PRE-INSULATED PIPE

Commercial Pipe Installation

OVERVIEW

What is Pre-Insulated Pipe?

It is a pipework system which ensures minimal heat loss or gain as required, by completely encasing a carrier pipe (containing hot or cold liquids) with a closed cell rigid polyurethane insulation inside an outer pipe casing which also contributes to the insulation properties of the carrier pipe. The insulation can be increased or decreased by changing the inner and/or outer pipe size.

Carrier Pipe

Copper Type B

Copper API 5L

Copper ASTM 106B

Carbon Steel Pipe

Stainless Steel Pipe 304L Schedule 10

Stainless Steel Pipe 316 Schedule 10

Insulation

Polyurethane Insulation Closed Cell, CFC Free, Rigid

Outer Casing

Polyethylene

PVC

Galvanised Spiral



Why Use Pre-Insulated Pipe?

Pre-Insulated pipework systems offer proven efficiency as the most successful way to minimise heat loss or heat gain when carrying fluids and gases. This pipework system is very versatile as it can be used in a variety of situations with numerous applications.

Assets

- The Rigid insulation coupled with a robust outer casing gives a high compressive strength
- Water ingress is nil due to the seamless insulation of Polyurethane foam and watertight jacketing
- The carrier pipe is protected from the weather preventing corrosion
- To create more room in a tight space the insulation thickness can be reduced
- ⊙ Long lasting product

Properties

- Rigid polyurethane foam has the lowest thermal conductivity and coefficient of expansion of all known insulating materials, thus increasing energy efficiency
- Polyurethane foam utilises CFC Free blowing agents
- Polyurethane foam provides very good damping properties, reducing noise considerably

Savings

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- Minimum maintenance costs
- Reduced onsite labour and quick process
- Retains its shape with no damage to insulation, in spite of regular foot traffic, resulting in lowered maintenance cost compared to conventional systems

SPECIFICATIONS

At Commercial Pipe Installation we manufacture the highest quality of Pre-Insulated Pipework to supply to you.

We have had our customised polyurethane insulation tested by the NATA accredited CSIRO to determine its insulative properties in compliance with *AS/NZS 4859.1 Materials for the Thermal Insulation of Buildings.*

Test Report: XC3478/R1 Issue Date: 22-Feb-2018

Product Name: Polyurethane Insulative Foam

Sample Description: Polyurethane insulative foam specially formed into a specimen 600mm x 600mm and 75mm thick for the purposes of thermal properties measurement.



The below table summarises the results of the testing.

Specimen ID	Measure- ment Number	Average Thickness (mm)	Mean Temperature (°C)	Thermal Resistance (m ² .K/W)	Apparent Thermal Conductivity (W/m.K)
180213A	FX6-0946	75.2	23.0	3.37	0.0224

Measurements

Specimen Lab ID	1802013A		
Customer Description	Polyurethane Insulative Foam		
Measurement No	FX6-0946		
Date of Measurement	14 February 2018		
Ambient Temperature	24 °C		
Mean Thickness	75.2 mm		
Mean Thickness Standard Deviation	0.6 mm		
Length x width	599 mm x 597 mm		
Weight	1.713 kg		
Density	63.7 kg/m ³		
Moisture Content	n/a		
Plate Spacing	75.5 mm		
Hot Surface Temperature	33.0 °C		
Cold Surface Temperature	13.0 °C		
Specimen Mean Temperature	23.0 °C		
Mean Heat Flow	5.92 W/m ²		
Mean Thermal Conductance	0.297 W/m ² .K ± 3%		
Apparent Thermal Conductivity	0.0224 W/m.K ± 4%		
Mean Thermal Resistance (R Value)	3.37 m ² .K/W ± 3%		

These details summarise the CSIRO report for convenience, if you wish to view a copy of the full report please enquire with our office.



CUSTOMISATION

At Commercial Pipe Installation we can fabricate Pre-Insulated Pipe systems to your specifications to suit your needs.



Carrier: Epoxy Painted Black Steel

Casing: Spiral Wound

Carrier: Copper Tube Casing: HDPE

Carrier: Stainless Steel

Casing: HDPE

Carrier: Refrigeration Copper

Casing: PVC

Casing: PVC

Carrier: Black Steel

Carrier: Black Steel Casing: HDPE

Bends

Pre-fabrication of bends significantly reduces onsite installation time as these can be pre-welded to straight lengths in our workshop.

