

Marco compound L1009 is specifically formulated to be Explosive Decompression (ED) resistant for use in high pressure and pressure cycling applications. Contact [engineering@marcorubber.com](mailto:engineering@marcorubber.com) for assistance in selecting a specialized compound when increased resistance to temperature, chemicals, or physical properties is required.

## ABOUT #L1009

TFE/P (Aflas®) materials exhibit excellent chemical, heat and steam resistance. They provide superior performance in water, steam and virtually all caustics making them ideal for use in applications in the oil and gas exploration and extraction industry.

## FEATURES

- Explosive Decompression Resistant
- Tested to NACE TN0297
- Resistant to high pressure CO2 gas
- Prolonged exposure to steam
- Excellent resistance to fluids with high H2S concentration
- Short-term high temp up to 290°C
- High resistance to acids, amines, steam, brine, sour oil and gas (H2S)
- Resistant to highly reactive organic and inorganic chemicals

## APPLICATION EXAMPLES

- High temperature pumps
- Safety valves
- Completion and production equipment
- Withstands extended exposure to 200°C steam

## ADDITIONAL INFORMATION

- Service Temperature of 32° to 482°F
- Spec: NACE TN0297

This information is accurate and reliable to the best of our knowledge. However, Marco Rubber makes 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.

## PHYSICAL PROPERTIES

ORIGINAL PROPERTIES	ASTM Method	Typical Test Results
Hardness, Shore A (Z1=75+/-5)	ASTM D2240	90
Color		Black
Tensile Strength, psi	ASTM D412	2740
Ultimate Elongation, %	ASTM D412	130
Modulus @ 50% Elongation, psi		1950
Modulus @ 100% Elongation, psi		2.52
Compression Set @ 25% Deflection. 24 hours @ 392o F (200o C), in Air		32
<b>FUMING SULPHURIC ACID – (168 hrs. @ 20°C)</b>	<b>ACID IMMERSION TESTING</b>	<b>Typical Test Results</b>
Hardness Change, Shore A	----	-2
Tensile Strength Retention, %	----	76
Ultimate Elongation Retention, %	----	98
Volume Change, %	----	4.2
<b>96% SULPHURIC ACID – (72 hrs. @ 100°C)</b>	<b>ACID IMMERSION TESTING</b>	<b>Typical Test Results</b>
Hardness Change, Shore A	----	-3
Tensile Strength Retention, %	----	99
Ultimate Elongation Retention, %	----	73
Volume Change, %	----	4.4
<b>60% NITRIC ACID – (72 hrs. @ 70°C)</b>	<b>ACID IMMERSION TESTING</b>	<b>Typical Test Results</b>
Hardness Change, Shore A	----	-3
Tensile Strength Retention, %	----	44
Ultimate Elongation Retention, %	----	107
Volume Change, %	----	10
<b>37% HYDR°CHLORIC ACID – (72 hrs. @ 70°C)</b>	<b>ACID IMMERSION TESTING</b>	<b>Typical Test Results</b>
Hardness Change, Shore A	----	-2
Tensile Strength Retention, %	----	57
Ultimate Elongation Retention, %	----	112
Volume Change, %	----	2.3
<b>50% HYDR°FLUORIC ACID – (168 hrs. @ 20°C)</b>	<b>ACID IMMERSION TESTING</b>	<b>Typical Test Results</b>
Hardness Change, Shore A	----	6
Tensile Strength Retention, %	----	63
Ultimate Elongation Retention, %	----	117
Volume Change, %	----	1.5

