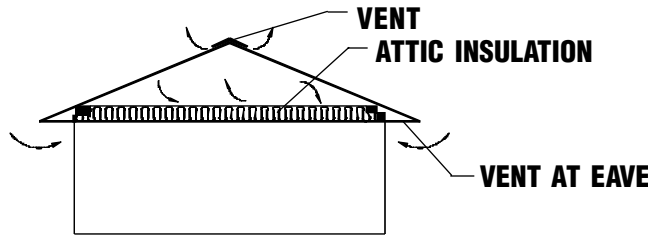


GENERAL INFORMATION VENTILATION INFORMATION

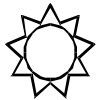
GENERAL

Proper design and installation of vapor barriers and ventilation systems are important to prevent condensation and the resulting problems of moisture damage and loss of insulation efficiency.

On buildings that have an attic space, vents should be placed at both the eave and peak of the roof in order to prevent a buildup of moisture (humidity) in the attic space.



BUILDING WITH ATTIC



In hot weather, proper ventilation prevents the attic from becoming a "hot-box" that radiates unwanted heat down through the attic floor into the living area. Attic temperatures can reach 150 degrees.



In cold weather, proper ventilation helps prevent moisture from condensing on the insulation, rafters, and roof deck. Trapped moisture can rot wood members and rob insulation of its R-value.

NATURAL VENTILATION

EXAMPLE

To find the exact free area needed to properly ventilate a home, find the length of the area to be ventilated in the vertical column of the chart below and the width of the area in horizontal column. The total net free area required is shown where these two columns intersect. This free area is expressed in square inches (chart utilizes 1/300 ratio, double the number for 1/150 ratio, i.e. multiply by two).

For example, suppose the total area to be ventilated is 1200 sq.ft. such as a house 30' x 40'. By looking at the chart, we find that we would need a total of 576 sq.in. If roof or gable end and undereave vents are used, 50% of the 576 sq.in., or 288 sq.in. are required for the roof or gable end vents and the same amount would be required for the undereaves. This is equivalent to the 1/300 ratio.

If undereave vents are not used, the above total free area requirements must be doubled. This is equivalent to 1/150 ratio. Even if the attic is recently vented, it should be carefully checked to determine whether or not the present vent arrangement is adequate to provide proper ventilation.

Length in Feet	Width in Feet										
	20	22	24	26	28	30	32	34	36	38	40
20	192	211	230	250	269	288	307	326	346	365	384
22	211	232	253	275	296	317	338	359	380	401	422
24	230	253	276	300	323	346	369	392	415	438	461
26	250	275	300	324	349	374	399	424	449	474	499
28	269	296	323	349	376	403	430	457	484	511	538
30	288	317	346	374	403	432	461	490	518	547	576
32	307	338	369	399	430	461	492	522	553	584	614
34	326	359	392	424	457	490	522	555	588	620	653
36	346	380	415	449	484	518	553	588	622	657	691
38	365	401	438	474	511	547	584	620	657	693	730
40	384	422	461	499	538	576	614	653	691	730	768
42	403	444	484	524	564	605	645	685	726	766	806
44	422	465	507	549	591	634	676	718	760	803	845
46	442	486	530	574	618	662	707	751	795	839	883
48	461	507	553	599	645	691	737	783	829	876	922
50	480	528	576	624	672	720	768	816	864	912	960

Chart uses 1/300 ratio; Double for 1/150 ratio; Divide by 5 for 1/1500 ratio.

GENERAL INFORMATION VENTILATION INFORMATION

metal sales
manufacturing corporation



Corporate Office
(812) 246-1935
www.mtlsales.com



MAGNA-LOC



SEAM-LOC 24



SNAP-LOC 24



VERTICAL SEAM



PRO-LOC I



PRO-LOC II



PRO-LOC III



MINI-BATTEN



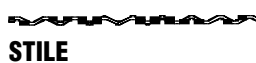
MAXI-BATTEN



IMAGE II



SOFFIT PANEL



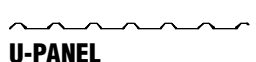
STILE



IC72-PANEL



R-PANEL



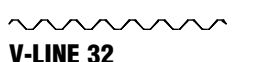
U-PANEL



SPAN-LINE 36



SPAN-LINE 36A



V-LINE 32



PRO-PANEL II



CLASSIC RIB



5V CRIMP

metal sales
manufacturing corporation



Corporate Office
(812) 246-1935
www.mtlsales.com

GENERAL INFORMATION GUTTER AND DOWNSPOUT SIZING

GENERAL

The purpose of this section is to provide information for gutter sizing and the spacing of drainage downspouts for the roofs of metal building.

