

METAL BUILDING INSULATION OVERVIEW

METHODS AND PROCEDURES FOR
INSTALLING METAL BUILDING
INSULATION CORRECTLY

TOPICS OF DISCUSSION

- UNDERSTANDING WHAT IS BEING INSTALLED
 - TYPE OF SYSTEM
 - THICKNESS/SINGLE OR DOUBLE LAYER
- READING INSTRUCTIONS
- IMPORTANCE OF THERMAL BLOCKS
- STARTER ROLLS AND BUTTING/OVERLAPPING
- VAPOR RETARDERS
 - TYPES OF TABS
- RIDGE INSULATION
- CORNERS AND ROOF WALL CONNECTIONS
- AIR TIGHTNESS

DO YOU KNOW WHAT THESE ARE?



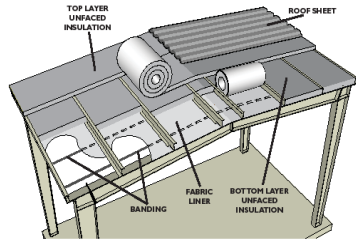
UNDERSTANDING WHAT IS TO BE INSTALLED

MANY TYPES OF SYSTEMS:



OptiLiner™
Banded Liner System

Roof Installation Instructions



General

Introduction
The OptiLiner™ Banded Liner System is designed to provide maximum thermal performance in pre-engineered metal buildings using Owens Corning metal building insulation. In addition to excellent thermal performance, this system offers outstanding acoustics, finished appearance and a brighter interior.

Safety Considerations
Installation contractor must have a site specific safety plan. Comply with all OSHA applicable local rules and regulations when installing this system. **WORKERS MUST USE OSHA REQUIRED FALL PROTECTION WHEN INSTALLING THE Banded Liner System AT HEIGHTS. (SEE OSHA REGULATIONS AT 29 CFR 1926, SUBPART M)**

Caution: Banding has sharp edges. Use caution when handling. Wear cut proof gloves.

Required Personal Protective Equipment: Safety glasses, cut proof gloves, long sleeve loose fitting clothing (for insulation installation)

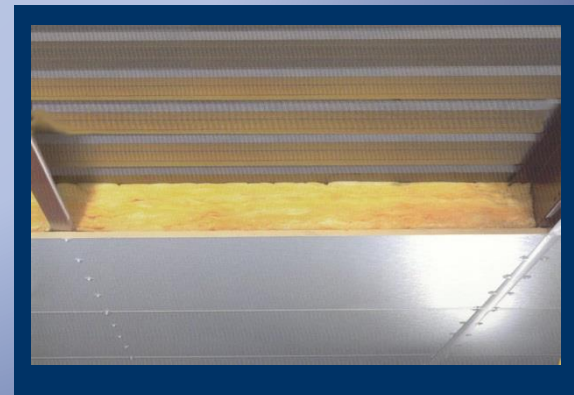
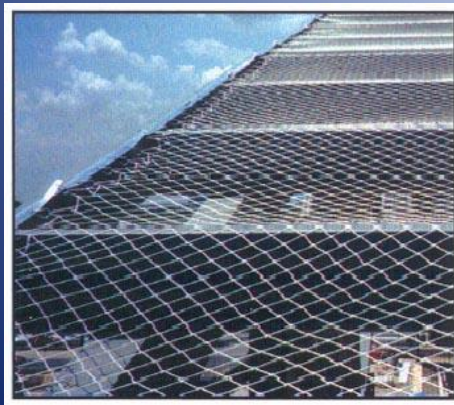
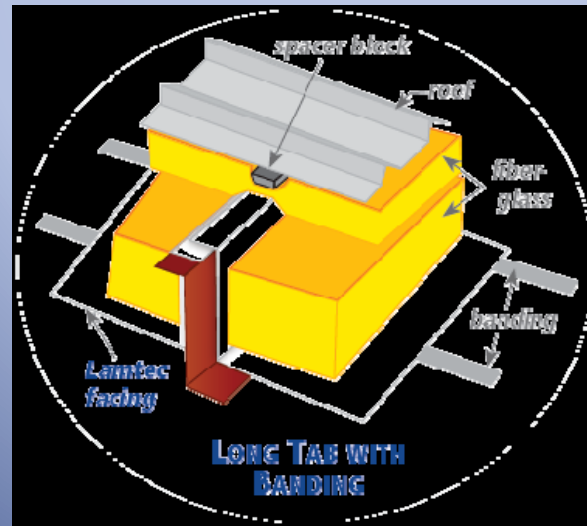
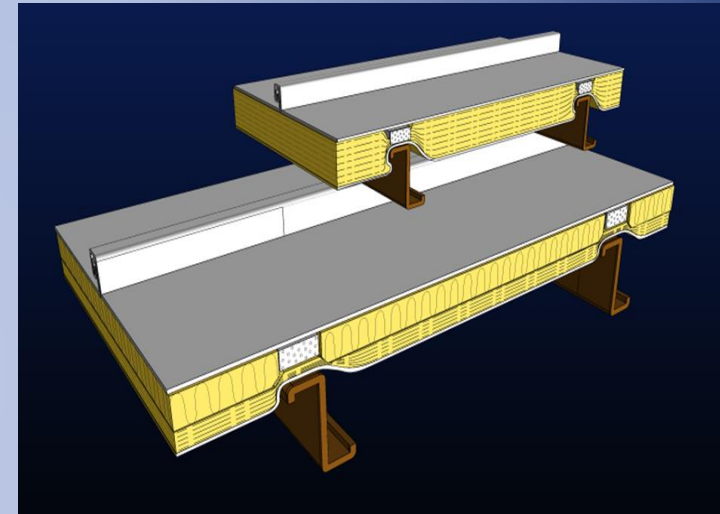
- Before You Start**
- Open pallets and packaging to ensure complete order was received
 - Review drawings to ensure each custom made fabric panel is installed in the appropriate area
 - Obtain necessary rake angle for your building type
 - Assemble appropriate equipment and tools
 - Assess weather is appropriate to begin installation