Bends may be required to allow for thermal expansion or to redirect the pipe system to reach the required destination.



Tees & Branches

Straight tees can be manufactured where a branch from the main pipe is required. Cross-over tees can also be produced where a branch is required to clear obstructions or other pipework.

The branch diameter is always smaller or equal to the main pipe diameter.

Flanges

Pre-welding flanges aids in installation as the pre-fabricated pipework can quickly and easily be joined to the existing pipe system onsite.

Further, by making allowances for any additional branches at the fabrication stage, the integrity of the insulative and watertight properties are maintained.





PRE-FABRICATION

We will work with you to pre-fabricate specialty pipework, bends, tees & various fittings to your specific needs. All pre-fabrication is carried out in our workshop by trained tradespersons using specialty equipment to ensure the highest quality pipework is produced.

The following steps are involved in the pre-fabrication process;

- Pipe is purchased to meet the specifications for both the carrier & casing pipe
- The carrier pipe is carefully anchored in a central position of the casing
- Filing & Venting openings are created in the casing and all other openings are carefully sealed
- Specialised machinery is used to mix and inject chemical substances at the correct ratio to create the polyurethane foam
- Filing & Venting openings are tightly sealed and the piece is left in a stable environment to harden



We take great caution when pre-fabricating to ensure the complete filling of the piece with no voids is attained, this ensures a very high quality standard of all pre-insulated pipework and fittings is produced.

JOINT RE-INSTATEMENT

When joining pipework segments together onsite it is essential to ensure that the entire system is encased with the polyurethane insulation. To do this small sections of the system may need to be insulated after installation by using a joint re-instatement kit.

As part of the installation process we will re-instate any joints to maintain the integrity of the installation. In the case of 'supply only', we can supply the re-instatement kits and instructions for use as required.

The following steps are involved in the joint re-instatement process;



- The exposed carrier pipes are joined by welding or other appropriate methods
- A sheath is attached to the outer casings either side of the join
- The chemical substances provided are combined and poured into the opening in the sheath
- The pour hole is tightly sealed and left for the polyurethane foam to harden

INSTALLATION

At Commercial Pipe Installation we employ qualified tradespersons to install the pre-insulated pipework that we manufacture. As the pipework along with the majority of fittings can be pre-fabricated the installation is simple and efficient making it a cost-effective solution to your pipework needs.





Riser

Pre-Insulated pipework is suitable to install within building risers. By pre-fabricating pipework the small space is used effectively. It also makes the installation process quick, reducing labour costs.



Above Ground

Pre-Insulated pipework can be installed above ground as other pipework systems are. Using this specialised pipework means that there is no requirement to install other insulative materials and the thermal insulation is much more effective than traditional methods.





to be installed in an unlined trench, which is then back-filled. The pipework is designed to withstand high/heavy traffic.

PROJECTS

We have been supplying and installing our prefabricated Pre-Insulated pipework on many projects in Western Australia with great success.

The following is a sample of these projects giving a brief overview of what we can provide.

CROWN CASINO

We manufactured & installed heating & chilled water pre-insulated copper pipework to a refit at the Crown Casino. With a tight on-site program & a limited shutdown period it was ideal to use this type of pipework.

Curtin University are progressively upgrading the district heating & chilled water pipework serving the campus, replacing the existing fibro pipe with pre-insulated pipework. We have been involved in the manufacture & installation for multiple projects as the upgrade is rolled out.



SPACE SURVEILANCE TELESCOPE

For this unique project our skilled team saved costs by welding and fabricating the heating & chilled water carbon steel pre-insulated pipework in our Perth workshop and transported it to Exmouth for installation by a secondary onsite team.

PERTH CULTURAL CENTRE

As part of The City of Perth's major upgrades to its Cultural Centre we manufactured the supply of copper pre-insulated pipework.

This project required the fabrication and installation of new stainless steel pre-insulated pipework which was connected to the inground existing services.

KARRATHA HEALTH CAMPUS

As part of the building of a new Joint Health Command we manufactured & installed inground heating & chilled pre-insulated steel pipework which complied with high quality standards, including weld x-ray certification.



HOLLYWOOD HOSPITAL

We manufactured the supply of pre-insulated copper pipe along with joint reinstatement kits for the inground potable cold water services.

CAMPBELL BARRACKS JHC

After surveying & removing the old corroding pipework at International House we fabricated & installed the new heating water pipework in the riser using preinsulated copper.

Commercial Pipe Installation Pty Ltd

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