Hi-Temp Gaskets

for High Temperature Applications

novus
SEALING LIMITED

Manufacturers and distributors of sealing and jointing materials.

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novus Hi-Temp

Description

Novus Hi-Temp consists of phlogopite mica paper impregnated with a high quality silicone binder. The material is produced in conjunction with Cogebi - the world leader in mica technologies - and contains Cogemica.

Mica is aluminosilicate of mineral origin, which has a lamellar and non fibrous structure representing an excellent alternative to asbestos at high temperatures. This material gives Novus Hi-Temp its thermal characteristics, - weight loss at 800^{O}C(1472^{O}F) less than 5% - and its chemical resistance to solvents, acids, bases and mineral oils.

Novus Hi-Temp is developed specially for high temperature applications (up to 1000^{O}C) as a sheet material, filler for spiral wound gaskets or facing for camprofiles. The material offers outstanding resistance to elevated temperatures as well as good sealability at moderate pressures.

Available as **sheet** in a variety of thicknesses. In **rolls** with different widths, lengths and thicknesses, in **slit form** for specialist gaskets and in **crinkle tape** for cam profile coatings.

Novus Hi-Temp can be combined with oxidation resistant graphite in both spiral wound and and camprofile form. The inhibited graphite acts as the primary seal and is protected by the Novus Hi-Temp from oxidation. The combination of inhibited graphite with the Hi-Temp barrier ensures excellent sealability even at high temperatures and high pressures.

Performance

Max continuous service temperature 1000^{O}C

Max operating pressure **Spiral Wound** 100bar*

Max operating pressure **Camprofile** 20bar

Max operating pressure **Sheet** 5bar

* Within a zonal spiral wound gasket ie:- windings of mica and graphite.

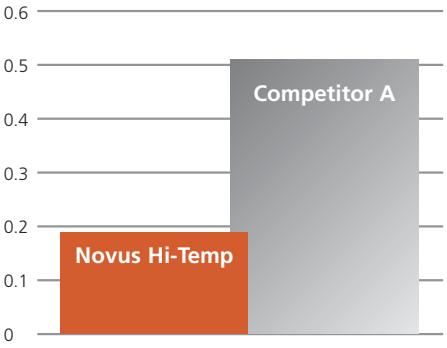
Where Used

Typically used for the production of specialist gaskets which will be used in high temperature oxidising atmospheres. The weight loss properties of Novus Hi-Temp are superior to graphite based materials which enables the material to maintain a tight seal at elevated temperatures. The material is versatile in construction and does not require metal inserts to improve handling. It also comes in a variety of formats which enables it to be used as a high temperature filler material for spiral wound gaskets and in roll form as well as crinkle tape for camprofile gaskets.

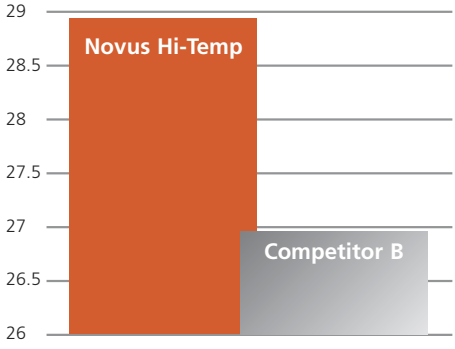
General Information	Hi-Temp 710	Hi-Temp 730
Class of mica	Phlogopite	Phlogopite
Binder	Silicon Resin	Silicon Resin
Mica content	ca 90%	ca 90%
Pegged steel insert	Optional	Optional
Colour	Dark Green	Dark Green
Application Range		
Max Temperature	1000^{O}C (1832^{O}F)	1000^{O}C (1832^{O}F)
Max Pressure	5bar (72.5psi)	5bar (72.5psi)
Physical Properties Measured on 2mm (.08") test pieces		
Density (IEC 371-2)	1.9g/cm^3 (0.1) (118 lbs/ft^3)	1.7g/cm^3 (0.2) (106 lbs/ft^3)
Tensile Strength (DIN 52910)	Approx 20 N/mm^2 (2,900psi)	Approx 10 N/mm^2 (1,450psi)
Compressibility (ASTM F36-J)	Approx 25%	Approx 25%
Recovery (ASTM F36-J)	Approx 35%	Approx 35%
Ignition loss at 800^{O}C (DIN 52 911)	< 5%	< 5%
Dielectric strength (IEC 243-23^{O}C)	Approx 20kV/mm (508 Vlmil)	Approx 20kV/mm (508 Vlmil)
Creep Strength (DIN 52913) 50 MPa, 300^{O}C 7252 psi, 572^{O}F	Approx 40 N/mm^2* (5,800psi)*	Approx 40 N/mm^2* (5,800psi)*

* For the Hi-Temp 730 , the measurement was performed with a pegged steel insert.

