PRODUCT FEATURES and SPECIFICATIONS

PTFE (SEALON) JOINT SEALANT

Operating Parameters

Temperature Range	-450° F to +600° F
Pressure Range	Full vacuum to 3000 PSI
Chemical Compatibility	Fully compatible throughout the pH range of 0 to 14! Affected only by elemental Fluorine and molten alkal metals.
Oxygen Service Limits	Oxygen index of 94.5% (PRODUCT MUST BE ORDERED WITHOUT ADHESIVE STRIP) (PTFE will burn in 100% oxygen atmosphere when ignition source is provided)
FDA Suitable	FDA 21CFR 177.1550

Material Properties

A. Specific Gravity: 0.70 - 0.80, compressed to 2.0-2.1
B. Modulus of Elasticity: 50,000 PSI at 73°F
C. Matrix Tensile Strength: ≤ 6800 PSI
D. Coefficient of Friction: 0.2 (comparable to wet ice)
E. Surface Free Energy: 18.5 dynes / cm^2
F. Chemical Compatibility: Inert except with elemental fluorine and alkali metals.
G. Oxygen Index: 94.5%
H. Thermal Conductivity: 0.2 BTU/hr-ft @ 0°C
I. Heat of combustion: 1434 ± 100 cal/g
J. Specific heat: 0.23 BTU/lb. -°F
K. Autoignition Temp: 939 ± 100°F
L. Ignition Temp.: Pa = 75 bar 145°C = 12k, Pe = Approx. 105 bar in condensed oxygen.
M. Dissociation Pressure: 5 x 10^{-18} mm Hg at 27°C: 5 x 10^{-12} mm Hg at 100°C.
N. PTFE is degraded by high energy radiation, however, there are examples of exposure to 17 megarads of gamma radiation on steel flanges with no loss of seal.
O. Toxicity: NON-TOXIC
P. HEALTH HAZARDS: None under normal use and conditions
Q. WASTE DISPOSAL METHOD: Normal landfill - complies with any local disposal regulations.

SEALING PROPERTIES FOR PTFE(SEALON) JOINT SEALANT

•DIN 3535 Gas Permeability

This standard provides a means of measuring leakage of a gas through a gasket. This test is designed to compare the leakage rates of different products. The apparatus used is considerably more versatile than that used in ASTM F37. The sample gasket size can be varied, much higher internal pressures can be used. Normally measurements are made at room temperature.

Results of gas permeability test (DIN 3535 Part 4 Sec. 4.7)

3/16" (5mm) PTFE(SEALON) Joint Sealant
2.76" (70mm) of sealing ring's diameter.
Temperature = 73°F ± 3.6° (23°C ± 2°) nitrogen gas.
Clamping Pressure = 4350 psig (30 N / mm^2).

Internal Pressure	Gas permeability(ml/min.)
232 psig(16 bar)	0.04(range 0.02-0.05)
363 psig(25 bar)	0.04(range 0.03-0.05)
580 psig(40 bar)	0.06(range 0.04-0.07)

• DIN 52913 Torque Retention

This test equipment is designed to determine the torque retention capabilities of gasket products, when subjected to the compression load and operating temperatures as defined by the test procedures.

The test consists of applying a predetermined load on the test gasket via a tension screw, then heating the gasket/flange assembly to the desired temperature (there is no internal pressure). The standard test period is either sixteen (16) hours or one hundred (100) hours. At the end of the required time period, the compression load which is left acting on the test gasket, is measured. This allows one to calculate the torque retention capabilities of various gasketing products.

This test differs from the "Hot Compression Test" in that the gasket load is not constant, but is a function of the torque retention capability of the product tested.

Results of torque retention test (DIN 52913)

3/16" (5mm) PTFE(SEALON) JOINT SEALANT.
2.56" (65mm) sealing ring's diameter.
Clamping Pressure = 4350 psig (30N/mm2)
Test period = 16 hours
Operating temperature = from 73°F (23°C) to 302°F (150°C) and 392°F (200°C).