Materials List

- Banding
- Adhesive and/or double faced tape
- Fabric panels
- Insulation per specification
- Fasteners
- Patch tape (if required)

Equipment and Tools Required

- Hand-bladder blower protection
- Safety glasses
- Screw gun
- Cut proof gloves
- Tape measure
- Locking clamps
- Razor knife
- Paint brushes
- Tin snips
- Banding dispenser
- Iron pipe for banding dispenser



THICKNESSES:

- Single Layer
- Double Layer
- Triple layer
- Through Fastened Roofs
- Standing Seam Roofs

READ INSTRUCTIONS

- Liner Systems
- Skyweb II
- Conventional Insulation

THERMAL BLOCKS-Why they are important!

- Reduce loss of thermal efficiency.
- Necessary to meet IECC 2012 Code (prescriptive).

Starter Rolls/Butting/Overlapping

- Why use a starter roll?
- When do you butt insulation?
- When do you overlap?
- Ridge Insulation

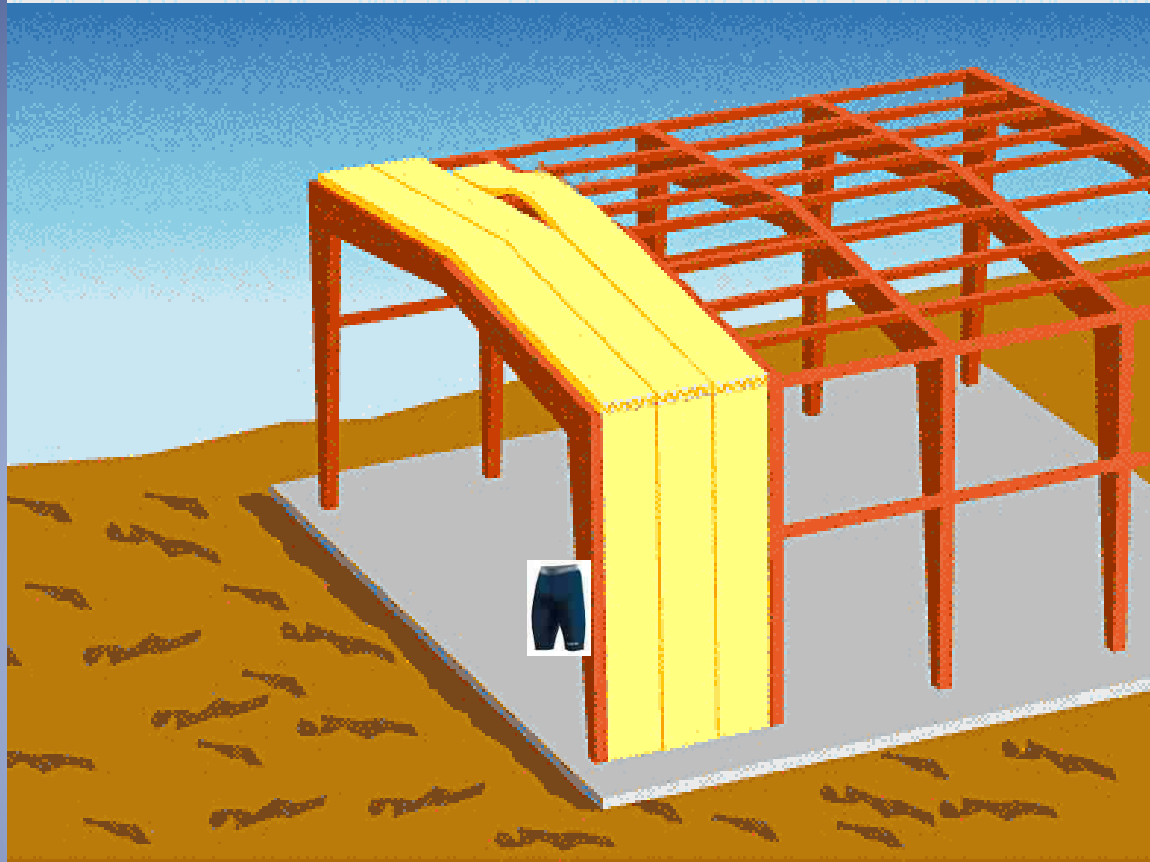
Vapor Retarders

- How to choose
- Types of Tabs

Corners and Roof/Wall Connections

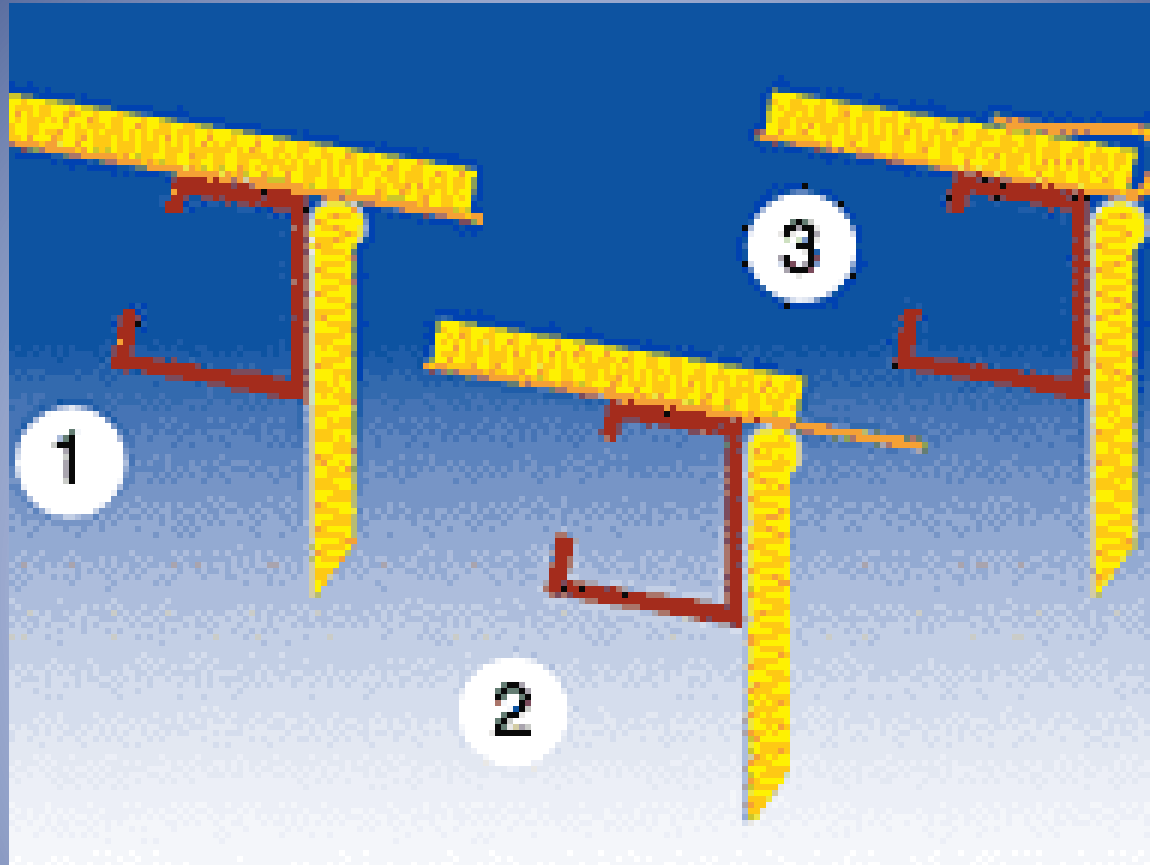
- Conventional Insulation
- Liner Systems