Leakage



Relaxation



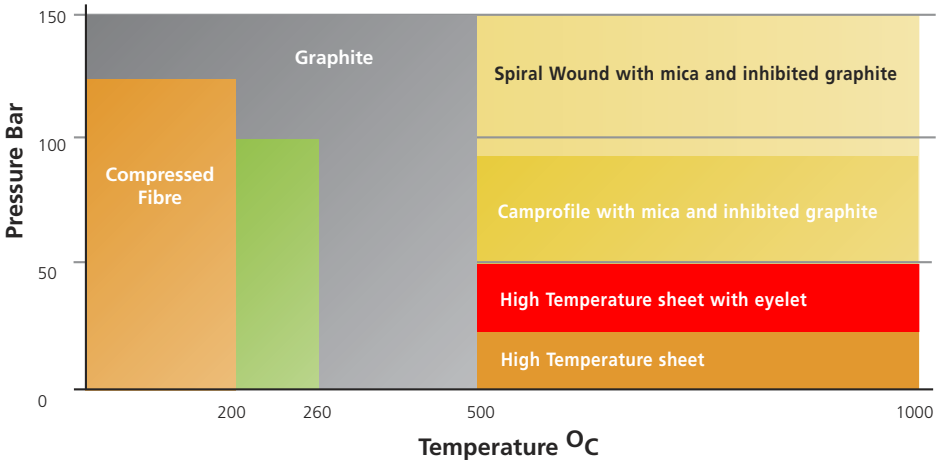
Leakage

Novus Hi-Temp exhibits excellent sealing properties compared with other mica based gasket materials. The above chart compares the gas leakage of Novus Hi-Temp (unreinforced) with a competitors reinforced mica based product at 2 bar pressure and at a gasket stress of 32MPa. As can be seen Novus Hi-Temp exhibits less than half the leakage of the competitors.

Retention

Novus Hi-Temp shows outstanding stress relaxation properties, ensuring maintenance of load throughout the products service life. The chart above shows these excellent stress retention properties by comparing the product with a competitors high temperature alternative at a gasket stress of 40 MPa and 300^{O}C

High Temperature PT Chart



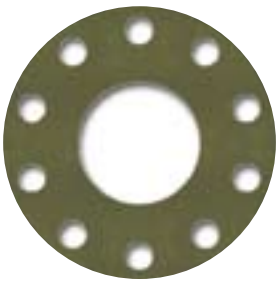
Availability

Sheet. Hi-Temp 710.

Traditionally used to produce cut gaskets in a variety of shapes. Typical examples would be exhaust applications and turbo inlet/outlet applications. Gas and oil Burners, gas turbines and heat exchangers. Approved by Siemens.

Sheets. 710/1 Material

Thickness (mm)	Width (mm)	Length (mm)
0.80	1000	1200
1.00	1000	1200
1.50	1000	1200
2.00	1016	1220
3.00	1016	1220

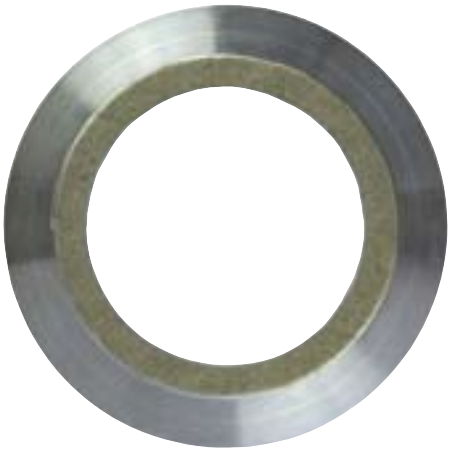


Rolls. Hi-Temp 730.

Used as an electrical insulation barrier or thermal barrier in a variety of shapes. The long lengths and variety of widths enable it to be cut down as required.

Rolls. 730/2

Thickness (mm)	Width (mm)	Length (mm)
0.45	1000	100
0.45	500	100
0.45	500	200
0.45	250	100
0.45	200	100
0.45	125	200
0.45	50	250
0.45	33	200
0.47	1000	100
0.56	1035	75



Novus spiral wound gasket with mica layer.

Slit & Crinkle Tape. Hi-Temp 730.

