

- End elements of multi-durometer packers
- Anti-extrusion rings and back-ups for seal stacks
- High-pressure static seals with larger extrusion gaps
- Bridge plug and frac plug elements

POLYMER	HNBR (hydrogenated nitrile)
DUTY	PKR: packer elements
CHEMISTRY	Peroxide-cured hydrogenated nitrile, high modulus
CURE	Peroxide
HARDNESS	90 Shore A nominal
DESIGN RANGE	−20 °C to +160 °C
COLOUR	Black
PORTFOLIO	Wave 1, must-have
POLE MARKS	HPHT

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	**1.25**	**±0.02 of approved value**	—	ASTM D297 / ISO 2781
Tensile strength	**22**	**min 18**	MPa	ASTM D412 die C / ISO 37 type 2
Elongation at break	**150**	**min 110**	%	ASTM D412 die C / ISO 37 type 2
Modulus at 100 %	**14**	**11 to 17**	MPa	ASTM D412 die C / ISO 37 type 2
Tear strength	**38**	**min 30**	kN/m	ASTM D624 die C
Compression set, 70 h at 150 °C	**30**	**max 40**	%	ASTM D395 method B, button
TR10	**−20**	**max −18**	°C	ASTM D1329 / ISO 2921
Gap extrusion at 150 °C, onset pressure	**To be measured**	**Reported, no limit yet**	MPa	In-house extrusion fixture, gap stated

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 PKR duty: Compound data (modulus, compression set, gap extrusion); packer validation to ISO 14310 / API 11D1 is done on the tool.

TEST	STANDARD OR METHOD	CONDITIONS	STATUS
Extrusion test	In-house fixture, method published with results	Onset of extrusion at 150 °C across stated gaps	Planned
Packer element test	API 11D1 / ISO 14310, with a packer OEM	As part of an HNBR Packer 75S and HNBR Packer 90P element set	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

Processing

Press cure guide: 10 min at 180 °C. Post-cure guide: 4 h at 150 °C (optional, for lowest compression set).

Storage and lot record

Target 4 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. Neither term has an industry-wide definition. These are Pascalor rules, and every datasheet states the actual numbers.