<b>5% HYDR<sup>®</sup>FLUORIC ACID + 25% NITRIC ACID – (168 hrs. @ 100°C)</b>	<b>ACID IMMERSION TESTING</b>	<b>Typical Test Results</b>
Hardness Change, Shore A	----	-6
Tensile Strength Retention, %	----	70
Ultimate Elongation Retention, %	----	84
Volume Change, %	----	3.5
<b>50% SODIUM HYDROXIDE – (168 hrs. @ 180°C)</b>	<b>BASE IMMERSION TESTING</b>	<b>Typical Test Results</b>
Hardness Change, Shore A	----	0
Tensile Strength Retention, %	----	96
Ultimate Elongation Retention, %	----	94
Volume Change, %	----	-0.3
<b>50% SODIUM HYDROXIDE – (168 hrs. @ 20°C)</b>	<b>BASE IMMERSION TESTING</b>	<b>Typical Test Results</b>
Hardness Change, Shore A	----	-1
Tensile Strength Retention, %	----	108
Ultimate Elongation Retention, %	----	116
Volume Change, %	----	1.2
<b>20% SODIUM HYDROXIDE – (72 hrs. @ 100°C)</b>	<b>BASE IMMERSION TESTING</b>	<b>Typical Test Results</b>
Hardness Change, Shore A	----	-3
Tensile Strength Retention, %	----	95
Ultimate Elongation Retention, %	----	117
Volume Change, %	----	2
<b>7% AMMONIA SOLUTION – (720 hrs. @ 140°C)</b>	<b>BASE IMMERSION TESTING</b>	<b>Typical Test Results</b>
Hardness Change, Shore A	----	-8
Tensile Strength Retention, %	----	87
Ultimate Elongation Retention, %	----	107
Volume Change, %	----	16.1
<b>28% AMMONIA SOLUTION – (72 hrs. @ 70°C)</b>	<b>BASE IMMERSION TESTING</b>	<b>Typical Test Results</b>
Hardness Change, Shore A	----	-1
Tensile Strength Retention, %	----	82
Ultimate Elongation Retention, %	----	116
Volume Change, %	----	3.2
<b>SHELL SPIRAX EP80 – (168 hrs. @ 175°C)</b>	<b>OIL IMMERSION TESTING</b>	<b>Typical Test Results</b>
Hardness Change, Shore A	----	-6
Tensile Strength Retention, %	----	94
Ultimate Elongation Retention, %	----	102
Volume Change, %	----	9

SHELL SPIRAX EP80 – (72 hrs. @ 175°C)	OIL IMMERSION TESTING	Typical Test Results
Hardness Change, Shore A	----	-6
Tensile Strength Retention, %	----	94
Ultimate Elongation Retention, %	----	102
Volume Change, %	----	9
STAUFFER BLEND 7700 – (200 hrs. @ 175°C)	OIL IMMERSION TESTING	Typical Test Results
Hardness Change, Shore A	----	-17
Tensile Strength Retention, %	----	83
Ultimate Elongation Retention, %	----	94
Volume Change, %	----	27
STAUFFER BLEND 7700 – (1000 hrs. @ 175°C)	OIL IMMERSION TESTING	Typical Test Results
Hardness Change, Shore A	----	-14
Tensile Strength Retention, %	----	65
Ultimate Elongation Retention, %	----	85
Volume Change, %	----	21
60% HEAVY OIL C – (72 hrs. @ 140°C)	OIL IMMERSION TESTING	Typical Test Results
Hardness Change, Shore A	----	-6
Tensile Strength Retention, %	----	80
Ultimate Elongation Retention, %	----	94
Volume Change, %	----	10
WATER – (72 hrs. @ 100°C)	GENERAL IMMERSION TESTING	Typical Test Results
Hardness Change, Shore A	----	0
Tensile Strength Retention, %	----	89
Ultimate Elongation Retention, %	----	117
Volume Change, %	----	1.1
STEAM – (168 hrs. @ 160°C)	GENERAL IMMERSION TESTING	Typical Test Results
Hardness Change, Shore A	----	-3
Tensile Strength Retention, %	----	91
Ultimate Elongation Retention, %	----	84
Volume Change, %	----	4.6
5% SULPHUR DIOXIDE – (48 hrs. @ 40°C)	GENERAL IMMERSION TESTING	Typical Test Results
Hardness Change, Shore A	----	-4
Tensile Strength Retention, %	----	69
Ultimate Elongation Retention, %	----	84
Volume Change, %	----	7.8



# L1009 MATERIAL SUMMARY

90 Durometer Black Explosive Decompression Resistant TFE/P (Aflas®) FEPM

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TRIETHYLENE GLYCOL – (264 hrs. @ 230°C)	GENERAL IMMERSION TESTING	Typical Test Results
Hardness Change, Shore A	----	-5
Tensile Strength Retention, %	----	88
Ultimate Elongation Retention, %	----	148
Volume Change, %	----	7.7