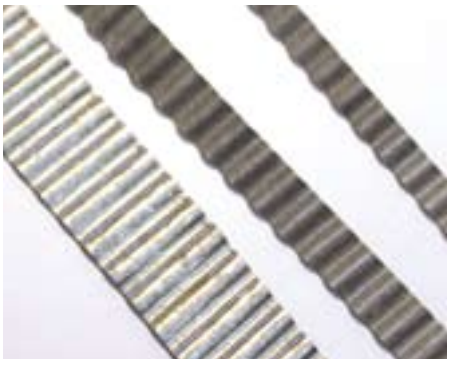
Available in three thicknesses and a variety of widths and lengths. Typically used for specialist semi metallic gaskets where high pressures and temperatures are encountered.

The slit material is available in the following widths for spiral manufacture.

Slit. 730/2

Thickness (mm)	Width (mm)	Finished Spiral Wound Gasket Width	Length (mm)
0.45	9	7.2	200
0.45	6	4.5	200

Slit Tape. Hi-Temp 730.



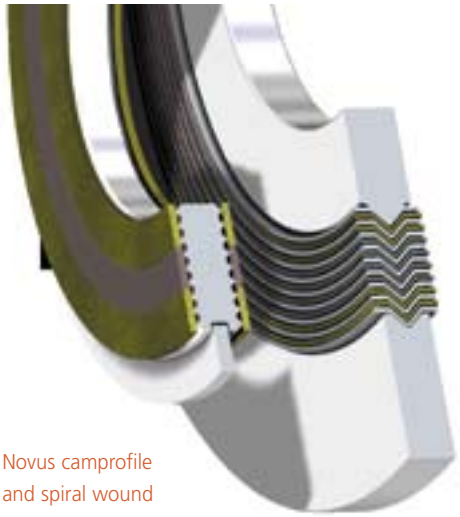
Crinkle Tape. Hi-Temp 730 is used as a coating for camprofiles.

LAMONS GASKET COMPANY

novus Hi-Temp

Novus GT Zone Gaskets

The Hi-Temp material can be combined with graphite in both spiral form and camprofile form to provide a high temperature semi metallic gasket.



Novus camprofile and spiral wound with GT-Zone. Showing sandwich layer construction (Hi-Temp/Graphite/Hi-Temp).

In the event of a graphite filled spiral wound gasket possibly causing an undesirable reaction between the graphite and the medium to be sealed, or of possible medium contamination. The problem can be solved by using a spiral wound gasket with a GT-Zone.

The spiral wound element of a Novus GT-Zone gasket consists of outer windings made of graphite (depending on the operating conditions) to improve gas tightness.
This results in a spiral wound gasket with the following properties.

Can be used at higher temperatures
Has excellent sealing properties

Combined with the other advantages of a spiral wound gasket, the spiral wound with a GT-Zone may be used in a wide range of operating conditions and applications.

Novus APX2

Novus APX2 is an oxidation resistant flexible graphite foil with extraordinary oxidation resistance characteristics. APX2's performance advantages are invaluable for industrial sealing applications where durability, reliability and safety are of critical importance at higher service temperatures. It is ideal in combination with Novus Hi-Temp for high temperature applications up to 800^{O}C.

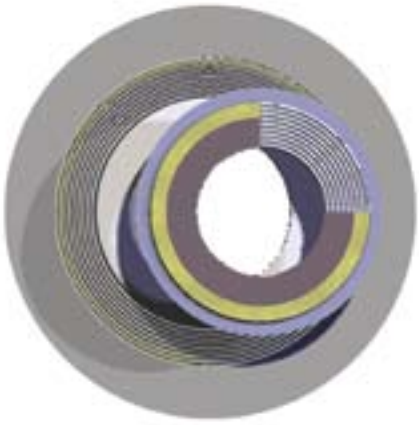
Lamons Style WRI-HTG

For applications requiring a spiral wound when oxidation may occur, usually at higher temperatures, Lamons has developed the WRI-HTG.

This gasket combines the corrosion and oxidation resistance of mica with the excellent sealability of flexible graphite.

The mica along with the metal winding serves as a barrier between oxidising process conditions and the external air and the graphite.

This gasket can be ordered for any ASME/ANSI B16.5 and ASME B16.47 series A or B flange or for special applications.



Lamon's WRI-HTG spiral wound gasket combines mica and flexible graphite.