Temperature	Times Testes	Torque Retention	Decrease %
302°F(150°C)	Continuous 16 times	2751 psi (range 2465-2929)	37.3% (32.6%-43.3%)
392°F(200°C)	Continuous 12 times	2717 psi (range 2465-2915)	37.6% (33.0%-43.4%)

• Compressibility - Please refer to chart IV

Remarks:
DIN (Deutsches Instut fur Normung) German Institute for Standardization

ADDITIONAL TESTING INFORMATION

Mass change after storage in synthetic gas condensate and subsequent drying out

Testing Conditions	Original Samples	Compressed Samples
Soaking in Isooctane/Toluol (70/30). 7 days at 23°C	62	1.3
Drying our, 14 days at 40°C	-0.1	-0.1
Soaking in Isooctane/Toluol/Methanol (50/30/20) 7 days at 23°C	64	1.2
Drying out, 14 days at 40°C	-0.1	0.0

APPLICATION INFORMATION

Size Conversation:

1mm	1/8”	3/16”	1/4”	3/8”	1/2”	5/8”	3/4”	1”
1mm	3mm	5mm	7mm	10mm	14mm	17mm	20mm	25mm

Size Recommendation:

Nominal Pipe Size(ANSI B16.5)	Recommended Size of PTFE(SEALON) JOINT SEALANT
1/2”, 3/4”	1/8”
1”, 1-1/4”, 1-1/2”	3/16”
2”, 2-1/2”, 3”, 3-1/2”	1/4”
4” - 6”	3/8”
8” - 16”	1/2”
18” - 20”	5/8”
24” - 36”	3/4”
36” - 60”	1”
60” and over	2”

Other Nonstandard Flanges

Sealing Width	Recommended Size of PTFE(SEALON) JOINT SEALANT
1/8” - 1/4”	1/8”
5/16” - 3/8”	3/16”
7/16” - 5/8”	1/4”
3/4” - 1”	3/8”
1 1/8” - 1 1/2”	1/2”
1 5/8” - 2”	5/8”
2” - 2 1/2”	3/4”
2 1/2” - 5”	1”
5” and over	2”

* In case of non-standard flanges, damaged flages, or bigger than 24”, the size recommended is 1/2 of the sealing surface’s width.

Acceptance / Approval

FDA	PTFE(SEALON) Joint Sealant meets the FDA requirements. PTFE – FDA 21 CFR177.1550 Adhesive –FDA 21 CFR175.105
DVGW	German Federation of Gas and Water Technology According to DVGW No. G 88e 050, PTFE(SEALON) Joint Sealant is suitable for the gas supply at internal pressure up to 232 psig (16 bar) in the temperature range from 14°F(-10°C) to 122°F(50°C).
BAM	German Institute for Material Research and Test According to BAM No. 13621/87 4-4625, there are no reflections against the usage of PTFE(SEALON) Joint Sealant for the oxygen supply, sealing the flanges made of copper, copper alloy or steel at internal pressure up to 580 psig (40 bar) in the temperature up to 140°(60°C).
TÜV	Technical Supervisory Federation of Bavaria in Germany, Materials and Structural Engineering Division, quality monitoring According to TÜV No. 191604, MP3/7381, the characters of the sealing values are as per Chart I & Chart II.

Custom Orders

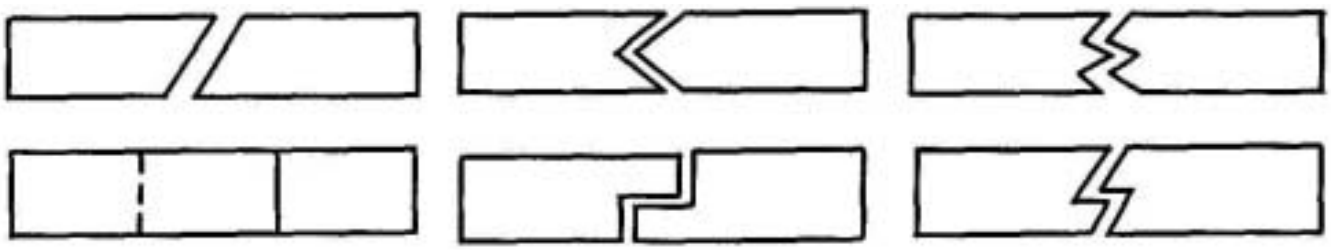
Other than the oval shaped cross-section, PTFE(SEALON) Joint Sealant can be supplied in various cross sections such as V-shape, square, rectangular and round as shown below, to fit into all kinds of flanges or sealing surfaces which have particular slots, grooves or special requirements of the cross-sections for easy installation. V-type, as a general practice, is to be stuffed with other materials such as fiberglass for certain specific applications.