Note that requirements for drainage contained in codes or ordinances promulgated by governing jurisdictions take precedence over these guidelines.

Gutter and downspout sizing and spacing is a function of the drainage area of the roof and the anticipated rainfall intensity. Rainfall is measured by the Weather Bureau recording the accumulation at 5 minute intervals throughout a storm. The largest 5 minute accumulation is then extrapolated to an hour. This is rainfall intensity in inches per hour.

EXTERIOR GUTTER SIZING

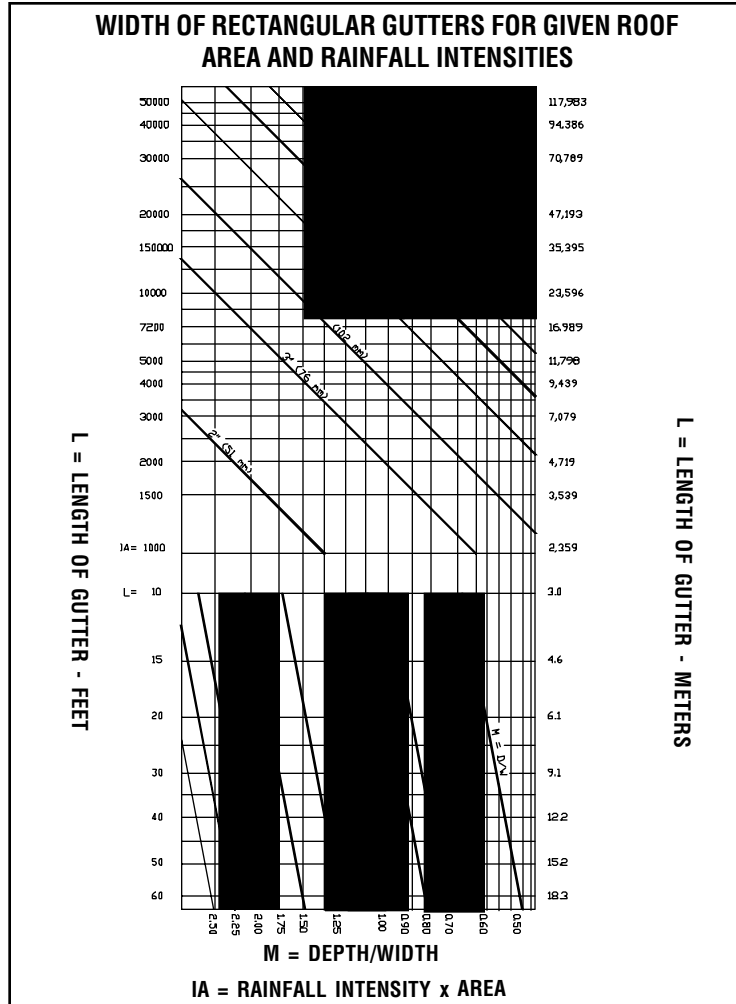
In sizing gutters, the following considerations apply for typical sections:

1. Spacing and size of outlet openings (The gutter can never be any more effective than the outlet and downspout selected to drain it. Downspout sizes must not exceed the bottom width of the gutter).
2. Slope of the roof. (The gutter must be of such a design and location that water from a steep pitched roof will not by its own velocity tend to overrun the front edge).
3. Style of gutters to be used (All gutters are not effective for their full depth and width).
4. Maximum length of gutter (Between ends or expansion joints is the limit unless the system is especially designed to accommodate the greater expansion, the larger flow and the need for special supports).
5. Gutter support capability (Supports should be based on full capacity of the gutter. Ice load capacity also affect the size and strength of the system).

The size of rectangular gutters depends upon these factors:

1. Area to be drained.
2. Rainfall intensity per hour.
3. Length of gutter in ft.(m).
4. Ratio of depth to width of gutter.

Level gutters may be sized by the chart on the following page. This chart was experimentally determined by the National Institute of Standards and Technology (NIST) formerly known as the National Bureau of Standard. It is plotted from $W = 0.0106 M^{-4/7} L^{3/28} (IA)^{5/14}$ with W in Feet(m).



