Insulation Insights
Volume 2, Edition 1

Removable Insulation Blankets – An Overview

Removable Insulation Blankets are used to insulate engine parts, exhaust piping and components,and industrial process piping and machinery. In particular,applications which use diesel engines, such as power generation, off highway & on-highway vehicles, and marine often require insulation blankets to manage the heat that these engines generate.

Stand-By Power, Dawoo P222LE Engine	*Mining Vehicle*	*Co-Generation Waste Recovery, CAT 3516 Engine*
		

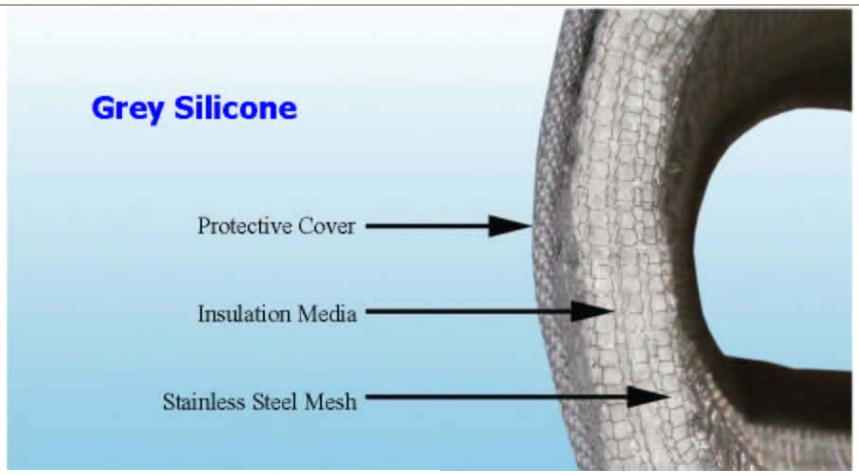
How Are They Constructed?

Removable insulation blankets are typically constructed in 3 layers.* The table and photos below illustrate the construction and materials used in a standard removable insulation blanket.

Insulation Blanket Construction

Layers	Material	Temperature Limit	Function
Outer	**Silicone Impregnated Fiberglass**	Grey: 500° F (260° C) Red: 600° F (316° C)	*Protective Cover*
	Aluminized Fiberglass	500° F (260° C) Coating 1000° F (538° C) Fabric **	
Middle	**Fiberglass**	Firwin 1200: 1200° F (649° C)	*Insulation Media*
	CMS Wool	Firwin 1800: 1800° F (982° C)	

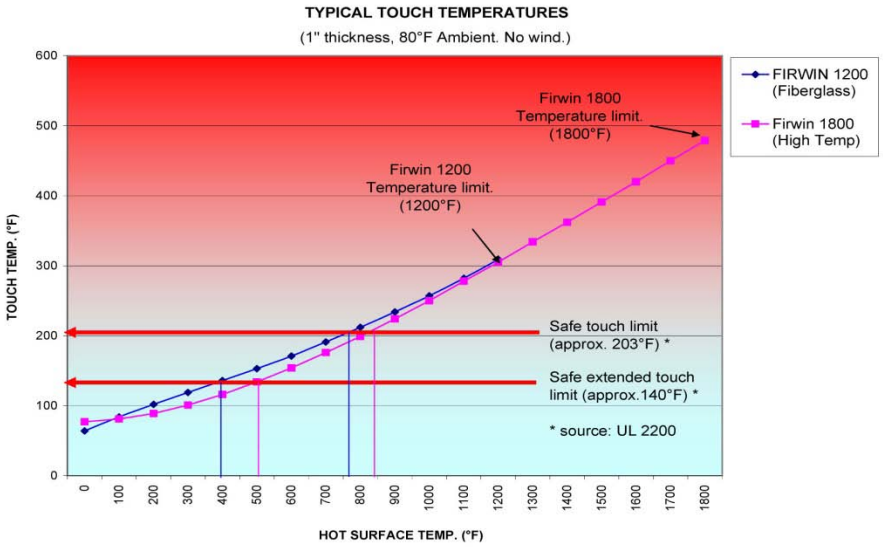
Inner	**Stainless Steel Mesh*** **	Firwin 304SS: 1200° F (649° C) Firwin 309SS: 1800° F (982° C)	*Contains Insulation Media*



* Certain applications require alternative construction methods – i.e. an extra layer may be added, as in the case of sound or fluid barriers.
** Aluminum coating may separate from fiberglass fabric at 500°F+, but fabric maintains good strength until 1000°F.
***The stainless steel inner liner may replaced by a fiber-containing material in cases where fiber containment is a requirement.

Heat Performance of Insulation Media

The chart below details the heat performance one can expect from removable insulation blankets. The chart shows what the temperature of the outer surface of the insulation blanket would be (touch temperature) at various temperatures of the part being insulated (hot surface). The chart also outlines at what hot surface temperature the insulation blankets reach the "safe touch limit" (as per UL 2200). For firwin 1200, the "safe touch limit" is reached at just over 700°F, while for firwin 1800, this limit is reached at 800°F.


TYPICAL TOUCH TEMPERATURES
(1" thickness, 80°F Ambient. No wind.)
TOUCH TEMP. (°F)
HOT SURFACE TEMP. (°F)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
FIRWIN 1200 (Fiberglass)
Firwin 1800 (High Temp)
Firwin 1800 Temperature limit. (1800°F)
Firwin 1200 Temperature limit. (1200°F)
Safe touch limit (approx. 203°F) *
Safe extended touch limit (approx.140°F) *
* source: UL 2200