1. PURPOSE
The purpose of the ISP Work Procedures is to ensure that any work carried out on ISP follows the appropriate Standard Work Procedure.

To ensure that COMPANY assets and property are not put at risk when work is required on ISP. The work procedures must be followed regardless of the scale of work.

2. SCOPE
Work on ISP shall be understood to mean:

- Install or demolish ISP panel
- Make a penetration through either or both skins of an ISP panel
- Mount equipment or either skin of an ISP panel
- Effect repairs to either skin

The Engineering team has the responsibility of maintaining and developing these ISP Standard Work Procedures.

NOTE: NO HOT WORK IS PERMITTED ON ISP UNDER ANY CIRCUMSTANCES.

3. ISP STANDARD WORK PROCEDURES

ISP – WP 1 Standard Work Procedure for sealing penetrations through ISP made for pipes and conduits.
ISP – WP 2 Standard Work Procedure for sealing penetrations through ISP made for cable run into cool rooms or freezers.
ISP – WP 3 Standard Work Procedure for sealing penetrations through ISP made for single or multiple lagged pipes.
ISP – WP 4 Standard Work Procedure for sealing large penetrations through ISP made for ductwork.
ISP – WP 5 Standard Work Procedure for sealing large penetrations through ISP made for groups of pipes and cable ladder.
ISP – WP 6 Standard Work Procedure for mounting equipment on ISP.
ISP – WP 7 Standard work procedure for repairing ISP

4. REFERENCES
Federal

Applicable to Victoria
Occupational Health and Safety Act 2004
Victorian OH&S Working at Heights Regulations

Applicable to NSW
Occupational Health & Safety Act 2000
Occupational Health & Safety Regulations 2001

Applicable to Queensland
Workplace Health & Safety Act 1995
Workplace Health & Safety Regulations 1997

Applicable to South Australia
Occupational Health, Safety and Welfare Act 1986
Occupational Health, Safety and Welfare Regulations 1995

Applicable to Western Australia
Occupational Safety & Health Act 1984

Applicable to Northern Territory
Work Health Act
5. ROLES & RESPONSIBILITIES

Only qualified maintenance contractors are permitted to carry out any work on ISP and must have prior approval and sign off on correct procedures by the Property Team, site manager/ work supervisor.

Where none of the work procedures appear to be appropriate for the job at hand, advice from the Engineering team must be obtained. The following applies for all work on ISPs:

- The Property Team must have full notice of any work to be completed
- Permits are to be issued for all new works and repairs.
- Permits can only be issued by supervisors or managers with the Property Team’s approval.
- Permits can be issued to employees and contractors.
- Permit holders must be trained and competent in performing the works covered by the issued permit.

All COMPANY employees, contractors and visitors are required to comply with these procedures

All issued and signed off permits are to be held on file for audit and review for at least twelve months by the manager

NOTE: NO HOT WORK IS PERMITTED ON ISP UNDER ANY CIRCUMSTANCES.
6. PROCEDURES
6.1 PROCESS FLOW CHART
6.2 PROCEDURES

ISP – WP 1 Standard Word Procedure for sealing penetrations through ISP made for pipes and conduits.

Objective: To ensure that when a penetration is made through ISP for pipes and conduits:

- That the penetration is made using the hole saw without generating enough heat to ignite the styrene.
- That the vapour seal is made good.
- That the flashing and sealing is applied to both sides of the ISP and is at least equal to the skin of the ISP.
- That the flashing and sealing does not harbour dirt or product.

Procedure:
1) Using a hole saw, make a hole through the ISP. The diameter of the hole should be as close to the diameter of the pipe or conduit as possible. Refer to diagram ISP WP1.
2) Pass the pipe or conduit through a suitably sized expansion flange, through the ISP and through a second expansion flange.
3) For both expansion flanges,
   a) Position the inner flange against the ISP
   b) Press the O ring firmly into position against the inner flange
   c) Apply silicone sealant between the outer flange and the ISP and screw fix the outer flange into place.
   d) Remove excess silicone sealant.
   e) Confirm that the o-ring is compressed between the flange and the pipe or conduit.

Expansion flanges are not readily available for pipes with a diameter less than 19mm. For pipes smaller than 19mm,

1) Fabricate flashing rings from colour bond sheeting. Ensure that the pipe fits neatly through the rings.
2) Apply Silicone sealant between the ring and the ISP and fix the rings in place using blind rivets. Remove excess sealant.
ISP - WP1

Note: The inner & outer flanges & 'O' ring are available as an expansion flange set. This illustration shows two sets installed.

