

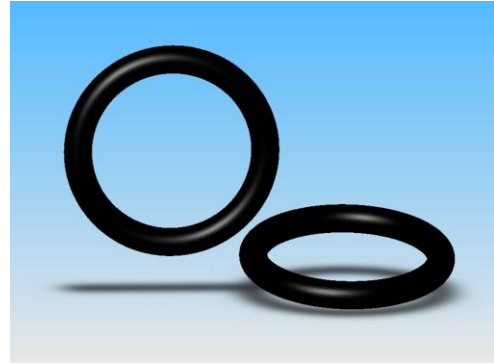


MARKEZ® Z1319 PERFLUOROELASTOMER
Technical Datasheet

HIGH TEMPERATURE BLACK PERFLUOROELASTOMER

Z1319 Is the ultimate “next-generation” perfluoroelastomer offering a combination of excellent chemical resistance and ultra-high temperature stability, extending the operating limits in all aspects.

Z1319 has been specially formulated to provide increased resistance to a broad range of chemicals by controlling the molecular architecture. In addition, this perfluoroelastomer has low permeability and as a result, it is less prone to swelling, resulting in a higher service life.



TYPICAL PHYSICAL PROPERTIES

FEATURES AND BENEFITS

- Very high temperature resistance
- Excellent chemical resistance to a wide range of chemicals
- Exceptional acid and amine resistance
- Superior mechanical properties
- High sealing efficiency
- Extremely low out-gassing properties
- Excellent steam resistance (ASME BPE 2000)

APPLICATIONS

- High temperature areas in the semiconductor manufacturing
- Jet engines
- Diesel engines
- Pumps, valves and mechanical seals
- Chemical industry
- Oil and gas equipment

| Property | ASTM | Value |
|--|-------|----------------------|
| Material Type | FFKM | |
| Color | | Black |
| Durometer, Shore A | D1415 | 75 |
| Tensile Strength MPa (psi) | D412 | 14 (2,016) |
| Elongation at break (%) | D412 | 130 |
| Modulus @ 100% MPa (psi) | | 11 (1,585) |
| Compression Set: 72 hrs @ 204° C (400° F) | D395 | 8% |
| Minimum Operating Temperature | | -15° C (+5° F) |
| Maximum Operating Temperature | | +327° C (+621° F) |
| Maximum Excursions up to: | | +343° C (+650° 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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TESTING AND COMPARISONS

Heat Aging

| Property | Units | Test Results at 23° C | Test Results at 343° C After 4 Hrs. | Test Results at 343° C After 8 Hrs. |
|---------------------|-------|-----------------------|--|--|
| Hardness | IRHD | 72 | 70 | 70 |
| Tensile strength | MPa | 15.5 | 14.7 | 10.7 |
| Elongation at break | % | 124 | 159 | 208 |
| Modulus at 50% | MPa | 5.1 | 4.4 | 4 |
| Modulus at 100% | MPa | 12.6 | 10.3 | 7.9 |

| Chemical Compatibility | |
|---|----------------|
| Conditions | Volume Swell % |
| 37% HCL, 70 hrs. @ 80° C | 2.80 |
| Water, 240 hrs. @200° C | 4.20 |
| Ammonium Hydroxide, 333 hrs. @ 100° C | 7.10 |
| Acetaldehyde, 70 hrs. @40° C | 2.70 |
| Ethylenediamine, 72 hrs., 504 hrs. @ 23° C | 0.1, 1.4 |
| Glacial Acetic Acid, 336 hrs, @ 100° C | 7.30 |

| Compression Set Testing | |
|-------------------------|-------------------|
| Testing Conditions | Compression Set % |
| 72 hrs. @200° C | 8 |
| 168 hrs. @200° C | 11 |
| 168 hrs. @230° C | 15 |
| 168 hrs. @270° C | 20 |
| 504 hrs. @200° C | 16 |
| 72 hrs. @300° C | 45 |

Compression Set Testing – ISO 815 B, ‘cold-set’

- Compression set testing performed when samples are cooled within the fixture prior to removal and measuring.
- FFKM compounds are notoriously poor in this test.

| Compression Set Comparison Test 72 hrs. @ 200° C | |
|---|-------------------|
| Compound | Compression Set % |
| Markez Z1319 | 38 |
| Competitor #1 | 72 |
| Competitor #2 | 65 |
| Competitor #3 | 91 |
| Typical FKM | 35 |

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