EXAMPLES OF FACING WITH CONVENTIONAL INSULATION



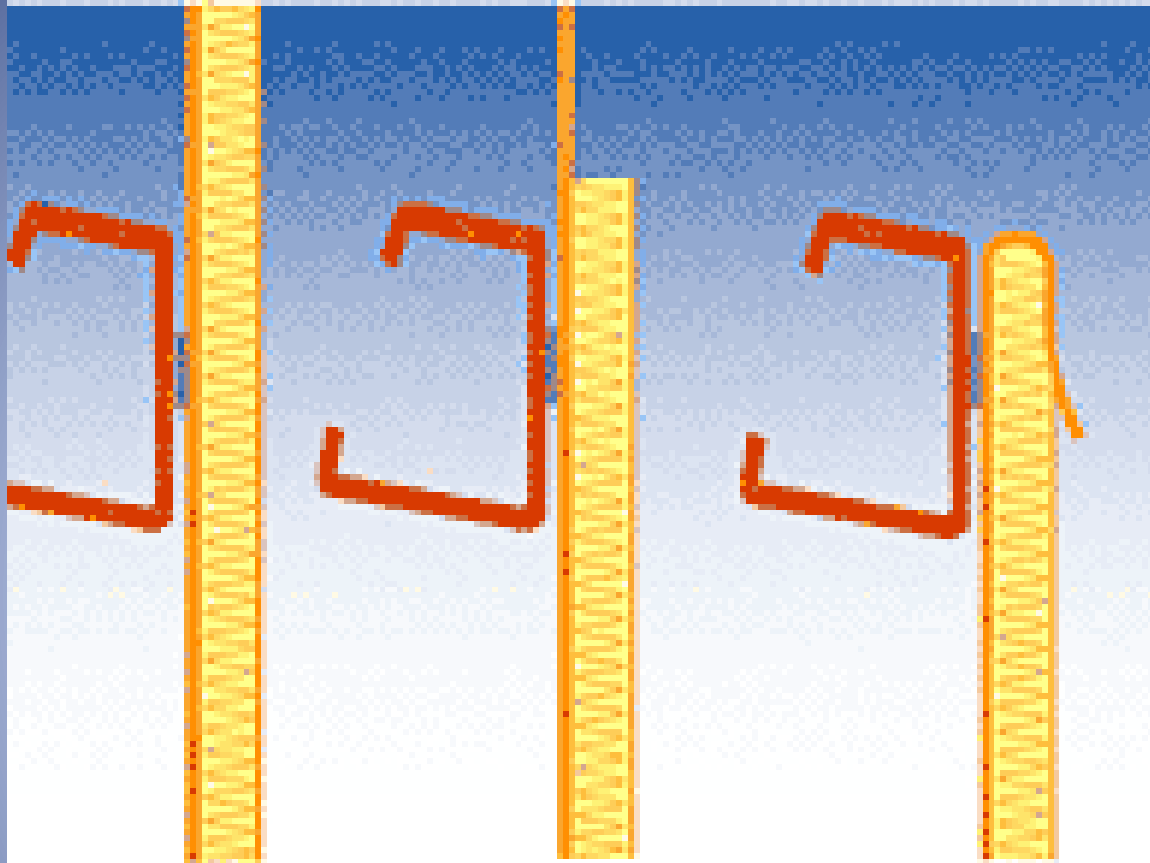
FRAME

From Insulation.org website (sponsored by NIA)



