# Technical Manual

## Structural Panels Inc

Isowall®

ROCKWALL™

STRUCTURAL PANELS INC

INSULATED PANEL BUILDING SYSTEMS

www.structuralpanels.ca

ISOWALL®

STRUCTURAL PANELS INC.

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# ISOWALL® Help & Support

Our dedicated, highly specialized team is able to offer you all the technical support you need to carry out your building projects with **ISOWALL®** products. From product information to on-site installation support, we will provide personal assistance with your construction enterprise.

For assistance with our products or questions please contact us at:


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# STRUCTURAL PANELS INC.

INSULATED PANEL BUILDING SYSTEMS

**ISOWALL®** is a stressed-skin sandwich panel system. The Isowall EPS (Expanded Polystyrene) system provides a high strength, low-cost, and reliable insulation solution. Our panels are a convenient and cost-effective building product that offers a high thermal performance and moisture control, and this airtight panel system can be installed easily and quickly. It produces a thermal envelope unit that is highly energy efficient and features an aesthetic, flush profile that will look good for years to come. From small coolers to large commercial buildings, **ISOWALL®** panel systems provide the perfect building solution for your commercial or industrial project.

## ISOWALL® PANEL PROPERTIES

- Thicknesses from 2” to 10”
- Panels are produced on a continuous lamination line to ensure outstanding quality
- Easy to install for anyone versed in general building principles and practices
- Rigid EPS core resulting in a strong yet light weight panel
- Panel facings are permanently bonded to EPS core with a heat polymerizing adhesive
- Panel edge profile is a friction fit tongue and groove that is installed in a base channel or track
- Available in any transportable length, however we may recommend bisecting very long panels to make installation and maneuvering safer and easier
- Installation process can cut construction costs in half. Tongue and groove edge enables ease of construction and the edge harmonizes with our **ROCKWALL™** panel system.

ISOWALL® WEIGHT PROPERTIES

| THICKNESS INCHES | WEIGHT IN LBS. PER LINEAR FOOT | WEIGHT IN LBS. PER SQUARE FOOT |
|---|---|---|
| 2" | 9.00 | 2.34 |
| 3" | 9.50 | 2.48 |
| 4" | 10.00 | 2.61 |
| 5" | 10.25 | 2.68 |
| 6" | 10.33 | 2.70 |
| 8" | 10.60 | 2.77 |
| 9" | 10.80 | 2.82 |
| 10" | 11.00 | 2.87 |

| Panel Facing MM (inches) | Thickness MM (inches) | TOTAL UNIFORM LOAD kPa (lb/sq ft) 0.239 ( 5 ) | 0.479 ( 10 ) | 0.958 ( 20 ) | 1.436 ( 30 ) | 1.915 ( 40 ) | 2.394 ( 50 ) | 2.873 ( 60 ) |
|---|---|---|---|---|---|---|---|---|
| 0.6 (.020 +/-) Steel | 51 (2) | 5.18m 17ft | 3.65m 12ft | 2.44m 8ft | 1.83m 6ft | 1.52m 5ft | 1.22m 4ft | 0.91m 3ft |
| | 76 (3) | 7.01m 23ft | 4.87m 16ft | 3.35m 11ft | 2.74m 9ft | 2.13m 7ft | 1.83m 6ft | 1.52m 5ft |
| | 102 (4) | 7.92m 26ft | 5.79m 19ft | 3.96m 13ft | 3.35m 11ft | 2.74m 9ft | 2.44m 8ft | 2.13m 7ft |
| | 127 (5) | 9.14m 30ft | 6.40m 21ft | 4.57m 15ft | 3.65m 12ft | 3.04m 10ft | 2.74m 9ft | 2.44m 8ft |
| | 152 (6) | 10.05m 33ft | 7.01m 23ft | 4.87m 16ft | 3.96m 13ft | 3.35m 11ft | 3.04m 10ft | 2.74m 9ft |
| | 178 (7) | 10.66m 35ft | 7.62m 25ft | 5.18m 17ft | 4.26m 14ft | 3.65m 12ft | 3.35m 11ft | 3.04m 10ft |
| | 203 (8) | 11.58m 38ft | 7.92m 26ft | 5.79m 19ft | 4.57m 15ft | 3.96m 13ft | 3.65m 12ft | 3.35m 11ft |
| | 229 (9) | 12.19m 40ft | 8.53m 28ft | 6.09m 20ft | 4.87m 16ft | 4.26m 14ft | 3.65m 12ft | 3.35m 11ft |
| | 254 (10) | 12.80m 42ft | 9.14m 30ft | 6.40m 21ft | 5.18m 17ft | 4.57m 15ft | 3.96m 13ft | 3.75m 12ft |

## ISOWALL® GENERAL SPECIFICATIONS

High thermal barrier envelope and vapor resistance resulting in significant energy saving R-value (about 4.1 per inch) for consistent thermal performance and thermal envelope.