<table>
<thead>
<tr>
<th>Product Code</th>
<th>OD Tube Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF3X025</td>
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<tr>
<td>TF3X038</td>
<td>30.6mm</td>
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<tr>
<td>TF3X051</td>
<td>50.8mm</td>
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<td>TF3X063</td>
<td>63.5mm</td>
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<tr>
<td>TF3X076</td>
<td>76.2mm</td>
</tr>
<tr>
<td>TF3X101</td>
<td>101.6mm</td>
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</tbody>
</table>
**Insulated Sandwich Panel (ISP) Procedure**

**ISP – WP 2  Standard Work Procedure for sealing penetrations through ISP made for cable run into cool rooms or freezers.**

**Objective:** To ensure that when a penetration is made through ISP for cable
- That the penetration is made using a hole saw without generating enough heat to ignite the styrene.
- That the vapour seal is made good.
- That the sealing applied to both sides of the ISP is at least equal to the skin of the ISP.
- That the silicone seal does not harbour dirt.

**Conduits carrying cable or wiring are not to be run into cool rooms or freezers under any circumstances.**

**Procedure:**

1) Using the hole saw, make a hole through the ISP. The diameter of the hole should be as close to the diameter of the conduit as possible. *Refer to diagram ISP WP2.*

2) Cut a piece of conduit 20mm longer than the thickness of the ISP being penetrated. This will allow the conduit to extend 10mm past the skin on either side of the ISP.

3) Apply silicone sealant to the outside of the conduit and insert the piece of conduit into the hole making sure there is a seal between the ISP and the conduit on both sides of the ISP. Pay particular attention to the seal on the warm side of the ISP.

4) After the silicone sealant has set, pass the cable through the conduit and apply silicone sealant between the conduit and the cable at both ends of the conduit.

**ISP – WP 2**

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**Image:** Diagram showing the process of sealing penetrations through ISP.
**Insulated Sandwich Panel (ISP) Procedure**

**SP – WP 3  Standard Work Procedure for sealing penetrations through ISP made for single or multiple lagged pipes.**

**Objective:** To ensure that when a penetration is made through ISP for lagged pipes

- That the penetration is made using a ‘beater saw’, jigsaw or hole saw without generating enough heat to ignite the styrene.
- That the vapour seal is made good.
- That the sealing applied to both sides of the ISP is at least equal to the skin of the ISP.
- That any void created is filled with closed cell polyurethane expanding foam.
- That the flashing and sealing does not harbour dirt or product.

**Procedure:**

1) Create an opening in the ISP sufficiently large enough to allow the pipe to pass through and to have it’s lagging applied. Where the penetration through the ISP is too large to be made with a hole saw a square or rectangular penetration is acceptable. *Refer to diagram ISP WP3.*

2) Install the pipe and apply the pipe lagging making sure the lagging is continuous through the penetration in the ISP. All components of the lagging should be applied at this stage, with the exception of any external metal cladding.

3) For each side of the ISP, fabricate flashing from two pieces of white Colour Bond sheeting equivalent to the ISP skin. Ensure that the flashing overlaps the penetration by at least 50mm. Apply silicone sealant between the flashing and ISP and fix in place with blind rivets. Remove any excess silicone sealant.

4) Make a small hole in the flashing and fill the void with expanding polyurethane foam. Trim away excess foam and plug the hole.

5) Fit metal cladding to the lagged pipe work if metal cladding has been specified.

**SP – WP 3**

![Diagram of ISP WP 3](image-url)
**ISP – WP 4 Standard Work Procedure for sealing large penetrations through ISP made for ductwork.**

**Objective:** To ensure that when a penetration is made through ISP for ductwork:
- That the penetration is made using a ‘beater saw’ or jigsaw without generating enough heat to ignite the styrene.
- That the vapour seal is made good.
- That the sealing applied to both sides of the ISP is at least equal to the skin of the ISP.
- That the flashing and sealing does not harbour dirt or product.

**Procedure:**

1) Create an opening in the ISP 20mm wider and 20mm deeper than the duct that will pass through it using a beater saw or jigsaw.

2) For a duct passing through ISP other than into a refrigerated space: *See diagram ISP WP4.*

   (a.) Fabricate aluminium channel flashing to cover the exposed ISP core. Apply silicone sealant between the flashing and ISP and fix in place with blind rivets.

   (b.) Fabricate aluminium or fibreglass angle flashing to cover the gap between the channel and the duct on both sides of the ISP. Apply a continuous bead of silicone sealant between all mating surfaces and fix in place with blind rivets.

3) For a duct passing into a refrigerated space see diagram ISP WP4.

   (a.) Fabricate aluminium or fibreglass angle flashing that when installed will almost cover the ISP core. Ensure that the inside and outside flashing can’t come into contact.

   (b.) Apply silicone sealant between the flashing and the ISP and fix in place with blind rivets.

   (c.) Apply a bead of silicone sealant between the inside and outside flashing to seal the exposed ISP core.

