



MARKEZ® Z1400 UHT PERFLUOROELASTOMER TECHNICAL DATASHEET – REV 2, JANUARY 2020

EXTREME HIGH TEMPERATURE BLACK PERFLUOROELASTOMER

Z1400 is one of the most thermally resilient FFKM compound currently available on the market. Markez Z1400 exhibits a combination of fantastic chemical resistance, extremely low compression set over time, and a best in class high heat resistance of 335 °C (635°F). Used as a cost-effective alternative to K7075 in countless applications across various industries like Semiconductor, Petro-Chem, Paint and Ink applications where resistance to harsh solvents is required. Available in O-rings and custom shapes. Our experienced application engineers welcome the opportunity to assist you in selecting the compound that provides the best value for your application.

FEATURES AND BENEFITS

- Cost effective
- Nearly universal chemical compatibility
- Extremely low compression set
- Compatible with amines < 100°F
- Does not melt at 350°C (under an air environment)
- Good dynamic properties - Long service life

APPLICATION EXAMPLES

- Chemical sprayers, injectors and reactors
- Connectors, Controls & Filters
- Petro-Chem equipment, Sour gas
- Ink handling & spraying equipment
- Inorganic & Organic Acids & Alkine
- Ketones, Esters, Ethers, Aldehydes
- Solvents
 - Acetone, Heptane
 - Glycol ethers, Naphtha
 - Toluene, Turpentine
 - White spirit, Xylene
 - Methyl ethyl ketone (MEK)
 - Dimethylformamide (DMF)
- Lab Instrumentation
- Liquid chromatography equipment
- Mechanical seals
- Painting equipment
- Pumps & Valves
- Aerospace Fuels, Skydrol & Oils
- Semiconductor Applications
 - Dry etch
 - Strip
 - LPCVD
 - Litho/Track
 - ECP
 - Exhaust valves

TYPICAL PHYSICAL PROPERTIES

PROPERTIES	ASTM	TYPICAL VALUE
Color		Black
Material Type	FFKM	FFKM
Hardness, Shore A	D2240	74
Tensile Strength, MPa (psi)	D412	18.91 (2,742)
Elongation at Break, %	D412	218
Min Operating Temp (lower spikes)		-15 °C (5°F)
Max Operating Temp (higher spikes)		335 °C (635°F)
Low Temperature (TR10), °C		-2



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.

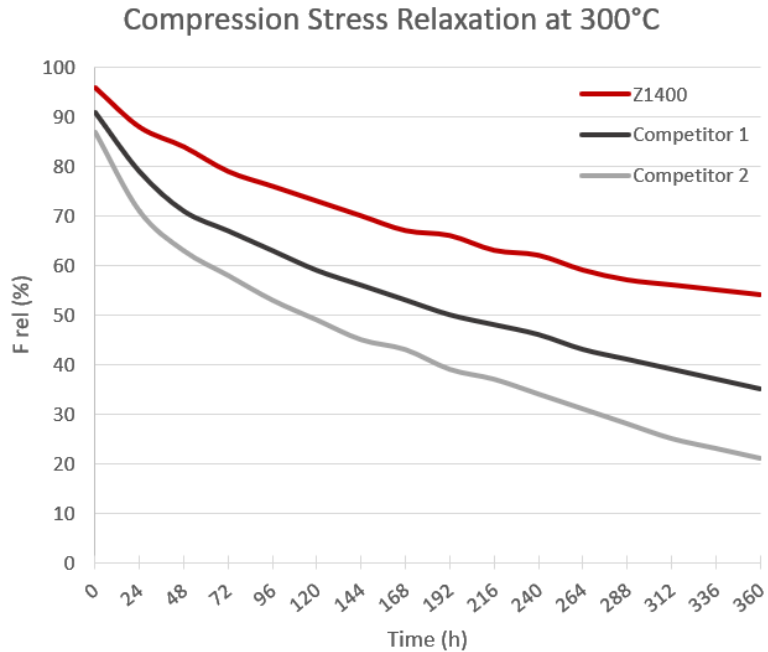
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TESTING RESULTS OF MARKEZ® Z1400 UNDER VARIOUS CONDITIONS

COMPRESSION STRESS RELAXATION

Z1400 is one of the most thermally resilient FFKM compounds currently available on the market. With a low compression set and enhanced extreme temperature sealing force retention, Markez Z1400 outperforms the competition.

When tested for 360 hrs at 300°C against a group of FFKM competitors, Z1400 holds over 50% of its original sealing force. Because of its first-rate compression stress relaxation resistance and thermal stability, Z1400 offers fantastic long term, high temperature sealing.



COMPRESSION SET – Various Conditions	Typical Test Results
Compression Set: 70 hrs. @ 200°C (392 °F)	6.5%
Compression Set: 70 hrs. @ 275°C (527 °F)	9.1%
Compression Set: 70 hrs. @ 300°C (572 °F)	18%
Compression Set: 70 hrs. @ 325°C (617 °F)	36.1%
Compression Set: 1000 hrs. @ 250°C (482 °F)	21%

HEAT AGING – (70 hrs. @ 290°C)	Typical Test Results
Hardness Change, Shore A	-3
Tensile Strength Change, %	-12
Ultimate Elongation Change, %	-1
Weight Loss, %	-0.3

HEAT AGING – (72 hrs. @ 300°C)	Typical Test Results
Hardness Change, Shore A	-5
Weight Loss, %	-0.9

HEAT AGING – (72 hrs. @ 335°C)	Typical Test Results
Hardness Change, Shore A	-10
Weight Loss, %	-3.7

GAS PERMEATION – T = 30°C	Typical Test Results
Nitrogen, cm ³ (stp)*mm/m ² *atm*d	250
Oxygen, cm ³ (stp)*mm/m ² *atm*d	450
Helium, cm ³ (stp)*mm/m ² *atm*d	5,400

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Electric Properties – Dielectric constant and loss factor at 50Hz. Resistivity 100 V direct tension.	Typical Test Results
Dielectric Constant ϵ'	3.50
Loss Factor $\tan(\delta)$	0.030
Surface Resistivity R_s, Ω	5 E16
Volume Resistivity $R_v, \Omega \cdot \text{cm}$	6.1 E16

STICTION TO AL	Typical Test Results
Max Force, N	314
Energy, N*mm	349

THERMAL EXPANSION	Typical Test Results
Longitudinal, $10^{-6} 1/K$	317
Transversal, $10^{-6} 1/K$	332
α_T/α_L	0.95

NITRIC ACID 65% – (168 hrs. @ 80°C)	Typical Test Results
Change in Tensile Strength, %	-61
Change in Elongation, %	34
Change in Volume, %	2.8

ETHYLENE DIAMINE – (336 hrs. @ 60°C)	Typical Test Results
Change in Tensile Strength, %	30
Change in Elongation, %	25
Change in Volume, %	3.0

Ammonia 30% – (168 hrs. @ 100°C)	Typical Test Results
Change in Tensile Strength, %	-5
Change in Elongation, %	10
Change in Volume, %	2.0

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