Please consult us for these custom-made PTFE(SEALON) Joint Sealant

Rectangle Round V-Type Square

Overlapping Methods at the End

Other than the regular method by crossing the ends at a bolt hole, here as shown (top view) are some examples for the applications where the extra bulk at the crossover could cause troubles.



TECHNICAL DATA CHART (METRIC SYSTEM)
PTFE (SEALON) JOINT SEALANT

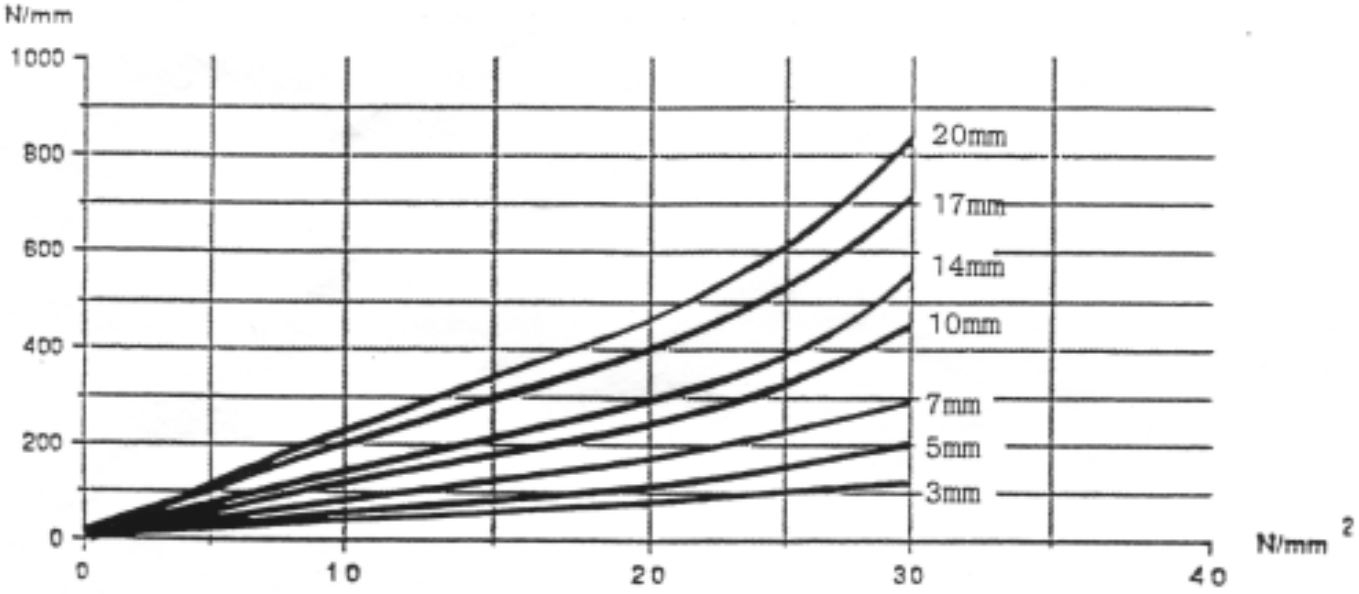


CHART I: LINEAR CLAMPING FORCE (N/mm) REQUIRED FOR OBTAINING THE CORRESPONDENT CLAMPING PRESSURE (N/mm^2)