**ISOWALL®** panels are listed in the CFIA construction materials manual for registered establishments under 1079.

Panels last as long as the service life of a typical commercial building and comply with various industry standards and building codes.

The steel skins on **ISOWALL®** panels contain a substantial amount of re-captured metal and are low-weight material to reduce transport and installation energy.

Interior and exterior facings are CFIA accepted 0.18 min. G-90 Hot Dipped galvanized steel, conforming to ASTM A653-Grade 33 pre-coated with an imperial white standard finish. The interior and exterior standard finishes are available in either embossed or smooth with a micro-rib, shadow line or smooth profile finish.

**ISOWALL®** panels have been tested by NRC and meet Flame Spread Test in accordance with ULC S102, ULC C376-95, UL-S138 (flame spread 25, smoke developed 290), Intertek NP-C463 for use in sprinklered buildings. Complies with CAN/ULC S102.

STRUCTURAL PANELS INC.

INSULATED PANEL BUILDING SYSTEMS

# OVERVIEW

## STEEL FINISH

Standard steel finish is G90 galvanized, pre-finished with a modified silicone polyester paint. Other finishes are available upon request. Panels are normally finished in a standard shadow-line profile on both sides with a micro-rib exterior option.

## STEEL THICKNESS

Standard steel thickness is 26 gauge. 24 gauge is also available upon request.

## COLOR AVAILABILITY

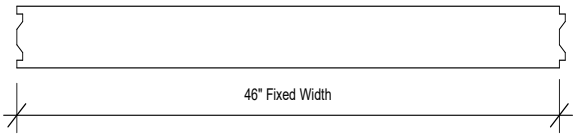
Structural Panels Inc. offers a wide array of available colors from a standard color chart. Standard floor colors for quickest delivery are:

- Imperial White (QC 18154)
- Antique Linen (QC 18696)
- Regent Grey (QC 18730)
- Unpainted galvanized

***Other colors can be sourced for manufacturing but could lead to longer lead times.*

## PANEL SIZES

Panels are manufactured at 46” wide and run between 6’ and 40’ in length, depending on your project and preference. We normally restrict **ROCKWALL™** panels to a length of 32’ or less due to their weight and maneuverability limitations. Your representative will make you aware of any concerns during the early planning stages of your order.




## TESTING AND CERTIFICATION

Structural Panels Inc panels are tested to the following standards:

- **CAN/ULC S101** *(1, 2 & 3 hours [ref SPI/WPA 180-01])*
- **ASTM E119** *(1, 2 & 3 hours [ref SPI/WPA 180-01])*
- **ASTM E282** *(Air Infiltration: 0.00 L/s at 75 Pa and at 300 Pa)*
- **ASTM E331** *(No water leakage at pressure differential of 730 Pa)*
- **ASTM E330** *(Max positive wind load +2640 Pa / Max negative wind load -2400 Pa)*
- **ASTM E72** *(Transverse load performance per report 101028928TOR-003)*
- **CAN/ULC S102** *(Test for surface burning characteristics of building materials and assemblies)*
- **ULC/ORD C376** *(Test for fire growth of insulated building panels in a full-scale room configuration)*
- **ULC S138** *(Test for fire growth of insulated building panels in a full-scale room configuration)*

## EXTRAS & ADD-ONS

Upon request, Structural Panels Inc. will provide or arrange for the supporting sealants, flashings, trims and fasteners required to complete your project. Engineered shop drawings and installation are also available upon request.

STRUCTURAL PANELS INC.

INSULATED PANEL BUILDING SYSTEMS

# ISOWALL® PANEL SYSTEM

# HANDLING MANUAL

## PART 1: GENERAL PROCEDURES

### 1.1 Scope

**Structural Panels Inc. (SPI)'s ISOWALL®** expanded polystyrene metal panel is designed for commercial and industrial wall. The vertical and horizontal joint applications provide designers with a wide range of practical and aesthetically pleasing design flexibilities and the system allows a tight and well-designed building envelope on appropriate framing. **ISOWALL®** panels have 26 gauge, G90 galvanized steel skins with a smooth or embossed silicone polyester shadow line finish (micro rib exterior or smooth available upon request). **ISOWALL®** expanded polystyrene panels meet requirements specified in most building codes.

