

## Ecoflex® 400 Substrate Support Mat

### Introduction

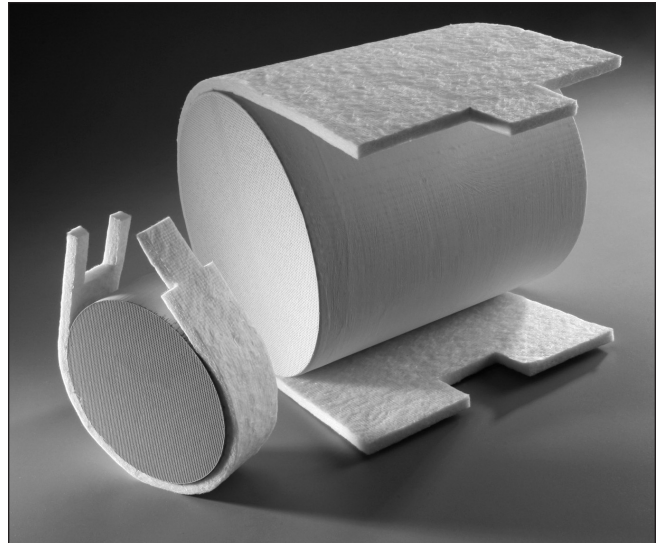
Unifrax is pleased to introduce Ecoflex® 400, the newest member of the Ecoflex support mat product family specifically developed for mechanical support of ceramic substrates used in emission control systems.

Ecoflex 400 utilizes M-FIL® polycrystalline fibers which have a proven history of long-term performance under all inlet gas temperatures up to 1050°C. It also provides superior erosion resistance, allowing it to provide robust design solutions without the need of wire-mesh rings or any other type of edge-treatment.

Ecoflex 400 is flexible, has excellent handleability and is easy to assemble through a broad range of different canning techniques. Ecoflex 400 is compatible with cordierite, ultra-thin wall (UTW), silicon carbide (SiC), and alumina titanate (AT) substrates.

The unique handling characteristics and proven long-term performance offered by Ecoflex 400 make it the ideal solution for a wide range of emission control devices, including diesel oxidation catalysts (DOC), diesel particulate filters (DPF), selective catalyst reduction units (SCR), and underbody converters (gasoline, diesel and ethanol flex fuel).

Ecoflex 400 is not affected by fuel condensates and/or urea.



### Product Availability

Basis Weight*	Nominal Thickness**	Nominal Installed Gap
(g/m <sup>2</sup> )	(mm)	(mm)
1200	7.7	3.0
1600	10.3	4.0
1800	11.6	4.5
2400	15.5	6.0
3200	20.6	8.0

\*Basis Weight: Fiber + Binder

\*\*Thickness measured @ 0.725 kPa

Additional basis weights available upon request.

### Typical Composition & Properties

M-FIL® Polycrystalline Fibers	92.5 – 94.5 %
Loss on Ignition	5.5 – 7.5%

## Canning Performance

Ecoflex 400 is typically installed at a nominal gap bulk density (GBD) of 0.40 g/cm<sup>3</sup>. The room temperature compression behavior of Ecoflex 400 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.

