HNBR H2 80P

HNBR-H2-80P-01 · HNBR · 80 Shore A · Peroxide cure · −40 °C to +150 °C

HPLT

700 bar and −40 °C: the hydrogen dispenser's day.

READ THE CODE HNBR-H2-80P-01 = HNBR, H2 duty (hydrogen service), 80 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

An 80 Shore A low-temperature HNBR for hydrogen service: decompression in 100 % hydrogen, sealing at −40 °C as fuelling protocols require, and permeation data stated.

Applications

- Hydrogen refuelling dispensers, nozzles and breakaways
- Station valves, filters and joints (ISO 19880-7 O-rings)
- Vehicle-side receptacles and valves exposed to pre-cooled gas
- Cold-climate hydrogen equipment

POLYMER	HNBR (hydrogenated nitrile)
DUTY	H2: Hydrogen
CHEMISTRY	Peroxide-cured hydrogenated nitrile, low acrylonitrile, hydrogen grade
CURE	Peroxide
HARDNESS	80 Shore A nominal
DESIGN RANGE	−40 °C to +150 °C
COLOUR	Black
PORTFOLIO	Wave 3, probable
POLE MARKS	HPLT

Properties: targets and release limits

PROPERTY	TARGET	RELEASE LIMIT	UNIT	TEST METHOD
Hardness	**80**	**75 to 85**	Shore A	ASTM D2240 / ISO 48-4, 1 s
Tensile strength	**20**	**min 16**	MPa	ASTM D412 die C / ISO 37 type 2
Elongation at break	**220**	**min 150**	%	ASTM D412 die C / ISO 37 type 2
Compression set, 22 h at 150 °C	**20**	**max 28**	%	ASTM D395 method B, button
TR10	**−32**	**max −30**	°C	ASTM D1329 / ISO 2921
Low-temperature sealing (product test)	**−40**	**no leak at −40**	°C	Product-configured O-ring test at pressure
Hydrogen permeability	**To be measured**	**Reported, no limit yet**	—	ISO 2782-1

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 H2 duty: Hydrogen decompression or permeation data at the stated conditions, and the stack maker's ageing tests for fuel cells and electrolysers.

TEST	STANDARD OR METHOD	CONDITIONS	STATUS
Station O-ring requirements	ISO 19880-7:2025, with a dispenser or valve maker	Up to 70 MPa nominal working pressure, −40 °C to +65 °C, on the customer housing	Planned
Rapid decompression in hydrogen	ISO 23936-2 Annex B adapted to 100 % H2	100 % H2 at up to 87.5 MPa, 65 °C, 8 cycles, 5.33 mm section	Planned
Low-temperature sealing	Product-configured O-ring test (method published with the report)	Sealing at −40 °C at rated pressure; leak onset temperature reported with TR10 of the same lot	Planned
Permeability	ISO 2782-1	Hydrogen at 23 °C and 65 °C	Planned
Low-temperature cycling	With gas pre-cooled as in SAE J2601, with a dispenser maker	Pressure cycles at −40 °C (number agreed with the maker)	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

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.