

## IsoMat® AV/AVi Substrate Support Mat

### Introduction

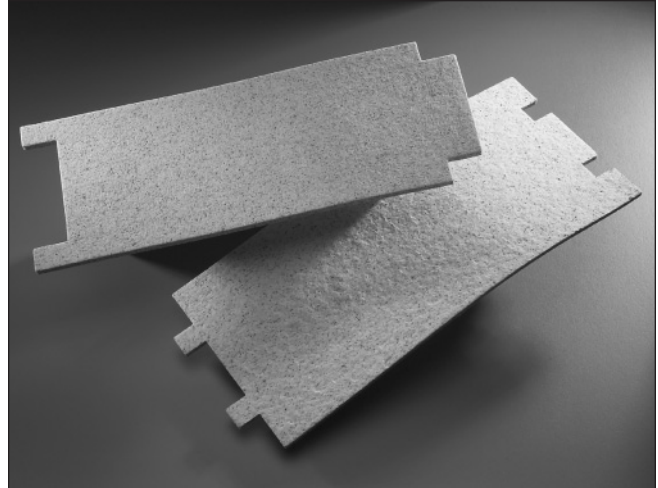
Unifrax is pleased to introduce IsoMat® AV/AVi support mat system. Developed to meet the most stringent European regulatory requirements, IsoMat AV/AVi is engineered utilizing the unique Isofrax® 1260°C fibers – a revolutionary green fiber produced using patented magnesia-silicate chemistry.

These fibers are the product of a long-term research and development effort by Unifrax to produce a biosoluble fiber with high-temperature performance characteristics up to 1260°C. Isofrax fibers exhibit excellent chemical stability and resistance to attack from most corrosive agents including combustion by-products of gasoline and diesel fuels.

### Mat Performance and Applications

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 IsoMat AV/AVi.

Like intumescent support mats utilizing traditional ceramic fibers, IsoMat AV/AVi can be designed to provide excellent holding force at continuous operating temperatures up to 900°C inlet gas temperature. Additional holding force is provided by vermiculite particles trapped in a structural support matrix of Isofrax fibers. The fiber matrix provides resistance to hot gas mat erosion. IsoMat AV/AVi 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 <sup>2</sup> )	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

### Typical Chemical Composition

Isofrax® Fibers	42.0%	±6.0%
Vermiculite	47.0%	±5.0%
Binder System	10.0%	±2.0%

## Canning Performance

IsoMat AV/AVi is typically installed at a nominal gap bulk density (GBD) of 0.87 g/cm<sup>3</sup>. The room temperature compression behavior of IsoMat AV/AVi 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.

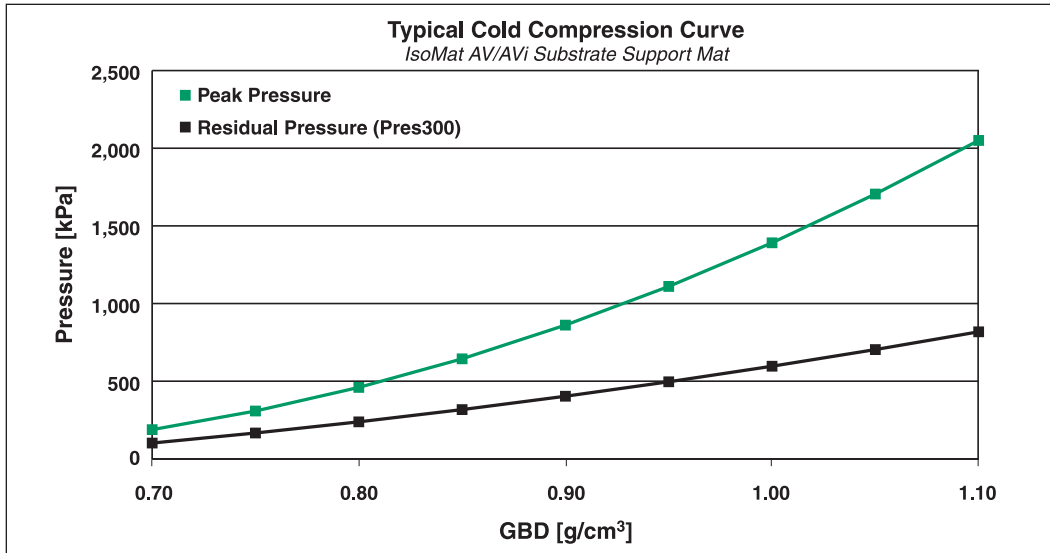


Figure 1: Typical cold compression curve for IsoMat AV/AVi support mat.

## 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. IsoMat AV/AVi has been designed specifically to present a lower erosion profile when compared to traditional expanding mats. Figure 2 presents comparative erosion loss for different support mat types as a function of GBD.