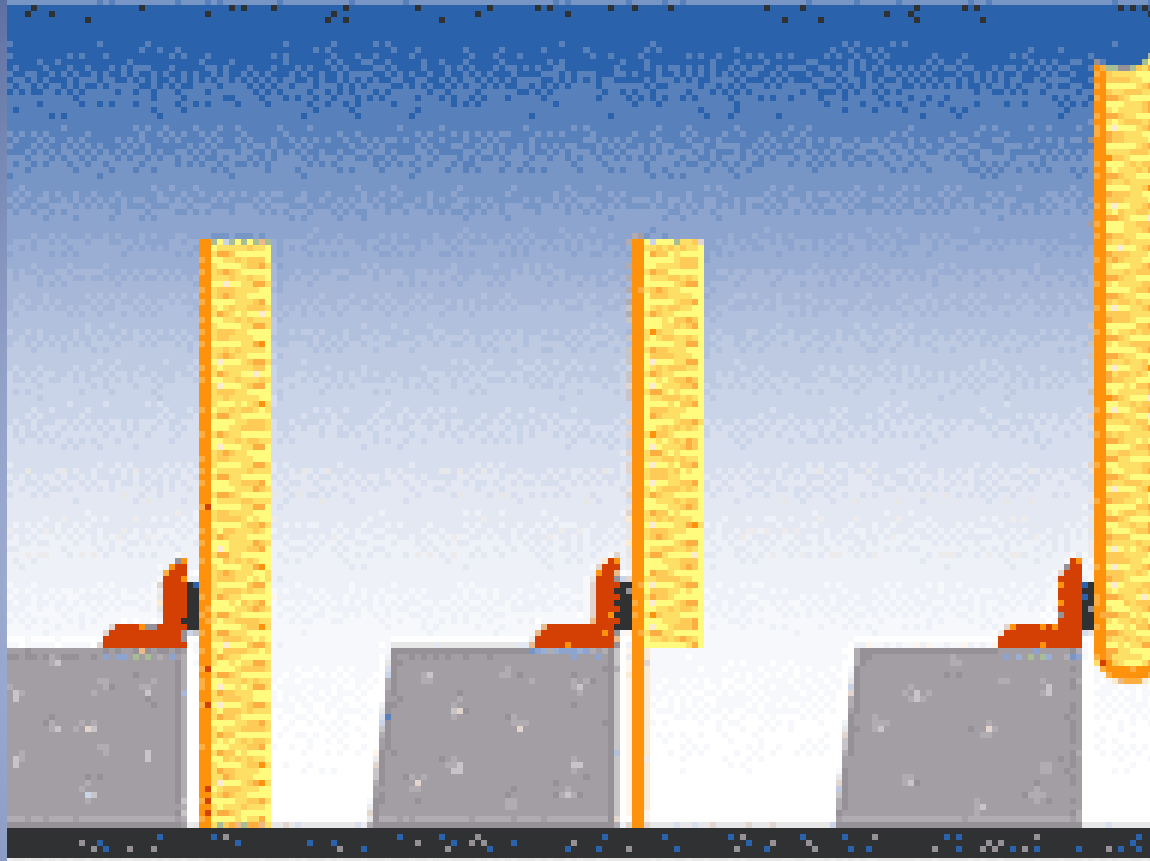
ROOF

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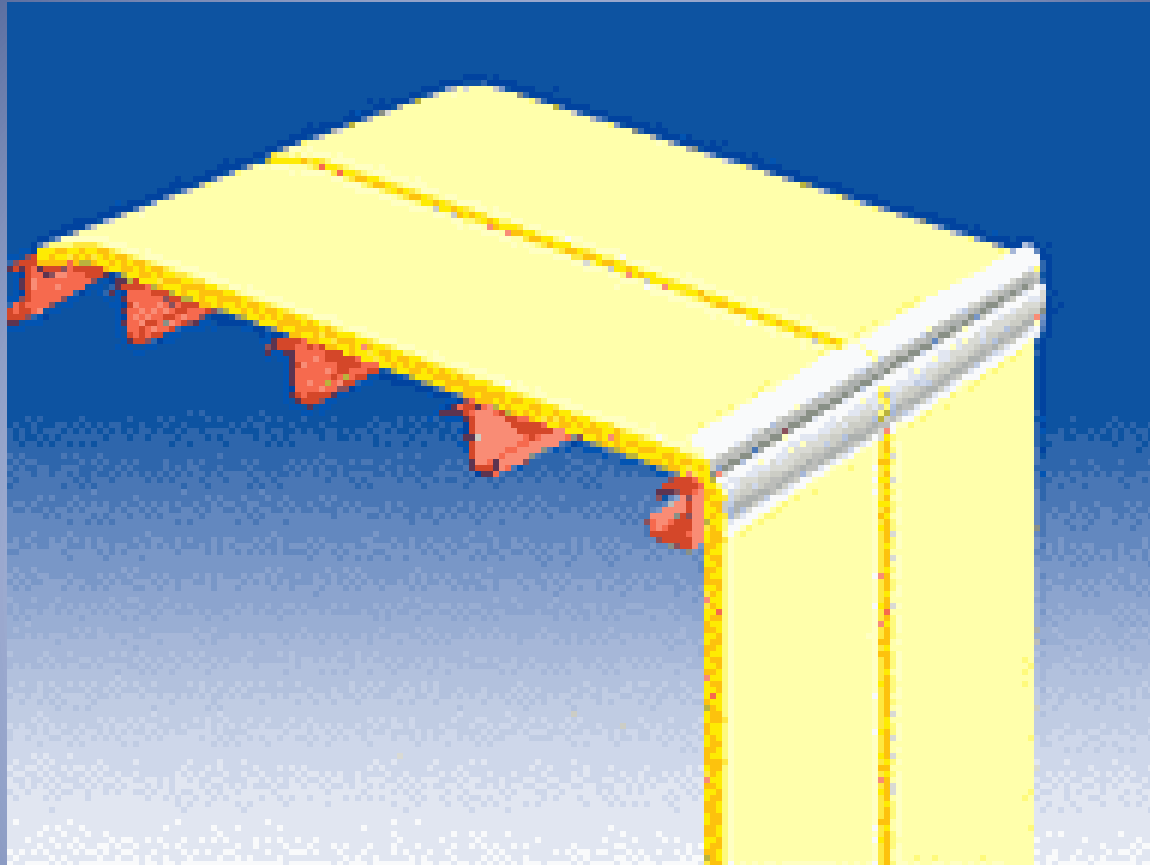
WALL UPPER

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WALL LOWER

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Complete

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TYPES OF TABS:

INSTALLATION METHODS (cont'd)

Tab Fastening Instructions

There are a number of different methods for fastening metal building insulation facing tabs. Most facings are 6" wider than the laminated insulation. The extra facing may be supplied as two 3" tabs, or one 6" tab for all other products. It is recommended that the first roll of insulation (starter roll) be at least 12" wider than the width of the metal roof or wall panel being installed. This ensures the insulation joints are not lined up with the metal panel joints and prevents working directly at the edge of a panel when folding and stapling the tabs.

Two 3" Tabs

If two 3" tabs are supplied, use a plier stapler to fasten the facing tabs together where two adjoining pieces of insulation butt together. First, pull the facing tabs in between the blankets, away from the inside of the building. Then staple approximately every 4" at approximately 1/4 to 1/2" from the edge of the tabs. (See Figure 1a.) After stapling the tabs, fold them over to tuck them between the insulation blankets and staple again. (See Figure 1b.)

