

2026

**PERLAST®**

# **Benchmark Report**



Precision Polymer Engineering

# Key Perlast® Materials

Benchmark testing was carried out by an external third-party test house to compare the performance characteristics of five perfluoroelastomer grades.

Typical material properties taken from published datasheets

Properties	Unit	Perlast®	Perlast®	Perlast®	Comp. Grade	Comp. Grade	Comp. Grade
		G77X	G80A	G75B	A	B	C
Max. Temp.	°C	350	310	325	327	316	275
100% Modulus	MPa	9.1	15.0	16.0	11.2	7.2	9.1
Tensile Strength	MPa	18.0	19.0	18.0	17.9	16.9	15.2
Elongation at break	%	170	150	125	160	150	160
Hardness	ShoreA	77	81	85	75	75	75
Compression Set 72h @ 200°C	%	8	18	18	13	14	25

# Chemical Resistance Summary

Properties	Perlast®	Perlast®	Perlast®	Comp. Grade	Comp. Grade	Comp. Grade
	G77X	G80A	G75B	A	B	C
<b>Acids</b> (Nitric, sulphuric, hydrochloric)	1	1	1	1	1	1
<b>Alkalis</b> (NaOH, KOH, Mg(OH) <sub>2</sub> )	2	1	1	2	2	1
<b>Amines</b> (ethylenediamine, ethanolamine)	3	1	3	3	3	1
<b>Water / Steam</b> (250 °C)	3	1	1	3	3	1
<b>Ketones</b> (acetone, MEK, MIBK)	1	1	1	1	1	1
<b>Esters</b> (ethylacetate)	1	1	1	1	1	1
<b>Ethers</b> (dimethylether, diethylether)	1	1	1	1	1	1
<b>Aldehydes</b> (acetaldehyde)	1	1	1	1	1	1
<b>Alcohols</b> (methanol, ethanol)	1	1	1	1	1	1
<b>Hydrocarbons</b> (benzene, toluene, xylene)	1	1	1	1	1	1
<b>Sour gas</b> (H <sub>2</sub> S)	1	1	1	1	1	1
<b>Lubricating Oil</b> (di-ester and petroleum based)	1	1	1	1	1	1
<b>Fluorinated Fluids</b> (HCFC, fluorocarbon oils)	3	3	3	3	3	3

1 = Excellent, little or no effect.

2 = Good, moderate (10-19%) swelling and change in physical properties.

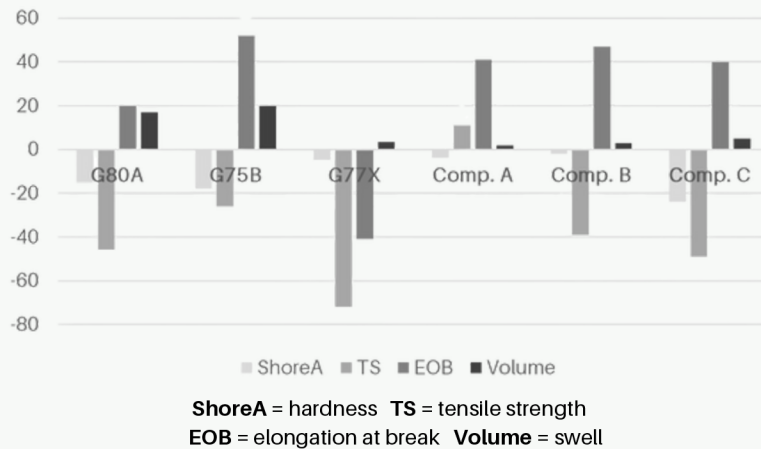
3 = Do not use, significant (>20%) swelling and noticeable change in physical properties

# Immersion Testing in Acid

When immersed in 70% nitric acid for 168 hours at 80°C Perlast® G77X and competitor grade A and B exhibited the smallest changes in hardness (Shore A) & volume swell.

Perlast® G80A exhibited the smallest changes in elongation (EOB).

