EPDM H2 60P

EPDM-H2-60P-01 · EPDM · 60 Shore A · Peroxide cure · −40 °C to +120 °C ○ NO POLE MARK

Hundreds of cells, one gasket, and nothing that leaches into the membrane.

READ THE CODE EPDM-H2-60P-01 = EPDM, H2 duty (hydrogen service), 60 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 60 Shore A peroxide-cured EPDM for PEM fuel cell stack gaskets and balance-of-plant seals: low compression set at 90 to 120 °C for a low closing force over a long life, resistance to humidified hydrogen and air, acidic product water and glycol coolant, low ionic extractables, flexibility for cold starts to −40 °C, and no fluorine.

POLYMER	EPDM (ethylene propylene diene)
DUTY	H2: Hydrogen
CHEMISTRY	Peroxide-cured EPDM, low hardness, low extractables, no fluorine in the formulation
CURE	Peroxide
HARDNESS	60 Shore A nominal
DESIGN RANGE	−40 °C to +120 °C
COLOUR	Black
PORTFOLIO	Wave 3, probable
POLE MARKS	None

Applications

- PEM fuel cell stack gaskets on bipolar plates
- Humidifier, coolant and air-path seals in the balance of plant
- Fuel cell power units for buses, trucks and stationary back-up power

Properties: targets and release limits

PROPERTY	TARGET	RELEASE LIMIT	UNIT	TEST METHOD
Hardness	**60**	**55 to 65**	Shore A	ASTM D2240 / ISO 48-4, 1 s
Tensile strength	**10**	**min 8**	MPa	ASTM D412 die C / ISO 37 type 2
Elongation at break	**350**	**min 250**	%	ASTM D412 die C / ISO 37 type 2
Compression set, 22 h at 120 °C	**12**	**max 20**	%	ASTM D395 method B, button
Compression set, 1,000 h at 90 °C	**20**	**max 30**	%	ISO 815-1
TR10	**−50**	**max −45**	°C	ASTM D1329 / ISO 2921
Dilute sulfuric acid at pH 3, 1,000 h at 90 °C, hardness change	**−2**	**−5 to +5**	points	ASTM D471 / ISO 1817
Ethylene glycol and water (50/50), 1,000 h at 90 °C, volume change	**+2**	**max +6**	%	ASTM D471 / ISO 1817
Ionic extractables, 168 h at 90 °C in deionised water	**To report**	**Agreed with the stack maker**	—	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
Acid ageing	In-house method, published with results	Dilute H2SO4 at pH 3, 90 °C, 1,000 h, with compression set and stress relaxation	Planned
Coolant ageing	ASTM D471 / ISO 1817	50/50 ethylene glycol and water at 90 °C, 1,000 h	Planned
Extractables	Ion chromatography and conductivity of the soak water	168 h at 90 °C in deionised water	Planned
Compression stress relaxation	ISO 3384	At 90 °C and 120 °C, 1,000 h	Planned
Stack qualification	IEC 62282 series, with a stack maker	On the customer's bipolar plates	Planned

Processing

Press or injection moulding guide: 4 min at 180 °C for thin sections. Post-cure guide: 4 h at 150 °C, which also lowers extractables. For gaskets moulded onto 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.

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.