### 1.2 Limitations

These instructions are provided as a general guide to SPI customers and their contractors with procedures and guidelines for the installation.

***Before using any of these instruction procedures the installer should:***

- Check all applicable federal, provincial and local codes to verify compliance with the code
- Be certain that site conditions are such that safe working practices are strictly observed
- Review all installation drawings and associated documents for the project
- Consult with general contractor, design engineer, architect and/or owner to confirm that the suggested procedures are suitable for each specific installation
- Recognize that the substitution of components not supplied by SPI may require some procedures different from those recommended
- Comply with all safety regulations

***All materials supplied by SPI are subject to a limited warranty.***

### 1.2 Limitations (cont)

Because of variations possible with any building, a careful study of the installation drawings should be made, along with the study of all documents provided with the project. Details may require adaptations, changes or revisions as conditions may vary from one project to another and may be unique for each application.

If suitable, details supplied by SPI may be used to supplement project installation drawings but should not override them without approval of those responsible for the project.

It is the responsibility of the designer, general contractor, and installer that the details used meet particular building requirements and ensure adequate water tightness.

**SPI is not responsible for any and all claims arising from lack of water tightness as a result of not following suggested typical detail drawings.**

The designer and installer must be aware of and allow for expansion and contraction of wall panels when designing and/or installing flashing.

### 1.3 Installer's Responsibility

Ensuring adequacy of framing materials, structures, and mid-wall girts shall be determined by the installer. **SPI** is not responsible for any claims resulting from and inadequacy.

The installer shall familiarize himself/herself with all erection instructions before starting work. The installer shall examine the substrate to ensure that all supporting members are straight, level, plumb, and true. Report any variation and potential problems to the architect and do not start work until unsatisfactory conditions have been corrected.

Workmanship shall be to the best industry standards and installation shall be preformed by experienced metal craftsmen. Oil canning in the flat area of the panels is common to the industry and shall not be cause for product refusal.

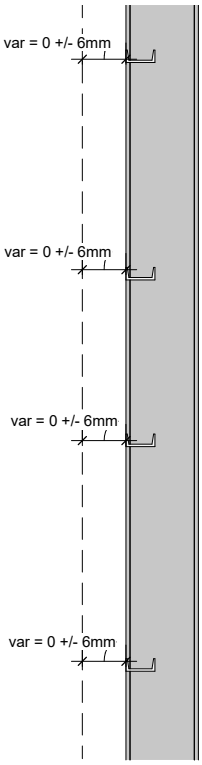
## 1.4 Tolerances

### 1.4.1 Alignment Tolerance

The alignment of panel supports is important as it establishes final alignment of the wall. As the seal is typically between the liner and the support, any shimming of the panel would lead to a break in the seal. As well, improperly aligned supports can include panel stresses and lead to distortion of the panels.

### 1.4.2 Industrial Applications

Support alignment shall not deviate more than 10mm (⅜") in any 6m (20') lengths in any direction. The support alignment shall not deviate more that 19mm ($^3/_4$") from the theoretical girt plane at any point on the wall.




### 1.4.3 Architectural Application

Support alignment shall not deviate more than 6mm (¼") in any 6m (20') lengths in any direction. The total alignment envelope shall not be more than 12mm (½") from the theoretical location over the entire wall with the exception of transition areas such as building corners and soffits. Alignment in these transition areas must be within 3mm (⅛") of the theoretical plane to accommodate corner panels or formed transition pieces.

## PART 2: HANDLING, MAINTENANCE AND CARE

### 2.1 Panel Storage and Handling

Customers will need ample storage space to receive packages. Exercise care in storing, handling and placing all paneling to prevent damage likely to impair the adequacy of appearance of the material.

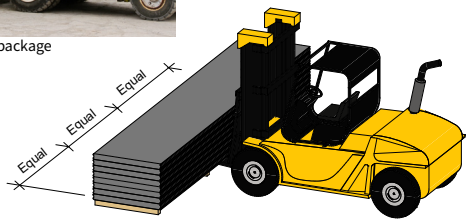
When **ISOWALL®** panels are shipped to the site, customers should inspect the shipment when received. Please ensure item numbers on the package list correspond with supplied materials. If there are any variances, please make note on the bill of lading when signing for delivery approval and contact SPI shipping as soon as possible.

