

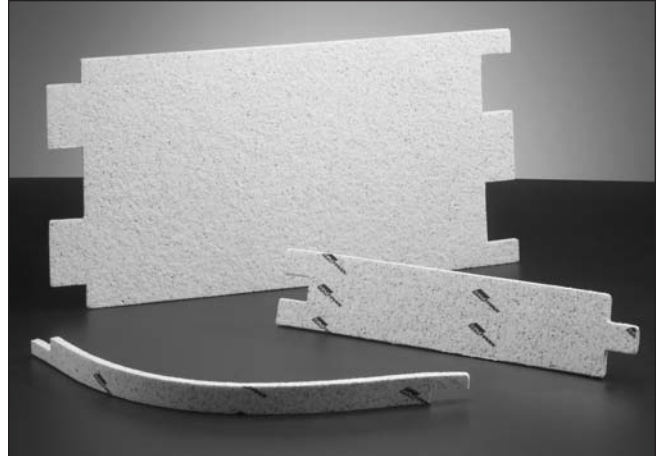
XPE®-NV Substrate Support Mat

Fiber Technology

Unifrax has been offering catalytic converter support mats used for internal combustion engines since 1980. Our XPE® intumescent mat products are designed to function as mechanical support for the ceramic substrate and act as an exhaust gas seal while providing thermal insulation.

Unifrax offers a variety of premium and advanced mat products with enhanced performance properties. As a manufacturer of fibers used in a variety of catalytic converter mounting systems, Unifrax has successfully combined fiber making expertise with a state-of-the-art paper manufacturing process to maximize the performance of our catalytic converter support mats. Engineered to meet the performance requirements associated with traditional catalytic converter applications, Unifrax is pleased to offer XPE®-NV substrate support mat.

Unifrax XPE-NV provides a unique balance of performance versus value and is recommended for a broad range of catalytic converter substrate support and cone insulation applications. XPE-NV can be engineered to provide excellent thermal stability at inlet gas temperatures up to 950°C. The support mat will expand with increasing relative thickness when first exposed to temperatures in excess of 325°C. Expansion pressure is provided by vermiculite particles trapped in a structural support matrix of Fiberfrax® ceramic fibers. The ceramic fibers also provide resistance to hot gas mat erosion.



Product Availability

Basis Weight	Nominal Thickness*	Nominal Installed Gap
(g/m ²)	mm	mm
3100	4.9	3.0
4070	6.5	4.0
6200	11.6	6.0

*Thickness measured @ 0.725 kPa.

Typical Properties

Thermal Conductivity at 650°C*	0.18 W/mK
Loss on Ignition	6.0% (min)
Tensile Strength	100.0 kPa (min)

*ASTM-C177

Chemical Composition

Fiberfrax® Fibers	35.0%	±5.0%
Vermiculite	55.0%	±5.0%
Binder System	7.0%	±2.0%

Canning Performance

XPE-NV is typically installed at a nominal gap bulk density (GBD) of 1.0 g/cm³. The room temperature compression behavior of XPE-NV is shown in Figure 1. The GBD range for each specific application will be defined according to the requirements for holding force and substrate strength. Unifrax provides a global network of application engineering services and will provide you with a support mat recommendation for your specific converter design.

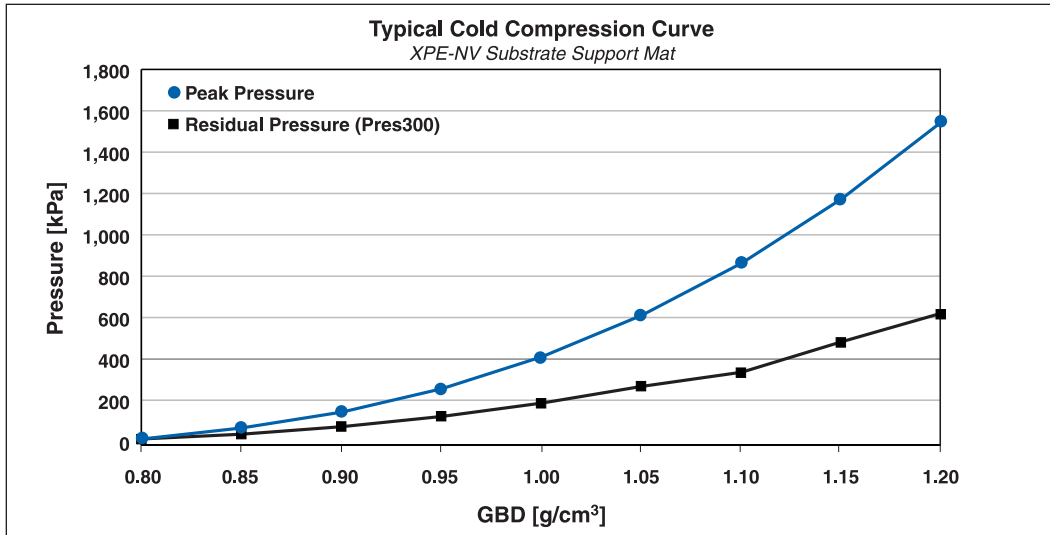


Figure 1: Typical cold compression curve for XPE-NV support mat.

