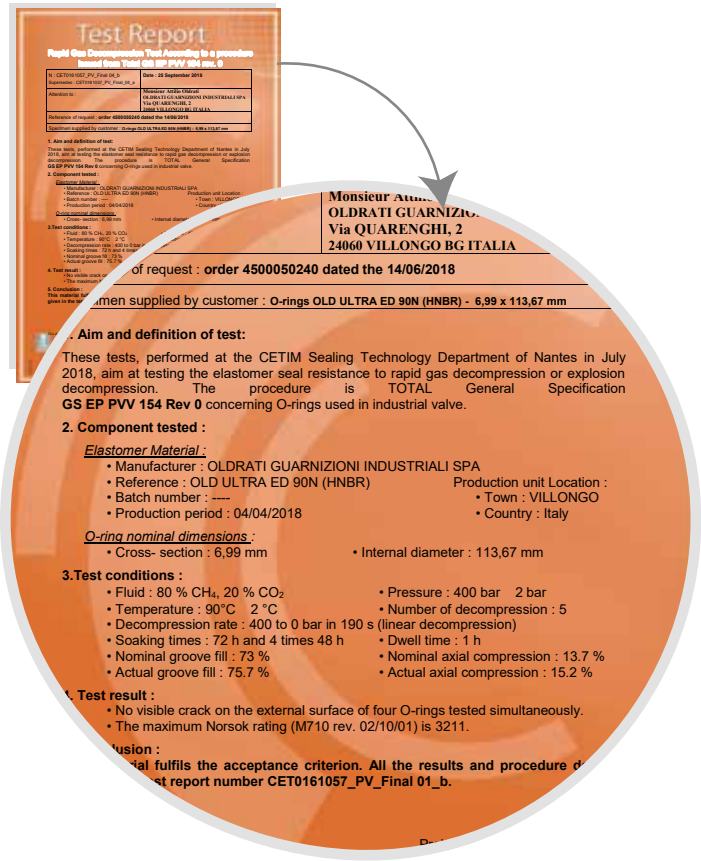
OLD ULTRA ED 90N

OLD ULTRA ED 90N qualified according to TOTAL GS PVV 154 rev.0

Oldrati Group obtained the **TOTAL GS PVV 154 rev.0** qualification for its new **HNBR** material **OLD ULTRA ED 90N**.

The qualification was achieved thanks to the development of a new material capable of resisting to extremely critical conditions that can be found in Oil Extraction activities: **high pressure, extreme temperatures, aggressive chemicals** and the even more severe conditions that may occur in the most recent drilling sites.



Test Report

Rapid Gas Decompression Test According to a procedure based from Total GS EP PVV 154 rev. 0

N. CET0161057_PV_Final 04_b
Extension : CETIM 1SE_PV_Final_04_b

Date : 25 September 2018

Attention to :

Monsieur Attilio Oldrati
OLDRATI GUARNIZIONI INDUSTRIALI SPA
Via QUARENGHI, 2
24060 VILLONGO BG ITALIA

Reference of request : order 4500050240 dated the 14/06/2018

Specimen supplied by customer : O-rings OLD ULTRA ED 90N (HNBR) - 6,99 x 113,67 mm

1. Aim and definition of test:

These tests, performed at the CETIM Sealing Technology Department of Nantes in July 2018, aim at testing the elastomer seal resistance to rapid gas decompression or explosion decompression. The procedure is TOTAL General Specification **GS EP PVV 154 Rev 0** concerning O-rings used in industrial valve.

2. Component tested :

Elastomer Material :

- Manufacturer : OLDRATI GUARNIZIONI INDUSTRIALI SPA
- Reference : OLD ULTRA ED 90N (HNBR)
- Batch number : ----
- Production period : 04/04/2018

Production unit Location :

- Town : VILLONGO
- Country : Italy

O-ring nominal dimensions :

- Cross- section : 6,99 mm
- Internal diameter : 113,67 mm

3.Test conditions :

- Fluid : 80 % CH_4, 20 % CO_2
- Temperature : 90°C 2 °C
- Pressure : 400 bar 2 bar
- Number of decompression : 5
- Decompression rate : 400 to 0 bar in 190 s (linear decompression)
- Soaking times : 72 h and 4 times 48 h
- Dwell time : 1 h
- Nominal groove fill : 73 %
- Nominal axial compression : 13.7 %
- Actual groove fill : 75.7 %
- Actual axial compression : 15.2 %

4. Test result :

- No visible crack on the external surface of four O-rings tested simultaneously.
- The maximum Norsok rating (M710 rev. 02/10/01) is 3211.