Novus Eyelets

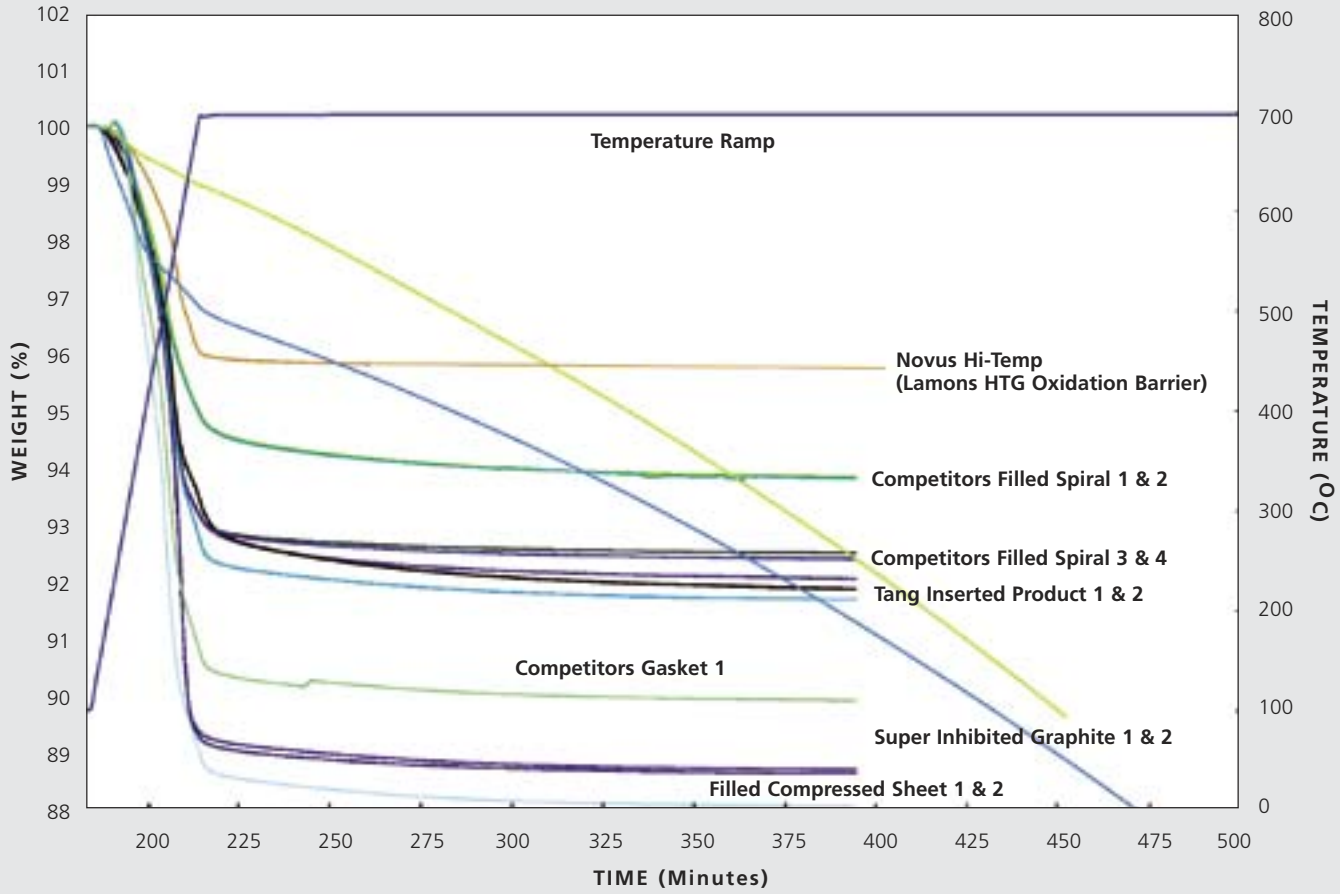
The pressure capabilites of Novus Hi-Temp sheet may be further increased by the use of an inner metallic eyelet. The eyelet is formed over the inner diameter of the gasket and decreases the materials permeability.

Novus **Hi-**Temp products are the ideal choice for high temperature atmospheres and thermal applications

novus Hi-Temp

High Temperature Sealing Materials Weight Loss Analysis

TGA Analysis Performed by the University of Houston



This graph demonstrates the outstanding performance of the Novus and Lamons combination spiral wound gasket. The weight loss for the products is considerably lower where Novus Hi-Temp is used in conjunction with graphite in this type of product.

Flexible Graphite performance after exposure to 1500°F

Lamons Kammpro HTG after exposure to 1500°F - The flexible graphite maintains all its physical and mechanical properties after exposure.

Lamons WRI-HTG spiral wound gasket after exposure to 1500°F - Maintaining the proven and superior sealing characteristics of flexible graphite creates an ideal high temperature solution - the flexible graphite is completely protected from oxidation.

W O R L D W I D E

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