**Immersion in 70% nitric acid (168h at 80°C) % change**



## Images of the O-ring surfaces after ageing 20 x magnification

The test samples were BS 214 O-rings with each material grade tested side by side.



## Summary:

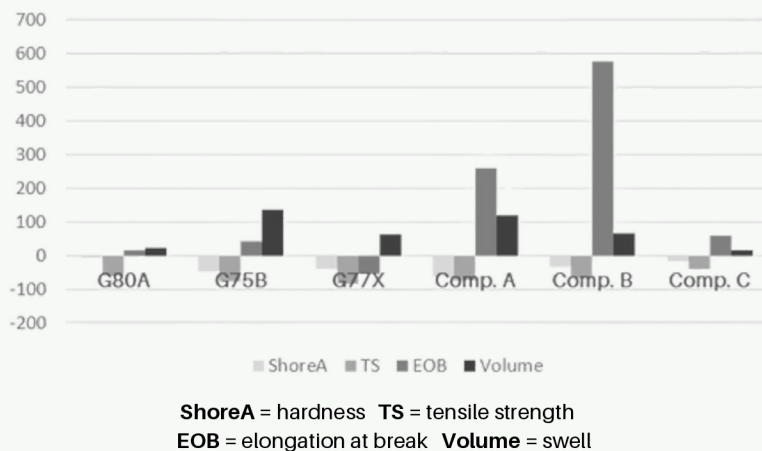
Perlast® G80A is a suitable alternative to competitor grades in acids.

# Immersion Testing in Amines

When immersed in pure ethylenediamine for 168 hours at 100°C Perlast® G80A outperforms Perlast® G75B and G77X, plus all three competitor grades.

Competitor A and B show the worst properties.

Immersion in ethylenediamine (168h at 100°C) % change



Images of the O-ring surfaces after ageing 20 x magnification

The test samples were BS 214 O-rings with each material grade tested side by side.



## Summary:

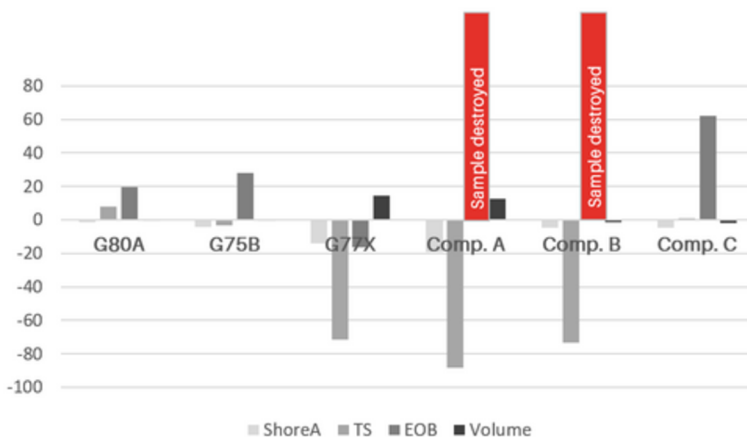
Perlast® G80A is a suitable alternative to competitor grade C and superior to competitor grade A and B in amines.

# Immersion Testing in Steam

When immersed in steam for 168 hours at 250°C competitor grades A and B were destroyed.

Perlast® G80A, G75B and G77X outperformed all three competitor grades.

## Immersion in steam (168h at 250°C) % change



ShoreA = hardness TS = tensile strength  
EOB = elongation at break Volume = swell

## Images of the O-ring surfaces after ageing 20 x magnification

The test samples were BS 214 O-rings with each material grade tested side by side.



## Summary:

Perlast® G80A is a suitable alternative to competitor grade C and Perlast® G75B and G80A are superior to competitor grades A and B in steam applications.



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For more information on the  
Perlast® material range, contact:



**Stuart Campton**

Strategic Market Development  
Leader - Fluorinated Products  
SCampton@idexcorp.com



**Enquire Now**

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**PERLAST®**

Precision Polymer Engineering | Greenbank Rd, Blackburn, BB1 3EA, England | 3201 S. Blue Bell Road, Brenham, TX 77833, USA.

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