EPDM Radiation 80P

EPDM-RAD80P-01 · EPDM · 80 Shore A · Peroxide cure · −40 °C to +140 °C ○ NO POLE MARK

For seals that work where people cannot.

READ THE CODE EPDM-RAD80P-01 = EPDM, RAD duty (radiation resistance), 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 EPDM for nuclear power plant pumps, valves and penetrations: radiation resistance, low halogen and sulfur content, and steam resistance for accident conditions.

Applications

- Primary and secondary cooling circuit pumps and valves
- Penetration and hatch seals
- Spent fuel and waste container seals
- Radiation-area equipment

POLYMER	EPDM (ethylene propylene diene)
DUTY	RAD: nuclear
CHEMISTRY	Peroxide-cured EPDM, radiation-resistant, low halogen and sulfur
CURE	Peroxide
HARDNESS	80 Shore A nominal
DESIGN RANGE	−40 °C to +140 °C
COLOUR	Black
PORTFOLIO	Wave 3, probable
POLE MARKS	None

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	**14**	**min 11**	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 125 °C	**15**	**max 25**	%	ASTM D395 method B, button
Elongation retained after gamma irradiation to 1,000 kGy	**To be measured**	**min 50 (target)**	%	Irradiation at an accredited facility
Halogens and sulfur, each	**To be measured**	**max 200**	ppm	Combustion ion chromatography
Hot water, 168 h at 140 °C, volume change	**+3**	**max +8**	%	ASTM D471 / ISO 1817
Steam, 24 h at 170 °C	**No cracking**	**no cracking**	—	In-house autoclave method

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 RAD duty: Gamma-irradiation ageing at the stated dose.

TEST	STANDARD OR METHOD	CONDITIONS	STATUS
Radiation ageing	Plant-specific nuclear qualification	Gamma dose and accident steam per the owner's specification	Planned
Chemical purity	Halogen and sulfur analysis	Each lot	Planned

Processing

Press cure guide: 10 min at 175 °C. Post-cure guide: 2 h at 150 °C (optional).

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.