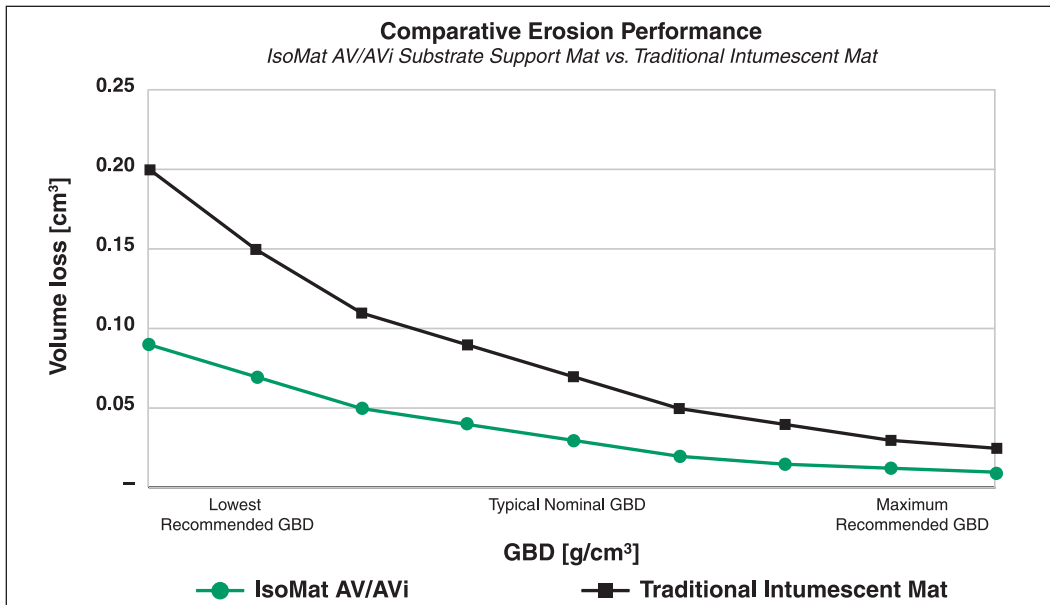


Figure 2: Comparative erosion data for IsoMat AV/AVi.



## Support Mat Aging Performance – Typical Curve For IsoMat AV/AVi

IsoMat AV/AVi is designed to present the same performance profile of expanding mats produced with standard refractory ceramic fibers (RCF). Figure 3 presents a typical aged mat performance curve for IsoMat AV/AVi 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 IsoMat AV/AVi under specific operating conditions.

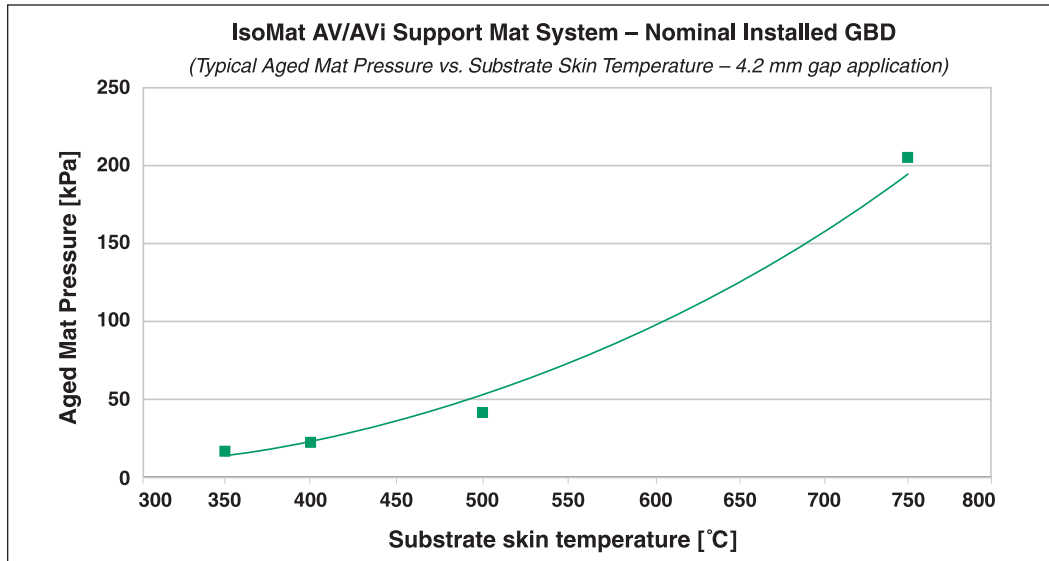


Figure 3. Typical aged mat pressure for IsoMat AV/AVi as a function of temperature.

## Isofrax Fiber – Health and Safety Information

Isofrax fibers have been tested pursuant to EU protocol ECB/TM/26 Revision 7, Nota Q, Directive 97/69/EC. Isofrax fibers do not require additional labeling, further testing, or special handling practices.

Intratracheal Instillation Biopersistence Testing per the German Hazardous Substances Ordinance has been conducted on Isofrax fibers with results that are below German regulatory thresholds. Requirements of the German Hazardous Substances Ordinance [October 26, 1993 as amended June 18, 1998] do not apply.

Therefore, IsoMat AV/AVi is certified as a Class-Zero, True Green Support Mat System. Certifications are available upon request.

## 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 IsoMat AV/AVi 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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Page 4 of 4

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