

# FLEXIBLE CERAMICS

Ceramics made into flexible fabrics

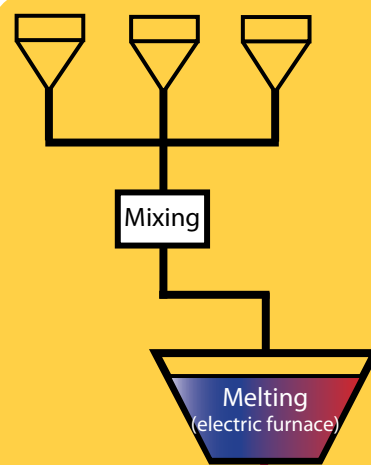


Most ceramics you might know about and see everyday like a coffee mug are rigid



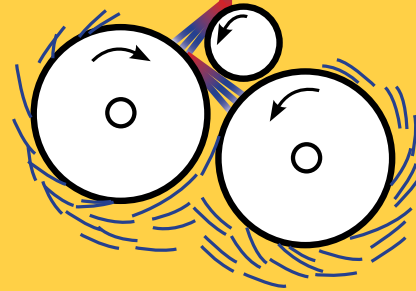
Ceramic fabrics were initially used to protect space shuttles. The ceramic fabric could prevent heat from getting through gaps in the tiles at the front of a space shuttle.

## HOW ARE THEY MADE?



One way to make ceramic fabrics is to first mix and melt the raw materials (mainly  $\text{SiO}_2$  and  $\text{Al}_2\text{O}_3$ ) at high temperature (above  $2000^\circ\text{C}/3500^\circ\text{F}$ !).

Spinning Method



The hot liquid is then spun into fibers by pouring it over rollers that spin at high speed.

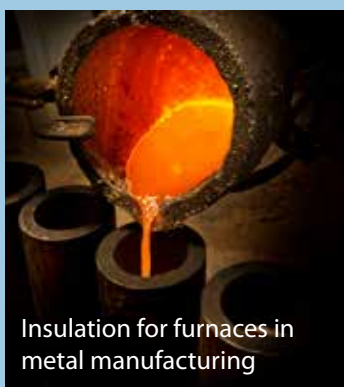
The fibers are then collected and can be woven into useful shapes



## WHAT ELSE ARE CERAMIC FABRICS USED FOR?

Since the fibers are made of ceramic materials, they can protect components against high temperature, are chemically resistant and are also lightweight!

Some applications include:



Insulation for furnaces in metal manufacturing



Insulation for aircraft engines



Insulation for pipes in many industries

## SUMMARY

Ceramics are traditionally known to be rigid solids. However, using special processing methods, they can be made flexible making them useful for many more applications (can you imagine trying to insulate a pipe with a rigid ceramic!?)

### WANT TO LEARN MORE?

To learn more about flexible ceramics, you can visit the following website ([ceramics.org/tag/flexible-ceramics](http://ceramics.org/tag/flexible-ceramics)) or scan the QR code.