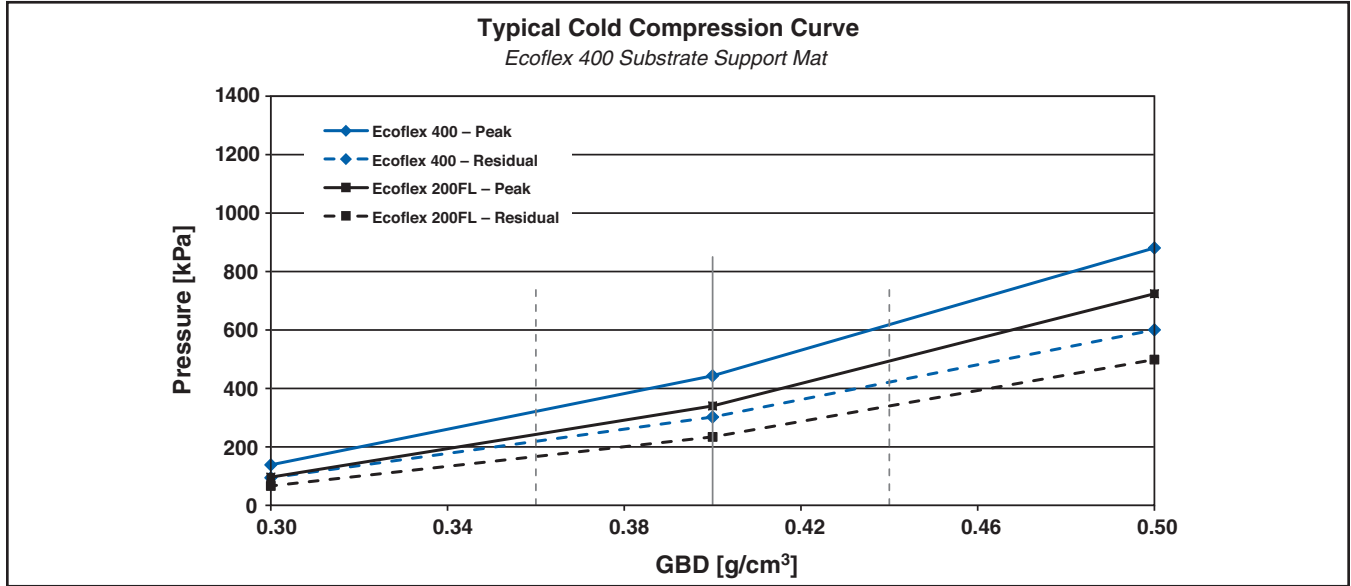


Figure 1: Typical Cold Compression Curve for Ecoflex 400 support mat.

## 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. Ecoflex 400 has been designed specifically to present a low erosion profile. Figure 2 presents comparative erosion resistance for different support mat types as a function of GBD.

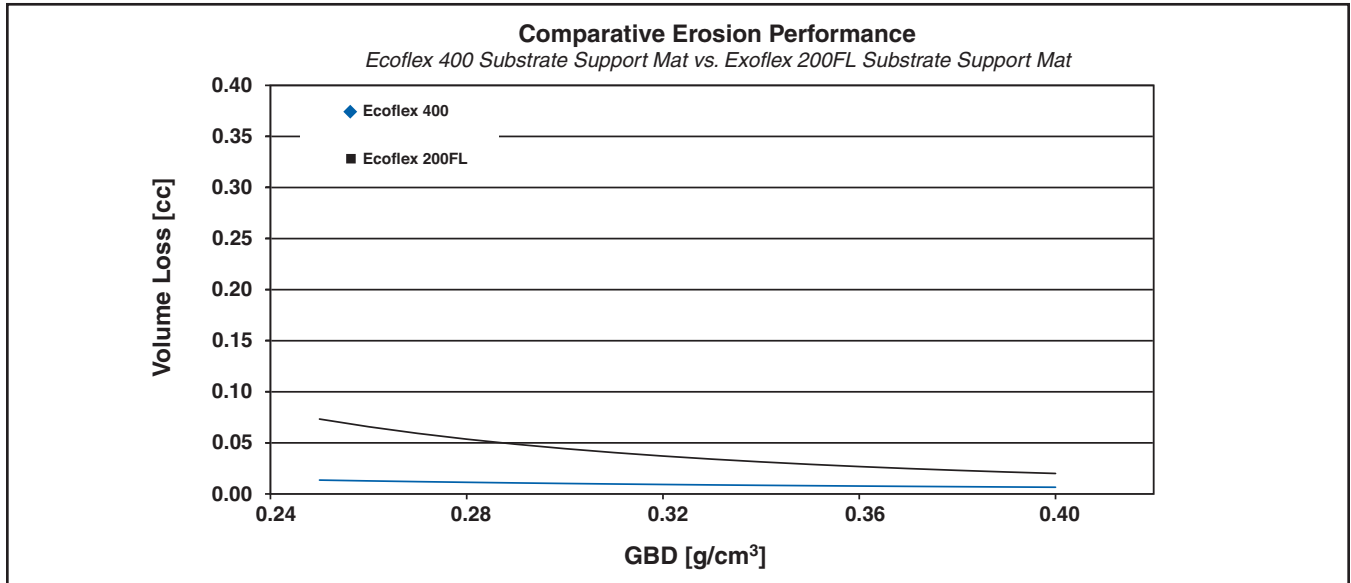


Figure 2: Comparative erosion data for Ecoflex 400 support mat.

## Friction Performance Data

Friction between the mat and opposing surfaces has an influence on canning characteristics and long-term robustness in the converter. Unifrax measures the friction coefficient between the support mat and the shell at room temperature (important during canning) and also at different operating temperatures (which is important after the converter is under normal operating conditions). Figure 3 presents Ecoflex 400 performance at room temperature against stainless steel.

