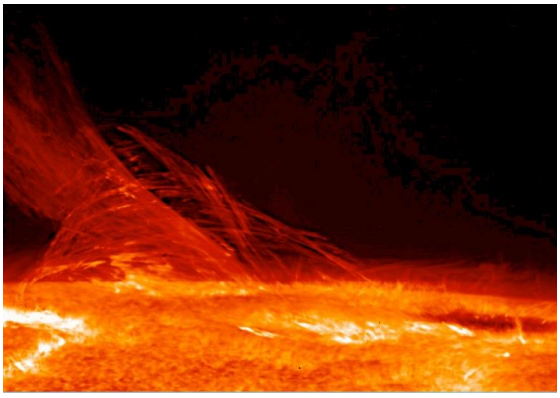
ELASTO PROXY INC.
The Art of Sealing
25 YEARS

Thermal Insulation

Solutions for High-Temperature Environments

What Are Thermal Materials?



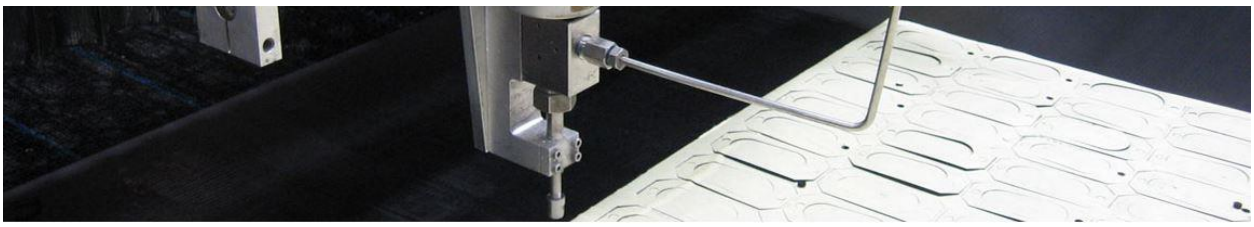
Summary: Learn how to select thermal insulation for your high-temperature application.

Thermal insulation is used in high-temperature environments such as ovens and engine compartments. Many different types of materials, including fireproof rubber, are available.

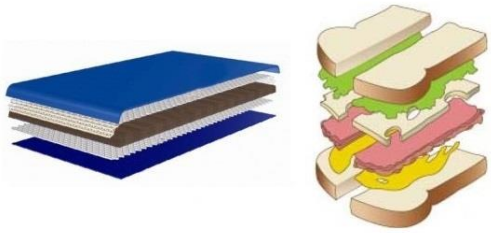
Choices include ceramic fiber, fiberglass, mineral fiber, mineral wool, polyurethane, silicone, and various specialty or proprietary materials. As you can see from this list, some thermal insulation is made of polymers. Others, such as metal foils, are not.

Thermal insulation materials come in different forms, too. Choices include boards, blocks, cords, coated fabrics, flexible sheets, foams, paper, and tapes. As a custom fabricator, Elasto Proxy can source thermal protection materials in these and other form factors. We then convert stock items to create specialty thermal insulation that meets all of your application requirements.

For example, using our water jet cutting machine, Elasto Proxy can convert sheets of melamine foam into thermal insulation with specific length and width dimensions. Our skilled production personnel can also convert thin sheets of aluminum foil-faced fiberglass fabric. Sometimes, however, cutting isn't that all you need. That's because your application requires more than just thermal insulation.



Building Insulation Sandwiches



In a kitchen oven, insulation serves an important but limited purpose – to contain heat and stop its spread. In an engine compartment, insulation may need to block the spread of heat and dampen loud sounds or vibrations, too.

This is especially true in large vehicles with heavy-duty, high-decibel engines. For example, the mine-resistant ambush protected (MRAP) vehicle that's been used in places like Iraq and Afghanistan uses both thermal and acoustic insulation in the engine bay.

By building sandwich-like structures of different materials, Elasto Proxy creates custom insulation that meets multiple application requirements. For an analogy, think of a ham and cheese sandwich on wheat bread. The ham and cheese both provide you with protein. The wheat bread meets your body's need for carbohydrates. None of these ingredients looks or tastes the same either. Consider, too, that the bread forms the outside of the sandwich rather than its middle.

With lunch, your taste preferences and nutritional needs determine which sandwich you might order at a restaurant. With sandwich-style insulation, your application requirements determine which materials you select and the way a custom fabricator stacks or layers them or you. That's why it's important to pick a partner that listens to your needs and understands your requirements. Experience with your industry also matters, as does an understanding of material properties and flammability standards.

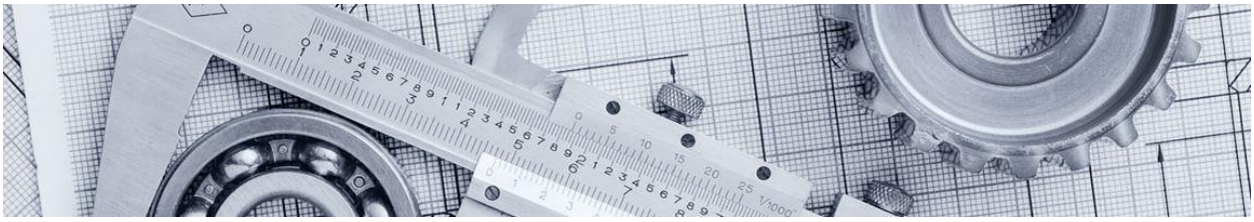
Material Properties and Flammability Standards

Even the best thermal insulation won't stop the transfer of heat completely. Whenever there's a difference in temperature between one side of a material and the other, some heat will move from the warmer area to the cooler area. Not all materials transfer heat equally, which is why technical buyers must consider a material property called thermal conductivity.

Simply put, thermal conductivity describes a material's ability to transfer heat. The lower the value, the more resistant the material is to heat transfer. In other words, make sure to choose thermal insulation with a low thermal conductivity for high-temperature applications. How much or how little thermal conductivity do you need? Again, that's a function of your application requirements.

In some cases, you may need to balance thermal conductivity against, say, tensile strength. Depending on your application and industry, you may also need to source a material that meets a specific standard for flame resistance. There are many different flammability ratings. Examples include UL 94 HF-1 (horizontal burning) and UL 94-V0 (vertical burning), just to name a few.

Do you have questions about selecting thermal materials, or the most efficient way to convert stock materials into custom insulation? What about the best way to stack or layer different materials to create sandwich-style structures that meet all of your insulation requirements. Watch the short video below for more information, and contact Elasto Proxy with questions or to request a quote.



How Can We Help You?

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