   (d.) Fabricate aluminium or fibreglass angle flashing to cover the gap between the first flashing and the duct on both sides of the ISP. Apply a continuous bead of silicone sealant between all mating surfaces and fix in place with blind rivets. XYZ Pty Ltd ISP Procedures - ISP WP4
ISP – WP 5  Standard Work Procedure for sealing large penetrations through ISP made for groups of pipes and cable ladder.

Objective: To ensure that when a penetration is made through ISP for large groups of pipes:

- That the penetration is made using a ‘beater saw’ or jigsaw without generating enough heat to ignite the styrene.
- That the vapour seal is made good.
- That the sealing applied to both sides of the ISP is at least equal to the skin of the ISP.
- That the flashing and sealing does not harbour dirt or product.

Note: This procedure can not be used for pipe penetrations into cool rooms. Work procedure ISP WP1 or ISP WP 3 must be used.

Procedure:

1) Create the required opening in the ISP. See diagram ISP WP5.
2) Fabricate aluminium channel flashing to cover the exposed ISP core. Apply silicone sealant between the flashing and ISP and fix in place with blind rivets.
3) Remove excess sealant.

ISP – WP 5

Run a continuous head of silicone sealant between the mating surfaces of the ISP & channel. Fix the channel in place with blind rivets & remove excess sealant.
Objective: To ensure that when equipment is mounted in an ISP wall or ceiling:
- That the equipment can not transfer enough heat to the ISP to ignite the core.
- That the skin of the ISP does not delaminate from the core.
- That the vapour seal is made good.
- That dirt or product will not be trapped between the equipment and the wall or ceiling.
- That an electrical hazard is not created.

Generally, ISP walls should be left as clear of equipment as possible. Alternative mounting procedures should be identified for equipment weighing more than 10kg. Alternatives that should be considered include floor mounting equipment and suspending or supporting the equipment from structural building elements.

Procedure:

1) For flush mounted equipment e.g. Light switches, power outlets, emergency stop buttons, containers for hairnets and earplugs etc.:
   (a.) Mark and drill pilot holes. For electrical equipment make sure that the position of the mounting holes maintains double insulation between live parts and the fixing screw. Otherwise earth the mounting screw.
   (b.) Apply silicone sealant between the mating surfaces of the equipment and the ISP.
   (c.) Fix the equipment in place with self tapping screws or blind rivets.
   (d.) Remove excess sealant.

Note: All conduits installed in processing and cool room areas must be spaced from the wall. The objective is to ensure that the instillation can be effectively cleaned.

2) For equipment that exceeds 10 kg or that could be subjected to significant forces, for example, a fire hose reel:
   (a.) Mark and drill clearance holes through the ISP at the mounting points.
   (b.) Make allowances to spread the load on both sides of the ISP by using large (at least 100 cm²) stainless steel plates or hot dipped galvanised Unistrut.
   (c.) Apply silicone sealant between the ISP and any faces of the plates or of the structure that make more than point contact with it.
   (d.) Use stainless steel nuts and bolts or stainless steel threaded rod and nuts to bolt through the assembly.
   (e.) Do not over tighten the assembly because this may damage the ISP.
   (f.) Remove excess sealant.
3) For surface mounted light fittings ensure that the fitting is mounted flush to the ceiling and that no voids exist between the light fitting and the ceiling panel. In hygiene areas the fitting must be rated IP 67 and the diffuser must be smooth on the outside.

4) For recessed light fittings: *refer to diagram ISP WP6*

(a.) The light fitting to be recessed must have a metal casing designed to be recess mounted. Size the opening in the ISP to be as close to the external dimensions of the light fitting as possible.

(b.) Make the opening in the ISP using a beater saw or jig saw.

(c.) Run a continuous bead of silicone sealant between mating surfaces of the light fitting and the ISP on the “cold” side of the panel and install the light fitting. Fix it in place with blind rivets.

(d.) Fabricate flashing to re-form the vapour seal on the “warm” side of the ISP. Apply a continuous bead of silicone sealant between mating surfaces and fix the flashing to the ISP with blind rivets. Avoid fixing the flashing to the light fitting.

(e.) If the ceiling space in the area of the light fitting is trafficable, fabricate and install an expanded metal top hat over the fitting that will prevent a person stepping on the fitting.

ISP – WP 6
ISP – WP 7  Standard wok procedure for repairing ISP

Most damage to ISP results in one skin of a panel being dented or torn. This work procedure addresses the repair of this type of damage. Panel damaged to such an extent that both skins are creased should be replaced.

Objective: When repairing damaged ISP it is necessary to make sure:

- That when the damaged material is cut away without generating enough heat to ignite the styrene.
- That the vapour seal is made good.
- That the sealing applied to both sides of the ISP is at least equal to the skin of the ISP.
- That the flashing and sealing does not harbour dirt or product.

Procedure: - to be used when the core is gouged

1) Mark a square or rectangular area on the damaged skin that completely contains the damaged area of ISP.