One 6" Tab

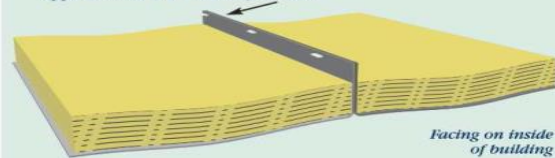
When working with a 6" tab, spray or brush a good quality moisture-proof adhesive on the back. (See Figure 2.) Extend the tab over the facing of the adjacent roll of insulation and press firmly with a damp cloth along the seam to smooth it and remove excess adhesive. In cases where continuity of the vapor retarder properties of the facing is not critical, it is common practice to install as described, but without the use of adhesive.

Miscellaneous

- Cover any rips or tears with matching facing tape to ensure a tight seal. Do not use patching tape to seal tabs.
- Trim excessive insulation flush at eaves and rakes to keep water out of the insulation.
- Since building and insulation systems differ, it is important that the contractor adhere to the particular erection instructions furnished by the metal building manufacturer and the laminator supplying the insulation.

Figure 1: Two 3" Tabs

1a. Pull tabs in between blankets and then staple approx. 4" O.C. approx. 1/4 to 1/2" from edge of tabs



1b. Fold stapled tabs over, tuck between blankets and staple again

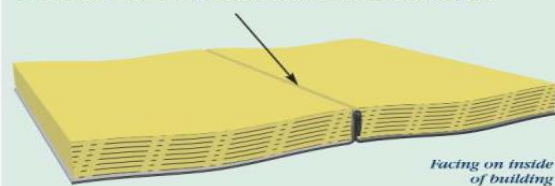
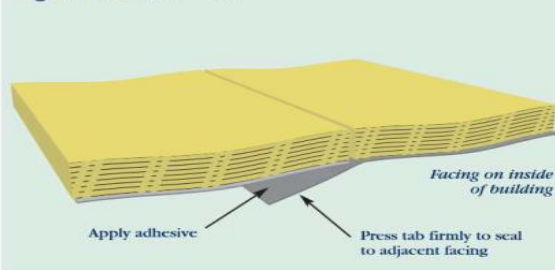
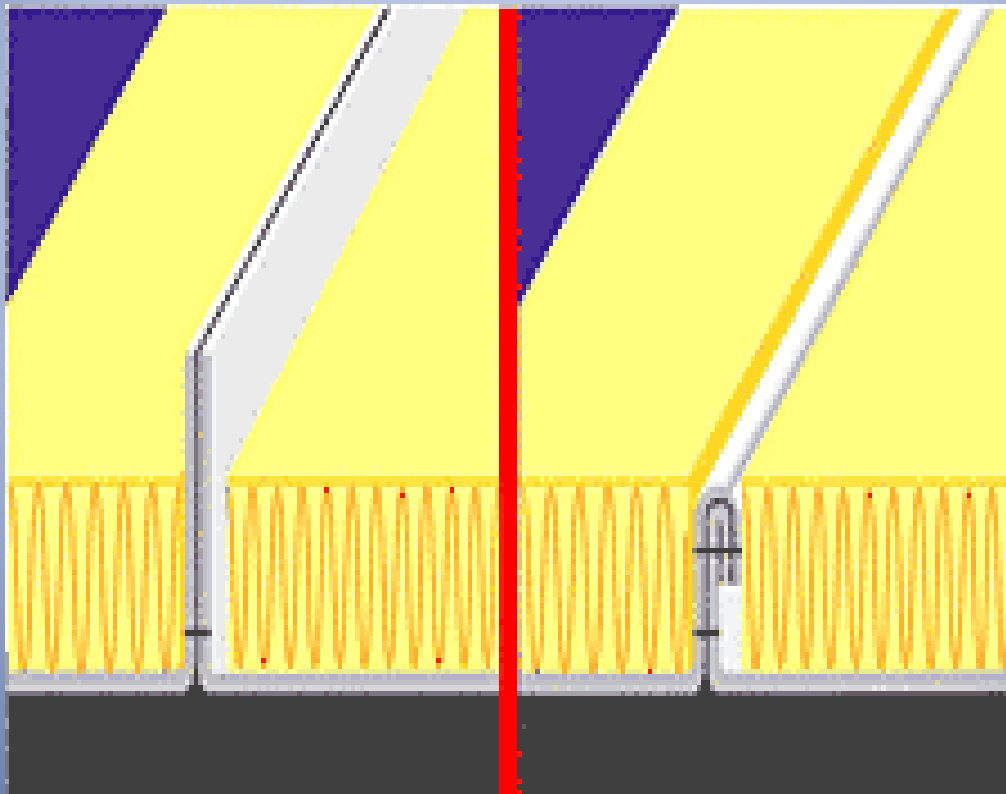


