



MARKEZ® Z1412 PERFLUOROELASTOMER TECHNICAL DATASHEET

HIGH TEMPERATURE BLACK PERFLUOROELASTOMER

Z1412 Compound offers high temperature resistance for long-term exposure. Z1412 also offers high pressure and explosive decompression resistance.

The high modulus of Makes Z1412, makes it resistant to extrusion and ideal for use in high-pressure environments. In addition, the low long-term compression set provides a high mean time between maintenance cycles in hot chemically aggressive environments.

Z1412 is suitable for both dynamic and static applications.

FEATURES AND BENEFITS

- NORSOK M-710 Tested
- High Durometer
- Explosive decompression resistance
- Excellent chemical resistance to a wide range of chemicals
- Exceptional acid and amine resistance
- Superior mechanical properties
- High sealing efficiency

APPLICATIONS

- Jet engines
- Diesel
- Chemical industry
- Oil and gas equipment

**Tested to:
 NORSOK M-710**



TYPICAL PHYSICAL PROPERTIES

Property	ASTM	ISO	Value
Material Type	FFKM	FFPM	
Color		Black	
Hardness: (°IRHD)	D1415	ISO48	90
Tensile Strength (MPa)	D412	ISO37	20.4
Elongation at break (%)	D412	ISO37	117%
100% Modulus (MPa)	D412	ISO37	17.4
Compression Set:			
72 hrs @ 200°C (392°F)	D395	ISO815	30%
Minimum Operating Temperature			-15°C (+5°F)
Maximum Operating Temperature			+310°C (+590°F)

This information is to the best of our knowledge accurate and reliable. However, Marco Rubber makes no warranty, expressed or implied, that parts manufactured from this material will perform satisfactorily in the customer's application. It's the customer's responsibility to evaluate parts prior to use.

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HEAT RESISTANCE – ASTM D 573 – 70 hrs. @ 275° C	TEST RESULTS
Change In hardness	+1.5%
Change in tensile strength	-10%
Change in ultimate elongation	+16%

FLUID RESISTANCE – ASTM D 471 – MEK - 168 hrs. @ 40° C	TEST RESULTS
Change in hardness	-3%
Change in volume	+5%

FLUID RESISTANCE – ASTM D 471 – WATER+GLYCOL - 168 hrs. @ 150° C	TEST RESULTS
Change in hardness	-1%
Change in volume	+1.5%

FLUID RESISTANCE – ASTM D 471 – STEAM - 168 hrs. @ 200° C	TEST RESULTS
Change in hardness	-4%
Change in volume	+3.2%

NORSOK M-710 TESTING PARAMETERS

0-rings Details:

Size: BS 1806 size -312

Section diameter: 5.33 mm, nominal; 5.23 mm, actual (radial)

Groove fill: 64%, calculated

Test Gas: 10 mol% CO₂ in methane; certified.

Procedure and Test Conditions

For each test cycle the following procedure and conditions applied:

- 1) the assembly was heated to 100°C and this temperature maintained throughout
- 2) a pressure of 150 bar, using the test gas, was applied
- 3) this pressure was maintained for 72 hours minimum (cycle 1)
- 4) gas was vented in 7.5 minutes at a constant rate of ca20bar/min from 150 bar to atmospheric
- 5) after 1 hour, test pressure was re-applied, for 24 hours (cycle 2)
- 6) subsequent cycles (3-10) were of duration 24 hours.

After the test, each of the three replicate test 0-rings was quartered and the exposed surfaces rated according to Table B.2 in the NORSOK M 710 Rev 2 standard:

NORSOK Rating for 0-rings

Compound	Summary Rating (Average of three)	PASS/FAIL
Markez Z1412	0000	PASS

Summary

MARKEZ Z1412 0-rings (size 312) meet the RGD acceptance requirement given in the NORSOK M-710 standard [Rev. 2, October 2001]. This acceptance applies at all pressure and temperature combinations up to the levels employed above, and only for the groove geometry employed in testing.

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