



ADVANCE THERMAL CANADA

P.O Box 3383 Sherwood Park, Alberta Canada T8H 2T2
 Ph: 780-420-1173 Fax :780-922-4498 Email: info@advancethermal.ca

Install Removable Insulation on Valves and Fittings

During maintenance, the insulation that covers pipes, valves, and fittings is often damaged or removed and not replaced. Pipes, valves, and fittings that are not insulated can be safety hazards and sources of heat loss. Removable and reusable insulating pads are available to cover almost any surface. The pads are made of a noncombustible inside cover, insulation material, and a noncombustible outside cover that resists tears and abrasion. Material used in the pads resists oil and water and have been designed for temperatures of up to 1600°F/871°C. Wire laced through anchors, straps with buckles, and overlapping flaps with hook and loop Velcro hold the pads in place.

Applications:

Reusable insulating pads are commonly used in industrial facilities for insulating flanges, valves, expansion joints, heat exchangers, pumps, turbines, tanks, and other irregular surfaces. The pads are flexible and vibration resistant and can be used with equipment that is horizontally or vertically mounted or that is difficult to access. Any high temperature piping or equipment should be insulated to reduce heat loss, reduce emissions, and improve safety. As a general rule, any surface that reaches temperatures greater than 140°F/60°C should be insulated to protect personnel. Insulating pads can be easily removed for periodic inspection or maintenance, and replaced as needed. Insulating pads can also contain built-in acoustical barriers to help control noise. (Contact us to discuss our Acoustical Barrier Blankets)

Energy Savings :

The table below summarizes energy savings due to the use of insulating valve covers for a range of valve sizes and operating temperatures. These values were calculated using a computer program that meets the requirements of *ASTM C 680—Heat Loss and Surface Temperature Calculations*. The energy savings is defined as the difference in heat loss between an un-insulated valve and a insulated valve operating at the same temperature.

Energy Savings from Installing Removable Insulated Valve Covers (Btu/hour)

Operating Temp F /C	Operating Valve Size (inches)					
	3"	4 "	6"	8 "	10 "	12"
200F/93 C	800.0	1,090	1,560	2,200	2,900	3,300
300F/149C	1,710	2,300	3,300	4,800	6,200	7,200
400F/204C	2,900	3,400	5,800	8,300	10,800	12,500
500F/260C	4,500	6,200	9,000	13,000	16,900	19,700
600F/316C	6,700	9,100	13,300	19,200	25,200	29,300

The figures are based on installation of a 1-inch thick insulating pad on an ANSI 150-pound class flanged valve with an ambient temperature of 65°F/18°C and zero wind speed.

Example :

Using the table above, calculate the annual fuel and dollar savings from installing a 1-inch thick insulating pad on an un-insulated 6-inch gate valve in a 250 pounds per square inch gauge (psig) saturated steam line (406°F/207°C). Assume continuous operation with natural gas at a boiler efficiency of 80% and a fuel price of \$4.50 per million British thermal units (MMBtu).

Results:

$$\text{Annual Fuel Savings} = 5,992 \text{ Btu/hr} \times 8,760 \text{ hours/year} \times 1/0.80 = 65.6 \text{ MMBtu/year}$$

$$\text{Annual Dollar Savings} = 65.6 \text{ MMBtu/year} \times \$4.50/\text{MMBtu} = \underline{\underline{\$295 \text{ per 6-inch gate valve a year in energy savings.}}}$$

Advance Thermal Canada recommends that you conduct a survey of your steam distribution system to identify locations where removable and reusable insulation covers can be used. Often companies use removable insulation on components requiring periodic inspections or repair. Your R.O.I can be as little as 8 months on some applications, ask us for an energy audit and or R.O.I. calculation for removable insulation covers for your facility equipment.

**Steam Tip Sheet information adapted from information provided by the Industrial Energy Extension Service of Georgia Tech and reviewed by the US Department of Energy Best Practices Steam Technical Subcommittee.*