

XPE®-AV2/AV2i Substrate Support Mat

Introduction

XPE®-AV2 is an advanced intumescent expanding mat designed to function as mechanical support for the ceramic substrate and act as an exhaust gas seal while providing thermal insulation. When compared to traditional expanding mats, XPE-AV2 offers improved holding force at low temperatures as well as superior erosion resistance. XPE®-AV2i offers the same performance features of AV2 with the following additional benefits:

- Lower organic content resulting in improved mat performance and converter robustness.
- Improved handling properties which will reduce part defects during canning operations.
- Eliminates the need for tape backing.

XPE-AV2/AV2i boasts the use of low shot, high fiber index feedstock. When utilized in our state-of-the-art paper manufacturing process, performance properties of XPE-AV2i catalytic converter support mat are maximized.

XPE-AV2/AV2i advanced expanding mat offers excellent thermal stability with a continuous use temperature of 800°C average mat temperature. The mat expands with increasing relative thickness when first exposed to temperatures in excess of 325°C.



Product Availability

Basis Weight	Nominal Thickness*	Nominal Installed Gap
(g/m ²)	mm	mm
2600	5.8	3.0
3280	7.3	4.0
5200	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

*ASTM – C177

Chemical Composition

Fiberfrax® Fibers	48.0%	±6.0%
Vermiculite	45.0%	±5.0%
Loss on Ignition	10.5%	±4.5%

Canning Performance

XPE-AV2/AV2i is typically installed at a nominal gap bulk density (GBD) of 0.85 g/cm³. The room temperature compression behavior of XPE-AV2/AV2i 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.

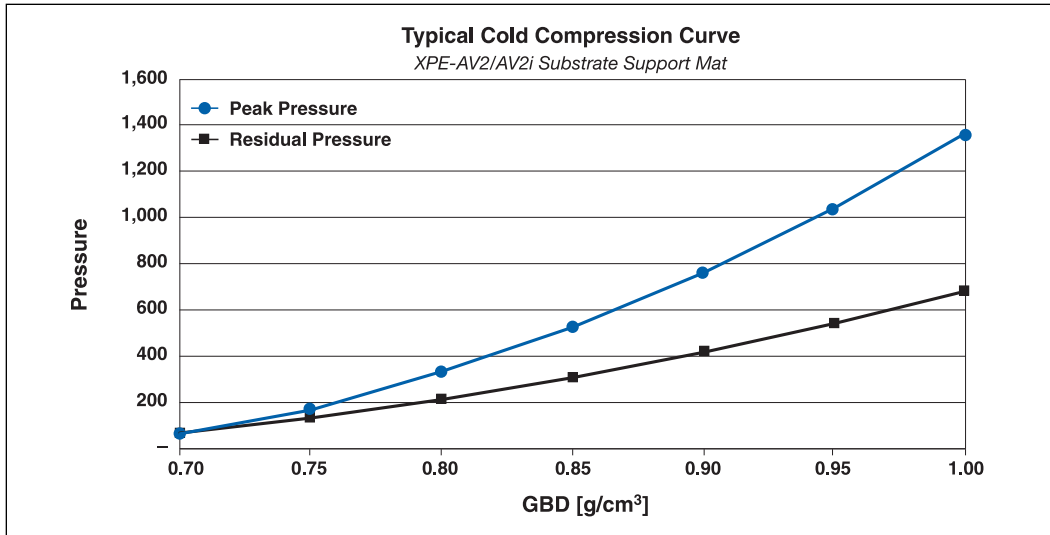


Figure 1: Typical cold compression curve for XPE-AV2/AV2i support mat.

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-AV2/AV2i can be properly designed in order to present a low erosion profile. Additionally, Rigidizer™-W can be applied to the exposed edges of XPE-AV2/AV2i, thus making it impervious to gas impingement. Figure 2 presents comparative erosion loss for XPE-AV2/AV2i and edge-treated XPE-AV2/AV2i as a function of GBD.

