Pipe Insulation
(Air Conditioning)

Installation Recommendation

Before application of pipe insulation, ensure that the metal surface of the pipe is clean and dry and that the insulation is dry.

Open a length of Bradford Glasswool SPI or Rockwool SPI (Sectional Pipe Insulation) and snap into position over the pipe, tightly butting it against the adjacent section.

The appropriate thickness of insulation can be calculated using the information contained in the Air Conditioning Design Guide. Alternatively, consult the Bradford Insulation office in your state to make use of the Thermecon computer programme.

The insulation may be held tight to the pipe in a variety of ways. In small sizes, the metal cladding will fulfill this function. Loops of soft galvanised or stainless steel wire are used up to 300mm O.D. of insulation, using three loops for each section beyond 200mm O.D. Above 300mm, 19mm metal bands should be used instead of wire loops.

Where multiple layers of insulation are used, apply the outside sections over the first layer in similar fashion ensuring that all joints are staggered to avoid direct heat transfer paths.

Bends can be insulated by cutting segments from a straight section of pipe insulation with a sharp knife i.e. mitered. The insulation segments are drawn tightly into position with 25mm galvanised square mesh and soft lacing wire. A surface finish can then be applied to correspond with that on the adjacent straight sections.

Valves, flanges and fittings may be insulated in much the same way as bends, using a sharp knife to cut batts or pipe insulation to give a neat close fit. The pieces can be secured by wrapping with wire mesh and the relevant surface coating can then be applied.

Alternatively, a sheet metal box may be constructed and lined with Rockwool Fibertex™ 450™ secured with pins or adhesive. This approach allows speedy access for maintenance or inspection.

Pipes at Low Temperatures

Pipes at low temperatures (chilled water and refrigeration) require a complete vapor barrier on the outside of the insulation. This is best provided by use of a factory-applied Thermofoil™ 750 foil laminate facing with 50mm laps that can be glued down. The vapor barrier is then completed by applying to all radial joints a 100mm wide strip of fire resistant vapor impermeable pressure sensitive tape, such as PPC 415 foil tape. Use of impermeable pipe supports are recommended to restrict transmission of vapor if damage occurs to a particular section of the vapor barrier.

At insulated bends, valves, flanges and fittings, the vapor barrier can be a foil laminate applied in strips by means of an adhesive or PPC 415 foil tape. In view of the greater risk of puncture in these locations a wise precaution is to apply by glove-coat or brush a layer of a suitable reinforced vapor seal mastic, such as Fosters 30-80 to a dry finish thickness of 0.9mm.

Pipes at Moderate Temperatures

Pipes at moderate temperatures (up to 350°C) if hidden from view, may not need a surface finish, the plain or unbound pipe sections are then secured with soft galvanised wire as described previously.

Low cost surface finishes include calico, scrim and alfoil; the longitudinal lap of the facing is glued down with a suitable adhesive. Aluminum fixing bands are then applied over the radial joints and at the centre of each section.

Metal Cladding

Metal cladding is the recommended surface finish in locations where the insulation is exposed to the weather or the risk of mechanical damage. The preferred sheet metals for this purpose are galvanised steel, zincanneal and aluminum. The metal is cut and rolled to size, allowing for side laps in accordance with the outside diameter of the insulation as follows:
Pipe Insulation (Air Conditioning)
Installation Recommendation

Metal Cladding

Insulation O.D. Side Lap

<table>
<thead>
<tr>
<th>Diameter Range</th>
<th>Lap Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 168.3mm</td>
<td>38mm</td>
</tr>
<tr>
<td>168.3 to 355.6mm</td>
<td>50mm</td>
</tr>
<tr>
<td>over 355.6mm</td>
<td>75mm</td>
</tr>
</tbody>
</table>

The outer edges to be lapped are swayed and, when fixing in position, the laps are located to shed water.

For service above ambient temperature, the metal can be secured by self-tapping screws or pop rivets; alternatively, and particularly for low temperature work, metal fixing bands can be used at the ends of the joints and the middle of each section of cladding. Care must be taken not to puncture the enclosed vapor barrier in low temperature applications.

Insulation of pipes up to 350°C, exposed location

As an alternative to sheet metal cladding, protection may be provided by applying two coats of a finishing cement. This may be considered where mechanical damage is a particular concern or acoustic considerations are important. Wire mesh is used over the insulation to provide a key for the first layer of cement. The first layer of 6mm is applied with a rough finishing to provide a key for the second 6mm layer, which is applied only after the first layer is fully dry.

The insulation must be dry when installed and kept dry. If necessary, waterproof covers should be used to protect pipe insulation which has been fixed in position but cannot immediately be protected by metal sheathing or other specified surface finish.

Insulation of pipes at temperatures below ambient

CSR Bradford Insulation, 55 Stennett Rd, Ingleburn, NSW 2565
Ph. (02) 9765 7000  Fax. (02) 9765 7052
Website: www.csr.com.au/bradford