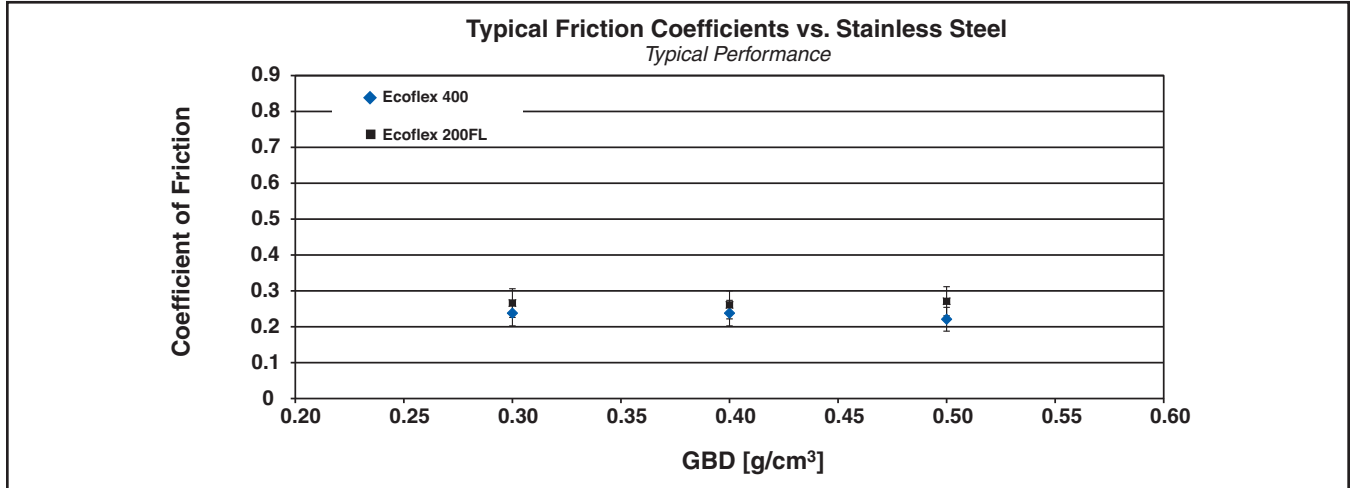


Figure 3: Comparative cold friction data for Ecoflex 400 support mat.

## Support Mat Aging Performance

Ecoflex 400 is designed to provide robust performance over a broad range of operating conditions. It is especially adapted to provide superior performance in high gap expansion conditions that may be common in heavy-duty diesel applications. Figure 4 presents typical aged mat performance for Ecoflex 400 and shows its advantages. Factors such as design gap and operating temperature also influence support mat performance. Please contact our Application Engineering Department for additional information regarding the performance of Ecoflex 400 under specific operating conditions.

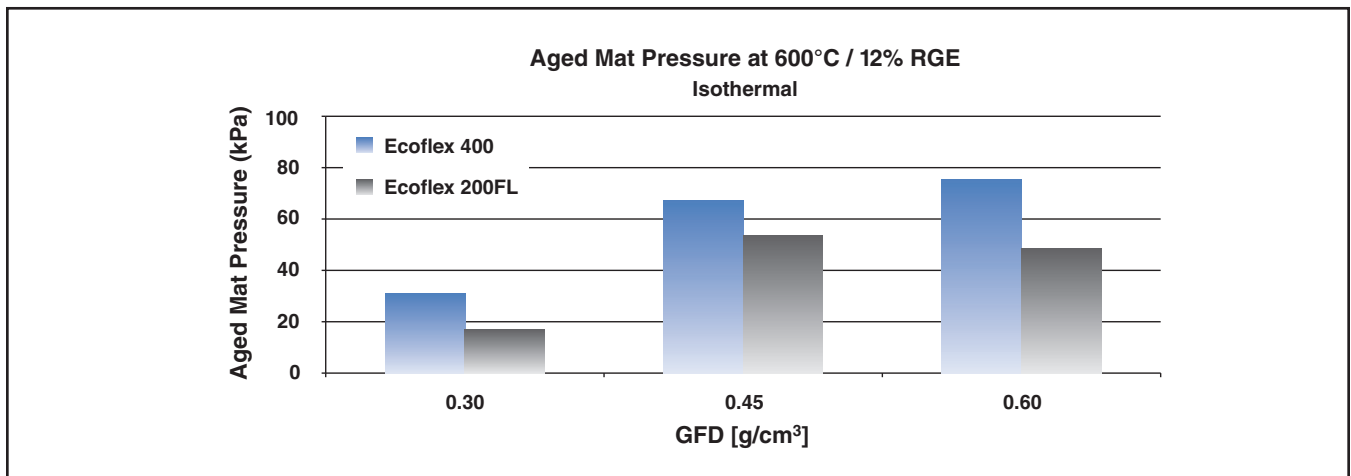


Figure 4: Ecoflex 400 support mat aging test as a function of temperature.



---

## 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 Ecoflex 400 or any of our catalytic support mats, please contact the Unifrax Emission Control Application Engineering Department at 716-768-6461 or [aecoordinator@unifrax.com](mailto:aecoordinator@unifrax.com).

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

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