Erosion Resistance

Support mat erosion may occur as a result of improper support mat installation or due to lack of holding force of the fiber matrix. Different types of support mat are more susceptible to erosion than others. XPE-NV can be properly designed in order to present a low erosion profile. Additionally, Rigidizer-W can be applied to the exposed edges of XPE-NV, thus making it impervious to gas impingement. Figure 2 presents comparative erosion loss for XPE-NV and edge-treated XPE-NV as a function of GBD.

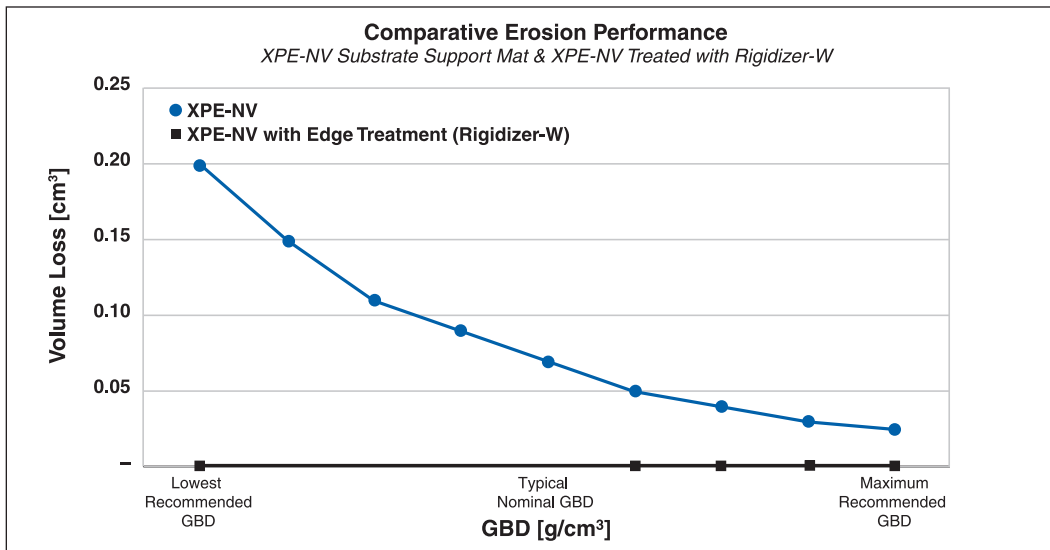


Figure 2: Comparative erosion data for XPE-NV.



Support Mat Aging Performance – Typical Curve For XPE-NV

XPE-NV is designed to present robust performance at operating temperatures above 600°C. Figure 3 presents a typical aged mat performance curve for XPE-NV as a function of temperature. Factors such as design nominal gap and thermal shell expansion also influence support mat performance. Please contact our Application Engineering department for additional information regarding the performance of XPE-NV under specific operating conditions.

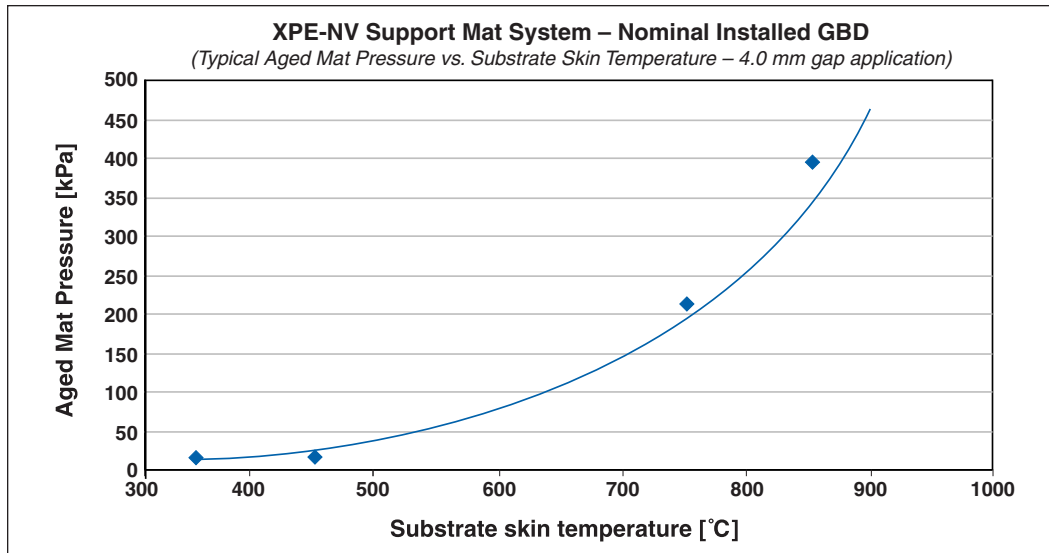


Figure 3: Typical aged mat pressure for XPE-NV as a function of temperature.

Worldwide Technical Support

Unifrax is a worldwide sales and service organization with several international locations and representatives. The services that we provide include thermal modeling, system design engineering assistance, and failure analysis as well as technical exchange programs.

For additional information regarding XPE-NV or any of our catalytic support mats, please contact the Unifrax Automotive Application Engineering Department at 716-278-3983.

Refer to the product Material Safety Data Sheet (MSDS) for recommended work practices and other safety information.

Data are average results of tests conducted under standard procedures and are subject to variation. Results should not be used for specification purposes.



Form C-3087-1
Effective 11/07
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Printed in USA
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