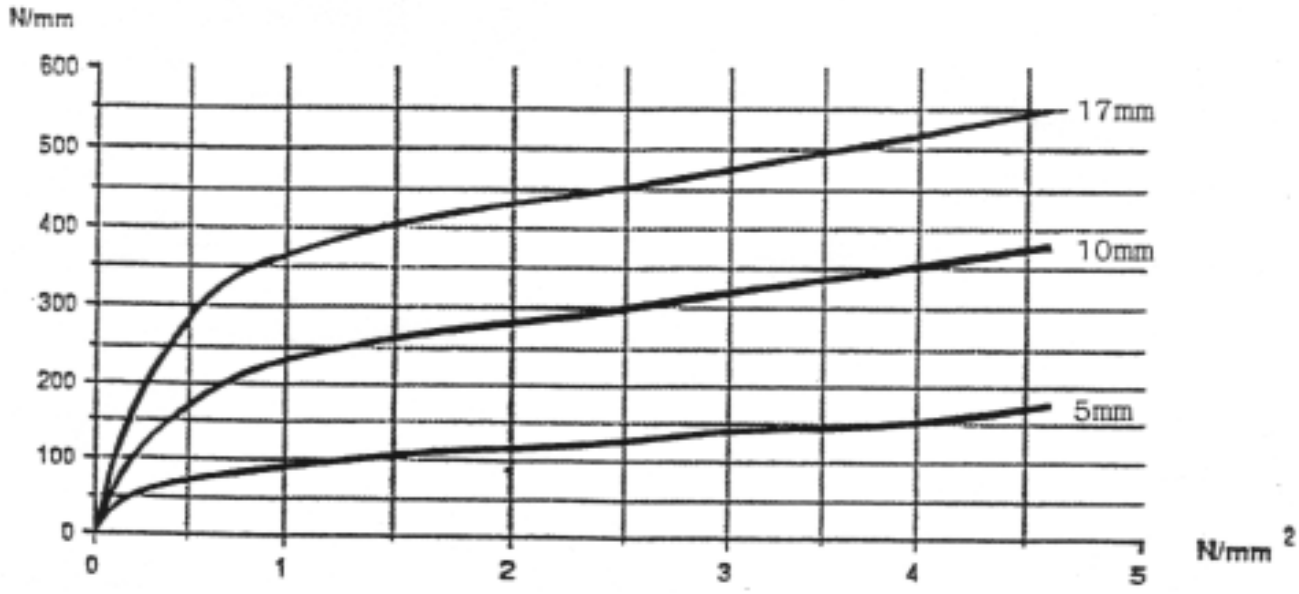


CHART II: LINEAR CLAMPING FORCE (N/mm) REQUIRED FOR THE CORRESPONDING INTERNAL PRESSURE (N/mm^2) OF GASEOUS NITROGEN AT PERMISSIBLE LEAKAGE RATE 0.00001 GRAM /(SECOND X METER)