Please also report any damage incurred during shipping. Photos are taken before panels leave the plant and it is recommended that photos be taken if damage is noted upon receiving panels.

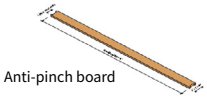
Blocking of shipped panels is specifically designed for safe unloading. When unloading panel bundles up to 30' in length, the forks should be place under the center of the packages (see facing diagram).

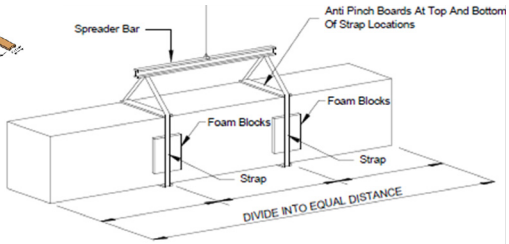
When unloading bundles longer than 30'; two or more lifting points are required due to the increased weight of the mineral wool core. Blocking or spacers should be used to protect the bundled panels from the forklift blades and mast when lifting.


Forklift positioned at center of package




When an overhead crane is used, reinforced nylon straps must be located at a minimum of two points along the bundle. Suitable stiff inserts should be at sling locations to protect panels from damage. When bundles longer than 15' are lifted by crane, a suitable spreader bar should be used between the straps.



## 2.1 Panel Storage and Handling (cont)

In all cases, panels should not deflect significantly during the lifting process. The longer the panel, the greater the potential for deflection.

In handling panels individually, they should be carried in a flat position, not vertical. Never drag panels when removing them from a bundle. (see facing)

SPI does not take any responsibility for damages resulting from mishandling of panels. Damaged material shall be replaced or corrected to the approval of the architect and any costs incurred shall be borne by the parties responsible for the damage.

Shipped panel bundles are plastic wrapped and can withstand temporary outdoor storage. Panels must be stored in a protected area away from standing water or drifting snow.

Ventilation can be enhanced by making small slits at intervals along the bottom of the bundle. Inspect panels daily for moisture. If panel bundles contain moisture, the panels should be re-stacked. Use care in re-stacking with proper lifting and handling to avoid damage to panels.

If panels are not used within 3 weeks, they must be covered with a tarp, protected, and/or stored indoors to avoid both moisture and UV damage. SPI shipping wrap is not intended to withstand long-term storage.

Flashing and accessories should be stored in a secure area, protected from damage, weather and theft. Fasteners, sealants, etc. should be stored out of the weather and protected from contamination.

## 2.2 Proper Equipment

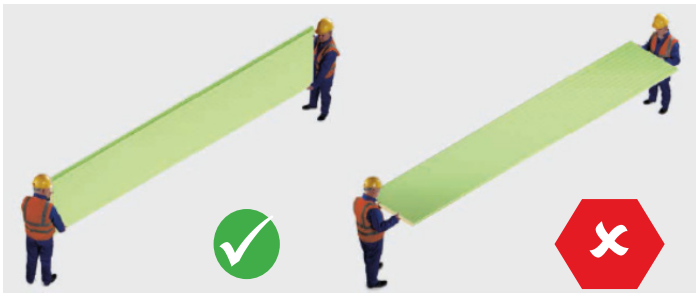
Before receiving the materials and before starting the panel installation, ensure that the proper equipment and tools are on hand.

Unloading panel bundles will require a suitable fork lift or crane. The equipment must be capable of handling the weight and multiple points pick up requirements of the panel bundles and have sufficient mobility for the job site's travel requirements.

The equipment for handling the individual panels must be capable of carrying the panel's weight and be capable of the project's reach and travel requirements.

In all cases, reference the equipment manufacturer's instructions to assure that the equipment is of sufficient capacity for the panel's weight and length and to assure the proper and safe operation.

All equipment and tools must be in good operating condition and the operators must adhere to safety precautions at all times. Worn out or improperly operating tools, too few tools, inadequate power source, or other equipment deficiencies slow down the installation process. The cost of inefficient working conditions is usually greater than the cost of providing good equipment.



**Caution**

***Individual panels should never be moved in a flat position as excessive flexing may result. Excessive flexing ruptures a panel's core, permanently distorts the facings and may lead to thermal blistering. When moving a panel, it must be turned on its edge first, then supported at each end with as many people as necessary to safely handle.***

## 2.3 Manually Handling Panels

Improper manual handling of the panels can be hazardous to the workers and can cause damage to the panels and adjacent materials.

