materials engineering research laboratory

TEST CERTIFICATE

This document certifies that

V1238 O-rings from

Seal Group, Parker Hannifin Corporation

passed the requirements of

NORSOK M710 in respect of rapid gas decompression resistance in 3% carbon dioxide at 150 bar and 100°C

Test gas:	3% CO_2 balance methane
Test temperature:	100°C
Test pressure:	150 bar (15 MPa)
Decompression rate:	20 bar/minute
Passed by :	G J Morgan (B Sc. Hons.)
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MATERIALS ENGINEERING RESEARCH LABORATORY LTD
Wilbury Way, Hitchin, Hertfordshire, SG4 0TW, United Kingdom. T: +44 (0) 1462 427850 F: +44 (0) 1462 427851
enquiries@merl-ltd.co.uk www.merl-ltd.co.uk

MERL verify that O-rings manufactured by Seal Group, Parker Hannifin Corporation from their elastomer V1238 have been subjected to a multicycle series of rapid gas decompression tests under the conditions detailed below. After 10 cycles, no failures were seen in any of the four test O-rings. These results indicate that the V1238 elastomer can be realisticaly considered for use in the same or less severe conditions.

Seal Conditions

O-ring details:-	Elastomer	V1238
	Size	BS 1806 size 312
	Section dimater	5.33mm
	Internal diameter	15.24mm

Test Gas

3% CO_2 in methane

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 (15 MPa), using the test gas, was applied
3) this pressure was maintained for 72 hours minimum initially
4) a rapid decompression in 7.5 minutes from 150 bar to ambient was performed
5) ambient pressure was maintained for one hour and pressure cycled every 24 hours

After 10 cycles, each O-ring was quartered, inspected and observations recorded.

Observations

O-ring	Observations on test O-ring after test
1	One crack across 75% of one cross section, no splits cracks, blisters or unevenness in other three sections
2	One crack across 10% of one cross section, no splits cracks, blisters or unevenness in other three sections
3	No splits cracks, blisters or unevenness in any sections
4	No splits cracks, blisters or unevenness in any sections

Summary

For four V1238 O-rings tested, no elastomer failures occurred after 10 rapid gas decompression cycles made under the conditions described above.