2) Using a jig saw cut through the ISP skin and remove the marked area of skin.

3) Use a sharp knife to cut in line with the edge of the opening, through the styrene to the other skin of the ISP.

4) Remove the styrene.

5) Cut a piece of ISP the same thickness as the panel under repair. The piece should overlap the opening by 40 – 50 mm on each side.

6) Remove one skin from the piece of panel and trim the styrene to be a neat, tight fit in the opening.

7) Apply silicone sealant between the mating surfaces and fix the plug in place with blind rivets.

8) Remove excess sealant.

Alternative procedure - to be used when the core is not damaged

9) Mark a square or rectangular area on the damaged skin that completely contains the damaged area of ISP.

10) Using a jig saw or beater saw cut through the ISP skin and remove the marked area of skin.

11) Fabricate a piece of colour bond sheeting, sized to overlap the area of exposed styrene core by 40 – 50 mm on all sides.

12) Apply silicone sealant between mating surfaces and fix the patch in place with blind rivets.

13) Remove excess sealant.
7. RECORDS/ DOCUMENTATION

<table>
<thead>
<tr>
<th>Record</th>
<th>Custodian</th>
<th>Location</th>
<th>Minimum Time Filed</th>
<th>Minimum Time Archived</th>
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<tbody>
<tr>
<td>Insulated Sandwich Panel (ISP) Work Permit</td>
<td>Maintenance Manager</td>
<td>Maintenance Office</td>
<td>2 years or until replaced</td>
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<td>Working at Height Permits</td>
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<td>Hot Work Permits</td>
<td>Maintenance Manager</td>
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<td>2 years or until replaced</td>
<td>Nil</td>
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</table>

8. REFERENCES

SWS No. 3.3 Contractor & Visitor Management
SWS 3.6 Electrical Safety
SWS 3.8 Hazardous Materials
SWS 3.13 Permit to Work
APPENDIX – A – INSULATED SANDWICH PANEL (ISP) WORK PERMIT
**INSULATED SANDWICH PANEL (ISP) WORK PERMIT**

It is important when making any penetrations though ISP to make sure the polystyrene foam is not left exposed. If exposed, it provides any easy way for the core of the ISP to catch on fire. This procedure is designed to address this issue by ensuring we install and manage ISP in a consistent procedure.

HOT WORK IS NOT TO BE CARRIED OUT ON INSULATED SANDWICH PANEL.

<table>
<thead>
<tr>
<th>ISP WORK PERMIT</th>
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</thead>
<tbody>
<tr>
<td>LOCATION:</td>
</tr>
<tr>
<td>DEPARTMENT:</td>
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<tr>
<td>Commencement Time:</td>
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<tr>
<td>EQUIPMENT:</td>
</tr>
<tr>
<td>WORK TO BE PERFORMED:</td>
</tr>
<tr>
<td>WORK TO BE PERFORMED BY:</td>
</tr>
<tr>
<td>STANDARD PRECAUTIONS:</td>
</tr>
<tr>
<td>• No hot cutting, oxy welding or grinding of panels.</td>
</tr>
<tr>
<td>• Operating equipment shut down and isolated where appropriate.</td>
</tr>
<tr>
<td>• The work areas clean and free from debris and flammable materials.</td>
</tr>
<tr>
<td>• Confined spaces are to be checked for poisonous and flammable gases and dust and oxygen levels.</td>
</tr>
<tr>
<td>• Notify department manager / supervisor of the intent to work.</td>
</tr>
<tr>
<td>• All equipment checked for good repair.</td>
</tr>
<tr>
<td>• Sharp tools only are to be used</td>
</tr>
<tr>
<td>• Use slow speed cutters and tin snips</td>
</tr>
<tr>
<td>• Non-spark producing tools, drill, cutters, etc to be used</td>
</tr>
<tr>
<td>• Exposed foam core resealed with non-combustible face at completion of work (i.e. no exposed foam core).</td>
</tr>
</tbody>
</table>

| MAINTENANCE |
| SPECIAL PRECAUTIONS (As Specified by ISP Standard Work Procedures) |
| WORK AUTHORISED BY: Signed: Print Name: Position: |
| WORK ACCEPTANCE: I have been fully briefed and understand the work to be performed. I am fully aware of the standard and special safety precautions as outlined above and agree to abide by these precautions. Signed: Print Name: |
| EQUIPMENT ISOLATION: (If Applicable) Actual equipment isolated: Equipment isolated electrically and removed from service by: Signed: Print Name: |
| FINAL POST WORK CHECK: I have checked the area at the completion of the work. All penetrations were found to be sealed and no exposed foam core or other hazardous panel conditions were noted. Signed: Print Name: |

THIS PERMIT MUST BE USED BY ALL PERSONNEL & CONTRACTORS WHEN WORKING ON ISP.