EPDM H2 75P

EPDM-H2-75P-01 · EPDM · 75 Shore A · Peroxide cure · −40 °C to +120 °C ○ NO POLE MARK

Hot potash or pure water and oxygen: one EPDM for the electrolyser stack.

READ THE CODE EPDM-H2-75P-01 = EPDM, H2 duty (hydrogen service), 75 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 75 Shore A peroxide-cured EPDM for electrolyser stacks and their balance of plant: resistance to 25 to 30 % potassium hydroxide at 85 °C in alkaline stacks, to deionised water and oxygen in PEM stacks, low extractables to protect membranes and catalysts, and no fluorine in the formulation.

POLYMER	EPDM (ethylene propylene diene)
DUTY	H2: Hydrogen
CHEMISTRY	Peroxide-cured EPDM, low extractables, no fluorine in the formulation
CURE	Peroxide
HARDNESS	75 Shore A nominal
DESIGN RANGE	−40 °C to +120 °C
COLOUR	Black
PORTFOLIO	Wave 2, probable
POLE MARKS	None

Applications

- Alkaline electrolyser stack gaskets and frame seals (KOH)
- PEM electrolyser water and oxygen circuits
- Electrolyte and water pumps, valves and gas separators in the balance of plant
- Seals overmoulded on stack plates (with a bonding agent)

Properties: targets and release limits

PROPERTY	TARGET	RELEASE LIMIT	UNIT	TEST METHOD
Hardness	**75**	**70 to 80**	Shore A	ASTM D2240 / ISO 48-4, 1 s
Specific gravity	**1.12**	**±0.02 of approved value**	—	ASTM D297 / ISO 2781
Tensile strength	**14**	**min 11**	MPa	ASTM D412 die C / ISO 37 type 2
Elongation at break	**300**	**min 200**	%	ASTM D412 die C / ISO 37 type 2
Compression set, 22 h at 150 °C	**12**	**max 20**	%	ASTM D395 method B, button
TR10	**−45**	**max −40**	°C	ASTM D1329 / ISO 2921
30 % KOH, 1,000 h at 85 °C, volume change	**+3**	**max +8**	%	ASTM D471 / ISO 1817
30 % KOH, 1,000 h at 85 °C, hardness change	**−3**	**−8 to +5**	points	ASTM D471 / ISO 1817
Deionised water, 1,000 h at 90 °C, volume change	**+3**	**max +8**	%	ASTM D471 / ISO 1817
Ionic extractables, 168 h at 90 °C in deionised water	**To report**	**Agreed with the stack maker**	—	Conductivity and ion chromatography of the soak water

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
Electrolyte ageing	In-house method, published with results	25 to 30 % KOH at 85 °C for 1,000 h and 3,000 h, free and compressed: volume, hardness, tensile and compression set	Planned
Water and oxygen ageing	In-house method, published with results	Deionised water and oxygen-saturated water at 80 to 90 °C for 1,000 h	Planned
Extractables	Conductivity and ion chromatography of the soak water	Ions and organics released in 168 h at 90 °C	Planned
Hydrogen permeability	ISO 2782-1	Hydrogen at 23 °C and 80 °C	Planned
Stack qualification	ISO 22734 system requirements, with an electrolyser maker	On the customer's stack design	Planned

Processing

Press cure guide: 10 min at 175 °C. Post-cure guide: 4 h at 150 °C, which also lowers extractables. For seals moulded onto stack plates, a bonding agent chosen with the plate maker.

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

This is a reference or general grade and carries no pole mark. The red HPHT mark is for high-pressure duty at 160 °C or above; the blue HPLT mark is for sealing under pressure at −30 °C or below.