

Q-Frax® Insulation Ceramic Fiber Heat Shield Materials

Introduction

Automotive trends toward quieter, cleaner, safer vehicles have created problems for design engineers. Greater demands on materials performance continue to be made as the industry handles the challenges of greater temperature extremes and reduced noise levels. Automotive engineers have found a solution to these new thermal management problems in ceramic fibers, invented by Unifrax Corporation in the 1940s. Unifrax Corporation now produces over 50 product forms of lightweight, thermally efficient, thermally stable ceramic fiber materials based on Aluminum Oxide/Silicon Dioxide chemistry. Today, automotive design engineers are requiring more sophistication in heat shielding applications to handle higher temperatures, reduce emissions and provide favorable acoustical attenuation. The stringent demands imposed by temperature extremes, lighter weight and low thermal conductivity require the performance of Q-Frax® Insulation.

Q-Frax Insulation is the family name for the group of customized papers, blankets, felts, intumescent mats and coatings controlled in specific accordance with QS-9000.

- **QSP Papers** are the most thermally efficient of all Q-Frax products and available as thin as .8 mm for applications constrained by space and weight limitations.
- **QSB Blankets** are the strongest of all Q-Frax products and completely inorganic for those applications that are intolerable to organic outgassing.
- **QSF Felts** are impregnated with a thermosetting resin. Supplied in uncured form, they are formed by simultaneous application of pressure and heat to achieve complex shapes of rigid consistency for thermal and acoustical shielding.
- **QSM Mats** are intumescent mats specifically developed to mechanically support, seal and insulate in a wide variety of thermal sealing and shielding applications.
- **QSC Coatings** are ceramic fibers mixed with inorganic binders and are available in consistencies ranging from paint to caulk. QSC Coatings reduce thermal degradation of metallic exhaust components and may be pumped into hard-to-reach areas in special shapes and configurations.



Q-Frax® Advantages Include

- Temperature stability to 1650°C
- Unaffected by moisture; non-hygroscopic
- Highly efficient thermal and acoustical insulator
- Product quality in accordance with QS-9000
- Customer specific product development

Typical Q-Frax® Application Areas

- Engine
 - Exhaust Train
 - Manifold
 - Down Pipe
 - Catalytic Converter
 - Muffler
- Heat Shielding
 - Body Mounted
 - Under Carpet

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

Q-Frax® Insulation Nomenclature Defined

Nomenclature	Defined
Q-Frax	Family Of Customized Products Controlled In Accordance With QS-9000
First Two Letters (QS)	Quality Standard
Third Letter (P, B, M, F, C)	Paper, Blanket, Intumescent Mat, Felt, Caulk
Numbers	Approximate Nonwoven Grammage (g/m ²)
Final Letter (A, F, J, K)	Product Thickness Designation

Q-Frax® Product Offering Commercial Equivalents

QSP Papers	QSB Blankets	QSM Mats	QSF Felts	QSC Coatings
QSP100A (970A)	QSB600 (6#-1/4)	QSM1000 (XPE1050)	QSF400 (4#-1/4)	QSC150 (QF150)
QSP300F (970F)	QSB800 (8#-1/4)	QSM1500 (XPE1550)	QSF600 (6#1/4)	QSC180 (QF180)
QSP500J (970J)		QSM2000 (XPE2035)	QSF3000 (Duraset)	QS-Caulk (LDS)
QSP1000K (970K)		QSM3000 (XPE3100)		
QSP1400L (970L)				

For additional information about product performance or to identify the recommended product for your application, please contact the Unifrax Application Engineering Group at 716-278-3888.

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