It is recommended that the panels be handled with appropriate lifting equipment. However, when it is necessary to manually handle panels, use extreme caution and assure there is adequate manpower to safely lift and carry the panels. The panels should be lifted by a sufficient number of workers equally spaced along each edge. The workers must lift only on the bottom face of the panel and must lift together to assure that the panel does not sag or twist. Before lifting, push panel sideways to break suction between two panels.

**Face Separation** - do not try to lift the panel by the edges of the topside face. This will cause the panel's face to separate from the core.

**Core Damage** - do not try to lift the panel by the edges of the expanded polystyrene core. This will cause distortion or breakage of the core's critical tongue and groove profile.

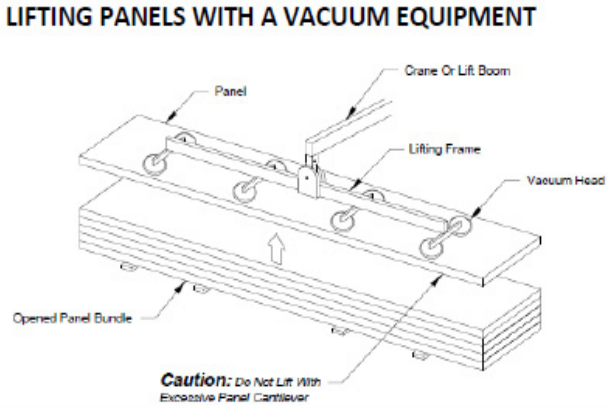
**Turning Panels** - when the panel must be rolled or tilted on its edge, roll the panel onto its female edge and place cushioning material under the edge to prevent crushing and finish damage.

**Blocking** - when the panels must be set on the ground, provide sufficient blocking to assure that the panel is cushioned against face damage and is uniformly supported.

## 2.4 Lifting Panels: Vacuum Lift Equipment

The recommended method of lifting is with an OKTOPUS®G1-B400 vacuum lifting device, Wood's Powr Grip MRTA810TDC3 (or equiv.), or other suitable panel lifting suction device.


Wood's Powr Grip MRTA8 Series Vacuum Lifter




Oktopus® G1-B400

## 2.5 Blue Protective Plastic Film

Protective plastic film (usually blue) is applied to the panels to help prevent damage in shipping and handling. This film is not to be removed until the components are ready for erection on the job site.

The protective plastic film is not to be exposed to direct sun for more than a week. This may cause the plastic to bond to the metal and make it more difficult to remove.

Panel bundles not used within 3 weeks should be stored away from the sun and weather elements to prevent damaged to the adhesive on the film.

Remove the protective plastic film from a corner and pull off at 45 degree angle. If the metal face remains sticky after the plastic is removed, clean with a soft cloth and water.

## 2.6 Touch-up and Repair

1. Surface Preparation

- Edges of deep scratches should be lightly sanded or feathered with #400 grit sand paper.
- Scratches and areas immediately adjacent should be wiped with lint free cloth dampened in mineral spirits.
- Allow area to dry thoroughly before applying touch up paint.

2. Touch-up Paint Application

- Check touch-up paint for correct match before applying to damaged areas
- Shake and stir paint before applying
- Apply touch-up paint to damaged area in thin coatings.

## 2.6 Touch-up and Repair (cont)

3. Precaution

- Protect your eyes, face and hand from direct contact with touch-up paint and/or solvents.
- Provide good ventilation in work area.
- Enforce NO SMOKING. Remove all sources of ignition. These coatings and solvents are FLAMMABLE.

## 2.7 Cleaning

If panels need to be cleaned, use a hose at normal water pressure. Do not use high pressure or steam. Clean off any accumulation of airborne or waterborne contaminants that have not been naturally flushed.

In areas where heavy dirt deposits dull the surface, solution of water and detergent (1/3 cup tide per gallon of water for example) may be used. A soft bristle brush with a long handle may be useful. A clean water rinse should follow.

Mildew may occur in areas subject to high humidity, especially on dirt and spore deposits. This is not normally a problem on clean surfaces due to the high inherent mildew resistance of baked-on finishes. To remove mildew, the following solution is recommended:

- 1/3 cup detergent (e.g. Tide)
- 2/3 cup tri-sodium phosphate
- 1 quart sodium hypochlorite 5 %( e.g. Clorox)
- 3 quarts of water

Strong solvents and abrasive type cleaners should be avoided. Caulking compounds, oil, grease, tars, wax and similar substances can be removed by wiping with a cloth soaked with mineral spirits. Wipe only contaminated areas and follow with detergent cleaning and thorough rinsing.