5. Conclusion :

This material fulfils the acceptance criterion. All the results and procedure d
gives in the test report number CET0161057_PV_Final 01_b.

TOTAL qualified **OLD ULTRA ED 90N** according to the **GS PVV 154 rev.0** criteria that includes the following conditions:

- O-Ring dimension:	**113,67 x 6,99 mm**
- Testing pressure:	**400 bar**
- Testing temperature:	**90° C**
- Gas mixture:	**20% CO_2 - 80% CH_4**
- Decompression Rate:	**from 400 bar to 0 bar in 190 sec**
- Hardness ShA:	**85 ÷ 90**

In test conditions, swelling phenomenon is enhanced by CO2; as a matter of fact, due to the high pressure, CO2 can be found in supercritical state, for this reason, its solvation strength is significantly higher than the gas state.

It is easy to predict possible severe damages that may occure during decompression cycles.

The Rapid Gas Decompression test was performed at CETIM (Centre Technique des Industries Mécaniques) in Nantes.

Founded in 1964 in Italy, Oldrati Group is recognized as one of the international leaders in Rubber and Plastic sector.
Oldrati operates multiple production sites in Europe thus ensuring high quality and services for global customers.
Oldrati's specialization in the Oil and Gas field led the Group to achieve prestigious qualifications.

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OIL & GAS APPROVED COMPOUNDS PORTFOLIO

OLDRATI NAME	ASTM 1418 NOMENCLATURE	POLYMER DESCRIPTION	SPECIFICATION APPROVAL
OLD-REX ICE	FFKM	Black perfluoroelastomer rubber with outstanding chemical resistance and low temperature applications	**NORSOK M-710** Rev. 3 (ISO 23936-2)
OLD-REX P495N	FFKM	Black perfluoroelastomer rubber with outstanding chemical resistance	**NORSOK M-710** Rev. 2 **NORSOK M-710** Rev. 3 (ISO 23936-2)
OLD EDLT 90NL	FKM	Black fluorocarbon rubber peroxide cured for very low temperature application	**NORSOK M-710** Rev.3 (ISO 23936-2) **SAUDI ARAMCO** 06-SamSS-001 (2013)
OLD EDG 90N	FKM	Black fluorocarbon rubber peroxide cured for low temperature application	**NORSOK** M-710 Rev. 2 **NORSOK M-710** Rev. 3 (ISO 23936-2)
OLD EDG 95N	FKM	Black fluorocarbon rubber peroxide cured for low temperature application	**TOTAL GS PVV 142** 03/01 Rev.00 **NORSOK M-710** Rev. 3 (ISO 23936-2)
OLD EDG 98N	FKM	Black fluorocarbon rubber peroxide cured for low temperature application	**NORSOK M-710** Rev. 3 (ISO 23936-2)
OLD EDFP 95NA	FKM	Black fluorocarbon rubber peroxide cured with improved chemical resistance	**SAUDI ARAMCO 06-SamSS-001** (2013)
OLD EDFP 95N	FKM	Black fluorocarbon rubber peroxide cured with improved chemical resistance	**TOTAL GS PVV 142** 03/01 Rev.00
OLD EDB 95N	FKM	Black fluorocarbon rubber bisphenolic cured with improved chemical resistance	**NORSOK M-710** Rev. 2
OLD EDA 95N	FKM	Black fluorocarbon rubber bisphenolic cured	**NORSOK M-710** Rev. 2
OLD EDAF 90N	FEPM	Black fluorocarbon rubber peroxide cured specifically designed in ammine service	**NORSOK M-710** Rev. 2
OLD NHP ICE 90	HNBR	Black hydrogeneted nitrile butadiene rubber peroxide cured	**NORSOK M-710** Rev. 3 (ISO 23936-2)
OLD EDNHP 90N	HNBR	Black hydrogeneted nitrile butadiene rubber peroxide cured	**TOTAL GS PVV 142** 03/01 Rev.00
OLD ULTRA ED 90N	HNBR	Black hydrogeneted nitrile butadiene rubber peroxide cured	**TOTAL GS PVV 154** Rev.0