



WHY NOVOLOID?

Key Features

- Excellent flame resistance
- Excellent chemical resistance
- Can withstand short-term heat exposure in temperatures > 1000°
- Excellent thermal insulator
- Low smoke and combustion toxicity
- Very compatible with thermoset & thermoplastic resins

Disadvantages

- Low tensile strength
- Low tensile modulus
- Affected by oxidizing acids (i.e. Sulfuric)

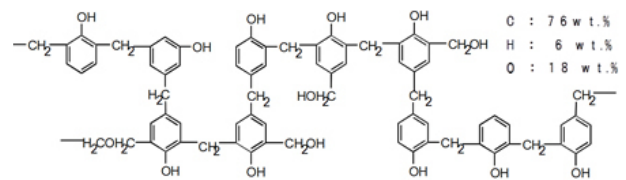
FIBER-LINE® PROCESS FOR NOVOLOID FIBER

- Coating
- Twisting
- Precision Winding

FIBER-LINE® NOVOLOID FIBER PRODUCTS

- Packing Yarn
- Industrial Fabric Yarn

Molecular Structure



Chemical Name

Cured Phenol-Aldehyde from melt-spun Novalac resin.

Manufacturer

Gunei Chemical Industry Co. Ltd.
Kynol, Inc. (Distributor).

History

The technology to produce Phenolic Fiber was initially developed in the late 1960's with commercial fiber production and development by Gunei Chemical Industry Co. based in Japan.

Composition

Novoloid, or Phenolic fiber, is a thermoset organic fiber produced from a phenolic novolac resin. The precursor resin is melt-spun in a solution of formaldehyde and hydrochloric acid. The reaction occurs and fibers are formed and cured. Novoloid fibers are composed of 76% carbon, 18% oxygen, & 6% hydrogen. Novoloid can also be used a precursor to carbon fiber.

Common Deniers

Various.

Types

- Multi-filament
- Spun





NOVOLOID

Abrasion Resistance	Ultraviolet (UV) Resistance	Flame Resistance	Chemical Resistance (Acid)	Chemical Resistance (Alkali)	Chemical Resistance (Organic Solvent)	Strength Retention (H ² O)
0	✓	✓	✓	✓	✓	✓

CHEMICAL COMPATIBILITY

Chemical Resistance to Acid: Degrades in concentrated or hot Nitric and Sulfuric acid.

Chemical Resistance to Alkali: Strong alkalis will attack at high temperature or concentration.

Chemical Resistance to Organic Solvent: Resistant to most organic solvents.

NOVOLOID DATA

Standard Modulus

Property	UOM	Value
Breaking Tenacity	g/d	1.5
Specific Gravity	Ratio	1.27
Elongation @ Break	%	30.0 - 40.0
Tensile Modulus	g/d	2.5 - 5.0
Moisture Regain*	%	6.0
Creep**	%	N/A
Shrinkage***	%	< 0.1
Melt Point	°C	N/A
Decomposition Temp.	°C	> 150

* Equilibrium moisture regain @ 55% RH ** Creep @ 40%-58% ultimate tensile strength *** Shrinkage in dry air @ 177 C for 30 minutes

This data is provided for informational purposes only, and does not constitute a specification. FIBER-LINE® makes no warranty, express or implied, that the product conforms to these values. Contact your FIBER-LINE® representative for exact product details which conform to your specific requirements.

ABOUT FIBER-LINE®

For over 25 years, FIBER-LINE® has provided science-driven expertise that improves the performance and the end-use processing of high performance fibers. Our products enable the search for new energy reserves and extend the life of fiber optic telecommunication cables. They also add important characteristics, such as SWELLCOAT® water-blocking, water repellence, adhesion, color, and wear and UV-resistance to these and many other applications. We believe that our ongoing commitment to protect the environment, to remain at the forefront of fiber and coating technology, and to 'treat others as we want to be treated' will continue to drive the success of our customers, shareholders, and employees.



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