

# Thermiculite® 866

THE ANSWER TO SOLID OXIDE FUEL CELL SEALING

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The answer to Solid Oxide Fuel Cell Sealing

Thermiculite 866, has been developed specially for the difficult task of sealing solid oxide fuel cells [SOFCs] and has proved to be very successful in this role.

Thermiculite 866 is a very special sealing material in that it is entirely free of any organic binder material but it is available in sheet form, is very soft, easily cut into gaskets and has excellent sealing characteristics. Thermiculite 866 consists of just Chemically Exfoliated Vermiculite (CEV) and steatite, nothing else is added. Thermiculite 866 has been adopted by a number of fuel cell development teams in Europe and the US.

Thermiculite 866 offers the following advantages :

Freedom from burn off of organic material that could result in the loss of bolt load, permeability and could result in the contamination of catalysts

Freedom from creep even at very high temperature

Freedom from relaxation effects ensuring continued sealing during thermal cycles

Freedom from components that would poison or inhibit the functioning of catalysts

Electrically insulating

Thermal resistance to above 1000°C

Alignment of the platelets of CEV and steatite during manufacture ensures excellent low load sealing characteristics

Gaskets of complex shapes can be cut easily and are robust during stack assembly



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## BEST SEALING PRACTICE

To obtain the best performance from a sealing material the following considerations apply just as much to an SOFC as to an industrial pipeline gasket:

Minimize the gasket area as far as possible taking in to consideration gasket handling

Maximize the compressive load available

Use studs of the appropriate metal and stress to high percentage of yield

Minimize load loss by making the studs as compliant as possible by using the minimum stud diameter suitable and by using extension collars or constant load washers such as Belleville washers

Tighten bolts in cross pattern manner

Tighten using either controlled torque or hydraulic tensioners

For torque tensioning use reliable lubricant having known friction factor

Unless the gasket is compensating for connection defects then always use the minimum thickness practical

Surfaces to be sealed should be free from transverse machining marks or scratches and be of an appropriate surface finish

Correctly used, an appropriate gasket may be able to provide a seal whilst avoiding the cost implied by a more robustly engineered design or components of tighter tolerances

*Flexitallic*<sup>TM</sup>

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