TECHNICAL DATA CHART (METRIC SYSTEM)
PTFE (SEALON) JOINT SEALANT

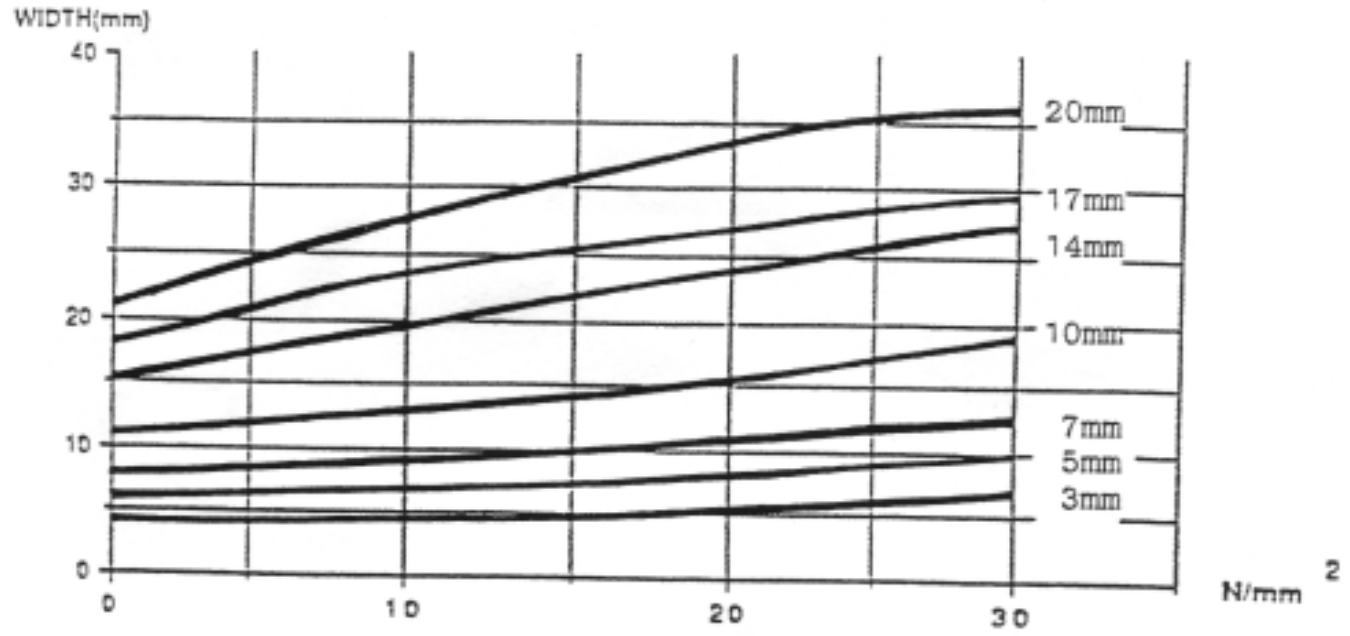


CHART III: GASKET WIDTH (mm) IN RELATION TO CLAMPING PRESSURE (N/mm^2)

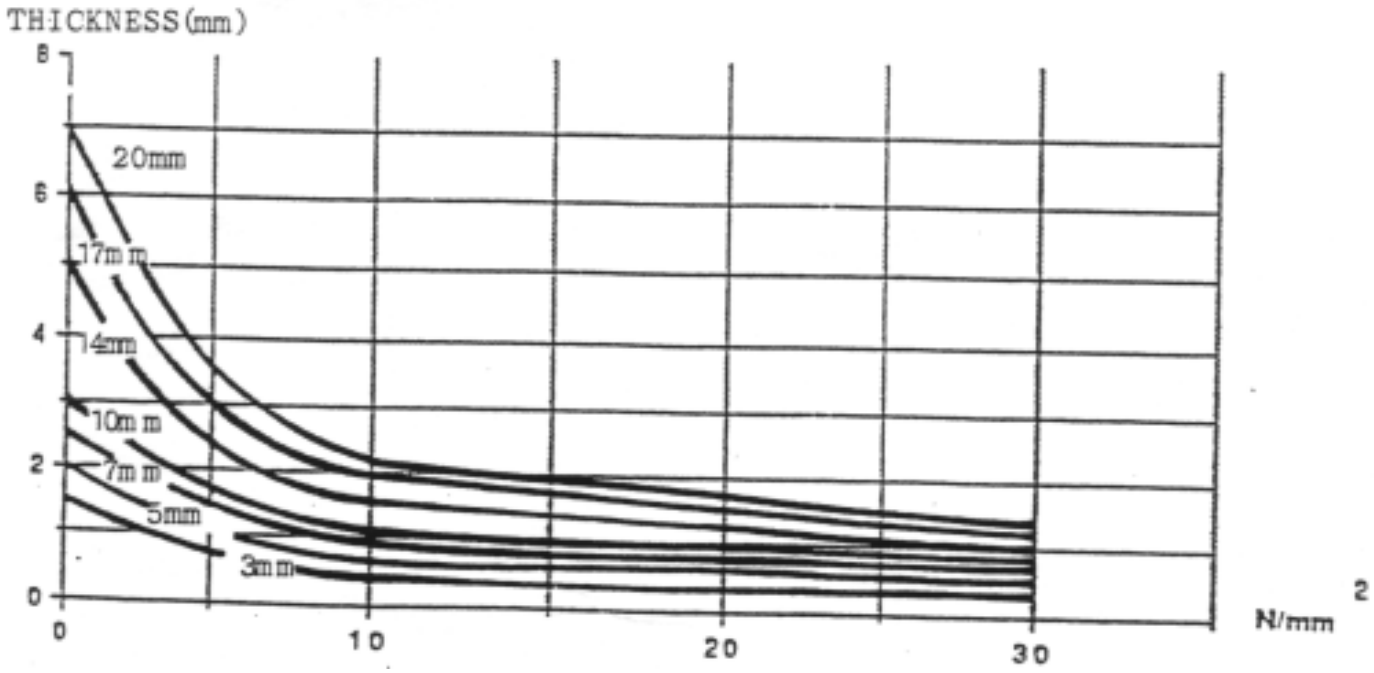


CHART IV: GASKET THICKNESS (mm) IN RELATION TO CLAMPING PRESSURE (N/mm^2)