



**TECHNICAL
DATA SHEET**

M77 REV.00

| | |
|---|---|
| Compound Code: LTFE90EA | Revision: 02 |
| Compound Description: FKM Nero / Black 90 ±5 m IRHD LTXP Norsok M-710 TR10-40°C | Date: 21/12/2018 |
| Specification: NORSOK M-710 ED3 ISO 23936-2 (rapid gas decompression resistance) FKM 90 AED BLACK TR10 -40°C (Low Temperatures) | Person Responsible: Valerio Vezzoli |

| Samples Curing Conditions | | | | | |
|---------------------------|-------------|------|------|------|----------------|
| | Temperature | Unit | Time | Unit | Note |
| Curing | 180 | °C | 6 | min | Time Plate 2mm |
| Postcuring | 200 | °C | 12 | h | |

| Original Properties | | | | | |
|-------------------------|--------------|-------------------|--------------|-----------------------------|----------------------------------|
| Properties | Tested Value | Unit | Test Method | Limit | Note |
| Hardness Shore A 3 Sec. | 89 | PUNTI | ASTM D 2240 | | 90±5 m IRHD on finished products |
| Density | 1,82 | g/cm ³ | ASTM D 297 | 1,82±0,05 g/cm ³ | |
| Tensile Strength | 17,5 | MPa | ASTM D 412-C | | |
| Elongation at break | 111 | % | ASTM D 412-C | | |

| Low Temperature Properties | | | | | |
|----------------------------|--------------|------|---------------|-------|------|
| Properties | Tested Value | Unit | Test Method | Limit | Note |
| Transition glass (DSC) | -40 | °C | ASTM D 3418 B | | |

| Compression Set | | | | | | |
|------------------|------|--------------|------|-------------------------------------|-------|------|
| Deformation: 25% | | | | | | |
| Temperature | Time | Tested Value | Unit | Test Method | Limit | Note |
| °C | H | | | | | |
| 175 IN AIR | 70 | 27 | % | ASTM D 395-B | | |
| -40 IN AIR | 24 | 77,1 | % | DIN ISO 815-1 TYPE-B METHOD-A | | |
| -40 IN AIR | 72 | 84,1 | % | DIN ISO 815-1 TYPE-B METHOD-A | | |

| Value Change After Treatment | | | | | | | | | | | | | |
|------------------------------|------------|--------------------|-----|------------------|----------|--------------------|----------|--------------|----------|-----------|----------|-----------|----------|
| Treatment | Method | Time / Temperature | | Hardness Shore A | | Tensile strength % | | Elongation % | | Volume % | | Weight % | |
| | | hours | °C | requested | measured | requested | measured | requested | measured | requested | measured | requested | measured |
| AIR | ASTM D 573 | 70 | 200 | | 4,00 | | -9,00 | | -13,00 | | | | |
| AIR AFTER PENTANE | ASTM D 573 | 72 | 23 | | 2,00 | | -3,50 | | 11,00 | | | | 1,50 |
| M15 | ASTM D 471 | 168 | 23 | | -12,50 | | | | | 15,60 | | | |
| PENTANE | ASTM D 471 | 72 | 23 | | -6,30 | | | | | 3,30 | | | 6,10 |
| RME | ASTM D 471 | 336 | 150 | | -4,10 | | -15,00 | | -6,00 | 2,50 | | | |
| STEAM | ASTM D 471 | 168 | 200 | | -2,50 | | -25,00 | | 15,00 | 2,00 | | | |

| | |
|--------------|-----------------|
| Note: | Provisorial TDS |
|--------------|-----------------|

| | |
|---|--|
| Storage periods for unassembled components | Initial storage period 10 years, Extension storage period 5 years |
|---|--|

DISCLAIMER NOTE

This information is to the best of our knowledge accurate to the date indicated. However, BER-PA make no warranty, expressed or implied, that parts manufactured from this material will perform satisfactorily in the customer's application. It is the customer's responsibility to evaluate parts prior to use, especially in applications where their failure may result in injury and/or damage. It should also be noted that all elastomeric parts have a finite life, therefore a regular program of inspection and replacement is strongly recommended. TGA, infrared and other types of analysis must be agreed, fixed and approved by both parties with specifications and tolerances; on the contrary results can neither confirmed nor guaranteed. Nothing herein shall be construed as a recommendation to infringe any existing patent or violate any applicable law. The distribution of this document is not monitored. This data sheet is not subject to an automatic update.



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O-rings in compound

LTFE90EA

supplied by

BER-PA SRL

have been tested according to the requirements of

**NORSOK M-710 Edition 3 and ISO 23936-2
(Rapid gas decompression resistance)**

PASSED

Test gas: 90/10 mol% CH₄ / CO₂
Test temperature: 100 ±2 °C
Test pressure: 150 bar (15 MPa)
Number of cycles: 8
Decompression rate: 19.4 bar/minute
Seal Size: 312 (ISO 3601-1/AS 568)

Allen Madamombe

Scientist

19th December 2018

Date

Element Hitchin has been assessed to BS EN ISO 9001 by the British Standards Institution (BSI) and is a registered firm under the BSI Quality Assurance scheme for the provision of professional and technical services.



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Element Hitchin verify that O-rings in compound LTFE90EA supplied by Ber-Pa SRL have been subjected to a multi-cycle RGD test under the conditions detailed below.

| | | |
|--|---|--|
| RGD TEST COMMISSIONED BY | | |
| Ber-Pa SRL | | |
| SEAL COMPOUND DETAILS | | |
| Seal Manufacture | Ber-Pa SRL | |
| Supplied by | Ber-Pa SRL | |
| Compound name/number/reference | LTFE90EA | |
| Elastomer type to ASTM D1418 | FKM | |
| Lot/Batch No. | Not disclosed | |
| Seal type | O-ring | |
| Manufacturing method | Not disclosed | |
| Seal size (ISO3601-1/AS 568) | 312 | |
| CSD (nominal) | mm | 5.33 |
| Mean CSD (actual, radial) | mm | 5.29 |
| RGD TEST CONDITIONS | | |
| Temperature | °C | 100 ±2 |
| Pressure | MPa (bar) | 15 +2/-0 (150 +10/-5) |
| No. of cycles | | 8 |
| Dwell between cycles | hour | 1 |
| Decompression rate (average) | MPa/min (bar/minute) | 2.0 (20) |
| Gas type | mg ⁹⁰ | 90/10 CH ₄ /CO ₂ |
| SEAL HOUSING DETAILS CONDITIONS | | |
| Seal compression direction | Radial | |
| Groove ID | mm | 25.4 |
| Groove OD | mm | 16.0 |
| Groove width | mm | 5.68 |
| Squeeze (average) | % | 10.8 |
| Groove fill (area basis) | % | 83 |
| Number of seals tested | | 4 |
| ISO TEST SEAL RATINGS | | |
| SEAL REPLICATE | RATING | PASS/FAIL |
| 1 | 0000 | Pass |
| 2 | 0000 | Pass |
| 3 | 0000 | Pass |
| 4 | 0000 | Pass |
| OVERALL RATING | PASS | |
| GENERAL | | |
| Test laboratory | Element Materials Technology, Hitchin, U.K. | |
| Test date | 16 th November – 22 nd November 2018 | |
| Test gas certified and available | YES/NO | YES |
| Transducer calibration available | YES/NO | YES |
| P/T log available | YES/NO | YES |
| TEST LABORATORY STAMP/SIGNATURE |  Element Hitchin, UK | |

Element Materials Technology

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