Figure 2: One 6" Tab



ROLLING AND STAPLING TABS





The Leading Source of High-Quality
Insulation Vapor Retarders

Select a Product: [Product Specifications](#)



Metal Buildings



GEM



Pipe



Wood Roofs



Duct Wrap



Duct Board



Foam

Technical Bulletin #12

Moisture Control Guidelines

[PDF VERSION](#)

Moisture vapor is present in all buildings and is generated from a variety of sources that sometimes cannot be eliminated. As metal buildings are made more airtight for thermal efficiency, this moisture is less likely to be diluted by dry outside air.

While having a positive effect on energy consumption, an increase in the insulation levels in metal buildings will not reduce moisture control problems. As insulation becomes thicker, roof sheets are colder and more likely to be below the dew point. With sufficient moisture in the building, some will penetrate the vapor retarder and condense on the roof sheets and purlins.



Zone 1: -10°F or lower
Zone 2: -10°F to +10°F
Zone 3: +10°F or higher

Winter Median of Annual Extremes	Maximum Allowed Indoor Relative Humidity (Constant)	Maximum Allowed Indoor Relative Humidity (Intermittent)
Zone 1: -10°F (-23°C) or Lower	30%	40%
Zone 2: -10°F to +10°F (-12°C to +12°C) or Lower	35%	45%
Zone 3: +10°F (+12°C) or Higher	45%	50%

As a means of reducing this problem, the insulation used in the walls and roofs of metal buildings should have continuous vapor retarders with sufficient perm ratings.

While such vapor retarders can be effective in limiting water vapor transmission, they are not totally impermeable membranes. And all too often, they may be subjected to cuts, punctures, or improper closure systems.

So while good insulation vapor retarders are important means of controlling moisture, they are only one factor in a good moisture control design. Before a building is erected, construction conditions and end-use processes - both of which are related to moisture generation - should be carefully evaluated.

A design professional, such as an HVAC engineer, should be consulted to establish the equipment and construction techniques necessary to reduce the moisture in the building. The accompanying map and chart provide a prudent guideline for interior humidity levels to minimize condensation problems.

Finally, proper ventilation of both interior areas as well as air spaces above insulation is essential. In all metal buildings, natural or mechanically powered ventilation is the single most effective means you can take to control moisture in interior spaces.

The information contained herein is a technical guideline and should not be interpreted as guarantee to avoid moisture related problems. It is important the insulation system be designed or approved by a qualified professional.

TABS NOT STAPLED OR GLUED.



Note stapled tabs pulling loose.



ANOTHER PICTURE-SAME PROJECT



RIDGE INSULATION

- RIDGE SHOULD BE FILLED WITH INSULATION

WHAT ABOUT???

- Long Tab Banded Systems-faced layer between purlins, unfaced layer over purlins.
- Liner Systems Roof-Fabric on bottom of purlins, unfaced layer between purlins, unfaced layer over purlins.
- Liner System Walls-Thermal break tape between wall sheets and girts, unfaced layer between girts, Fabric on interior flange of girts

LINER SYSTEM ROOF/CONVENTIONAL WALLS



WALL FABRIC CONNECTION AT FRAMING MEMBER



USE OF FLANGE BRACE CLIPS



FLANGE BRACES DISCONNECTED



LINER SYSTEM-INSULATION FROM ABOVE



ANOTHER SHOT FROM ABOVE



Air Tightness

- Dealing with Penetrations
- Connections at walls/roof.

LINER ROOF-CONVENTIONAL WALLS



ANOTHER EXAMPLE



LINER SYSTEM WALL