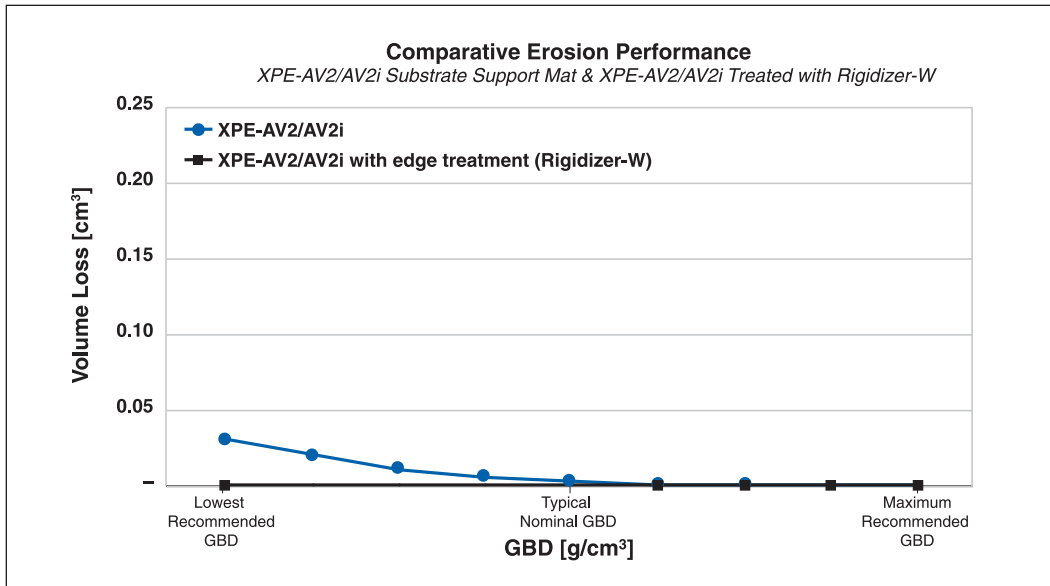


Figure 2: Comparative erosion data for XPE-AV2/AV2i.



Support Mat Aging Performance – Typical Curve For XPE-AV2/AV2i

XPE-AV2/AV2i is designed to present robust performance at operating temperatures above 500°C. Figure 3 presents a typical aged mat performance curve for XPE-AV2/AV2i 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-AV2/AV2i under specific operating conditions.

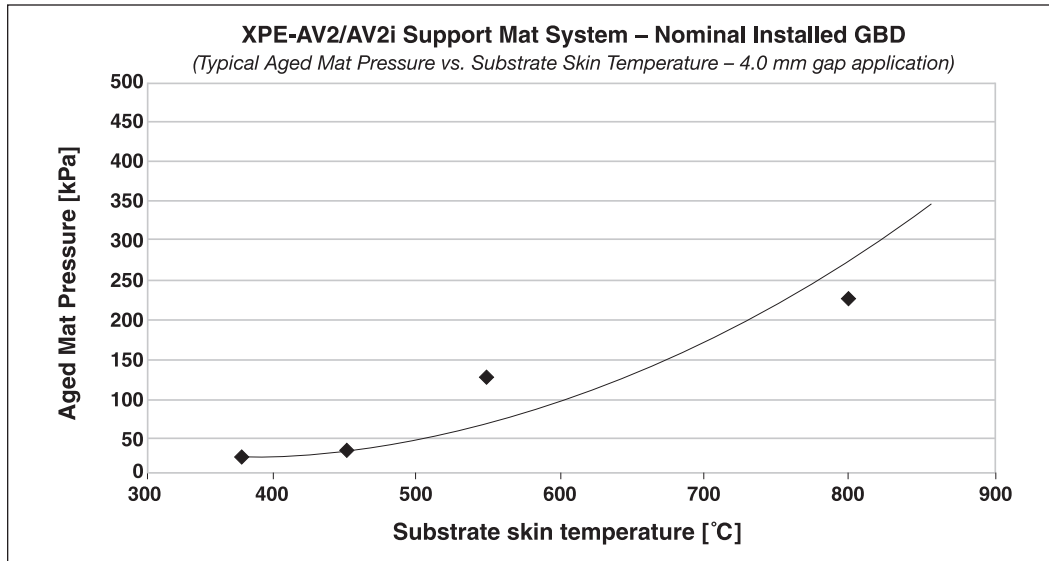


Figure 3. Typical Aged mat pressure for XPE-AV2/AV2i as a function of temperature.

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-AV2/AV2i 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.

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