

Smoking Blankets – Not Necessarily a Cause for Concern

While Firwin Insulation Blankets can be made up of a number of different insulation materials, the most popular is our FW1200 fiberglass insulation. Able to contain heat up to 1200° F (649° C), FW1200 offers excellent thermal qualities at an economical price.

One unique feature of our fiberglass insulation blankets that sometimes causes concern, especially among first-time users, is that they can smoke slightly upon initial exposure to high temperatures. This is due to organic lubricant oil that is used during the manufacture of FW1200.

Fiberglass manufacture employs a needling process to weave the fibers together, and often organic oil is used to lubricate the needles. This can result in a 1% to 2% residue in the fiberglass material. When exposed to high temperatures for the first time, this oil burns off, and causes the smoking that is sometimes experienced when first using fiberglass insulation for high temperature applications.

The smoke is harmless, and tends to smell like burning cooking oil. A 1 inch thick blanket may burn for 10 to 15 minutes (at temperatures above 300°F / 149°C) upon the first running of the engine / exhaust system, until the oil is consumed. Thicker blankets (2 inches and up) can smoke for longer, as the temperature on the outer layers of the blanket may not get hot enough initially for the oil to burn out, and may need a longer run or subsequent runs to completely remove the oil residue.



Firwin recommends, when exposing fiberglass insulation blankets to high temperature applications for the first time, that the area is properly ventilated to allow the possible smoke to clear.

“It is important to note that smoking is only inherent in fiberglass insulation. Other insulators that Firwin uses, such as CMS Wool, are heat treated in the manufacturing process, and therefore do not exhibit any smoking”, notes Jon Miles, Firwin’s Manager of Design Engineering. “For this reason, we will often recommend an alternative insulation to fiberglass for ‘sensitive’ applications where the mere appearance of smoke, even a harmless one like in the case of fiberglass, gives rise to concern”, adds Jon.

Possible Alternative Sources of Smoke:

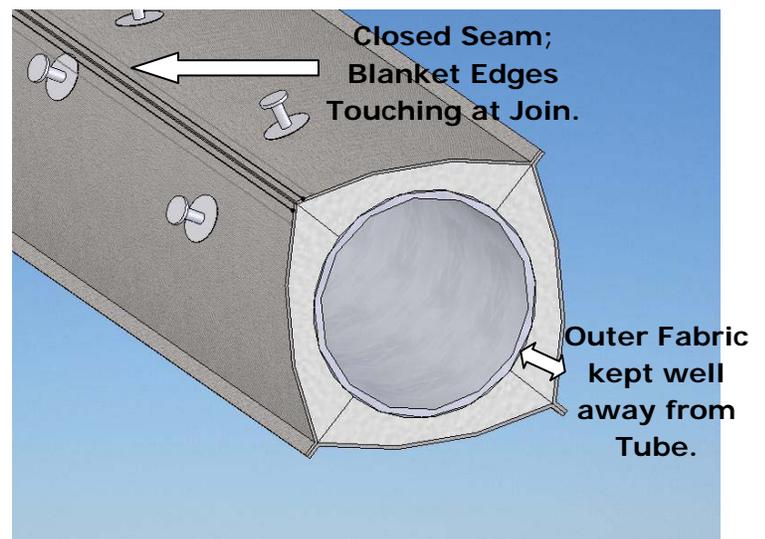
It is important to make note of the possibility that although it appears that the smoke is coming from the insulation, it is in fact coming from another source:

Residue / Contamination on pipe:

Sometimes smoke can be the result of residue that is on the piping. Even if the system has been run before without any signs of residue smoking, placing insulation blankets on the piping can cause the pipe temperature to rise to levels higher than they were without the blankets, and so it is possible that the residue smoke is only appearing now. Firwin therefore recommends inspecting the exhaust systems prior to installing removable insulation blankets, and clean as necessary to avoid residue burn off.

Blanket Flaps / Outer Surface caught against exhaust piping, or overlapped by neighbouring blanket:

Insulation blankets that are not properly installed, so that the outer cover or flaps are coming into contact with the exhaust piping, can cause smoking to occur. This same phenomenon can occur by overlapping blankets (i.e. one blanket is partially sitting on top of another),



where the upper insulation blanket can cause a heat increase on the outer surface of the inner blanket. These outer fabrics, although rated for high temperature applications, are typically not designed to withstand temperatures greater than 500°F (260°C). If exposed to higher temperatures, either via direct contact with the exhaust piping, or via the heat generated by overlapping blankets, these outer fabrics can become heat-damaged and brittle, and possibly give off smoke.

What to do in case of smoke:

Overall, if smoke appears to be coming from Firwin insulation blankets, the following step should be taken:

- If the blankets are fiberglass, it may be from the oil residue. Is this one of the first runs with the blankets on? Does the smell resemble a cooking oil? If the answer to these questions is yes, then it is likely that the smoke is from the oil residue.
- If the blankets are not fiberglass, or the smell is a burning smell, then the burning is likely from residue on the piping or improperly installed blankets. Clean piping and inspect blanket installation for outer blanket material coming into contact with piping or overlapping blankets, and correct as needed.

It is important to note that even in the case of a burning smell, the insulation blankets do not pose a fire hazard, as the materials used in Firwin removable insulation blankets are non-combustible. “The insulation material itself can’t catch fire; the outer cover, in extreme cases, and typically only under laboratory testing, may flame for a second before going out; but this is very rare in real life settings” said Brett Herman, Firwin’s Vice President of Sales and Customer Service. “However it is always better to be safe than sorry, and give us a call if there are any concerns”, said Brett.

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