To size rectangular gutter for a building 120 x 30 ft. located in Buffalo, NY. A gutter is to be located on one of the 120 ft. sides. So that each section of will not exceed 50 ft., three downspouts will be used with 2 gutter expansion joints. The area to be drained by each section of gutter will be 1200 sq. ft., the rainfall intensity is 6 in/hr, the length of each gutter section is 40 ft., and the ratio of gutter depth to width is 0.75. On the chart below find the vertical representing L = 40. Proceed vertically along this line to its intersection with oblique line representing M = 0.75. Pass to B vertically to the intersect of the horizontal line representing IA = 7200. The point of intersection occurs between the oblique line representing gutter widths of 5 and 6 in. The required width of gutter is, therefore, 6 in. and its depth need only be 4.5 in.

- Gutter length severed by a downspout (L) in feet
- Width of roof to be drained (R) in feet
- Gutter width (W) in inches
- Gutter depth (D) in inches
- Rain Intensity (I)
- Area to be drained (A)
- Ratio of depth to width of gutter (M)

Area (A) = L x R
 M = D / W
 (W) is determined from the chart above after finding IA (rainfall intensity x area) and M.

metal sales
 manufacturing corporation



Corporate Office
 (812) 246-1935
 www.mtlsales.com

FULL LINE

MAGNA-LOC

SEAM-LOC 24

SNAP-LOC 24

VERTICAL SEAM

PRO-LOC I

PRO-LOC II

PRO-LOC III

MINI-BATTEN

MAXI-BATTEN

IMAGE II

SOFFIT PANEL

STILE

IC72-PANEL

R-PANEL

U-PANEL

SPAN-LINE 36

SPAN-LINE 36A

V-LINE 32

PRO-PANEL II

CLASSIC RIB

5V CRIMP

metal sales
manufacturing corporation

ms

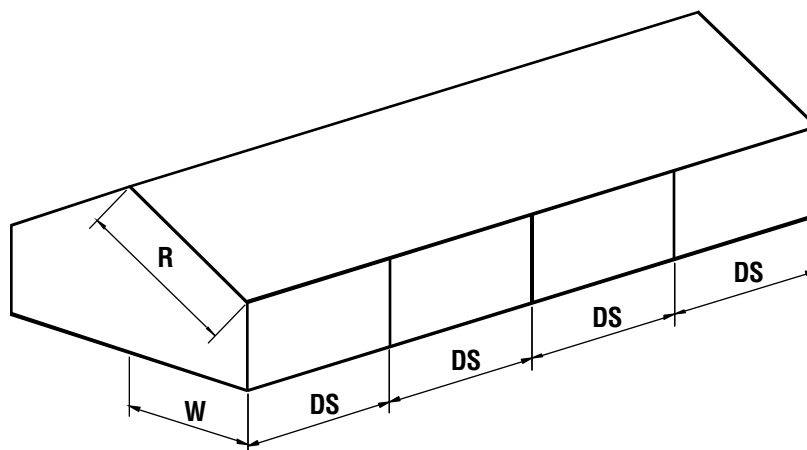
Corporate Office
(812) 246-1935
www.mtlsales.com

GENERAL INFORMATION

EXTERIOR DOWNSPOUT SIZING

In sizing downspouts, the following considerations apply for typical sections:

1. The size of the downspout should be constant throughout its length.
2. The gutter outlet capacity should suit the downspout capacity.
3. The downspout size must suit the bottom width of the gutter.
4. Assuming that using the fewest number of downspouts is desirable, their locations will be affected by:
 - a. Gutter capacity and length. To limit the effects of thermal expansion in gutters 50 ft(15.3m) is a practical maximum length of gutter to be served by a downspout. Unless special provisions are made for flexibility in downspouts, gutters and their support systems, gutters should expand away from downspouts and downspouts should not be located near gutter expansion joints.
 - b. The capacity of the inlet tube.
 - c. Potential for water freezing in downspouts. Locating downspouts on the north side of building is not recommended for such area.
 - d. The appearance of the downspout system and a potential need for concealment.
 - e. The greater capacity of a pitched roof.
 - f. The downspout discharge locations. Water disposal at this location should be acceptable.
 - g. The quick risk of gutter overflow from insufficient drainage capacity.



Downspout spacing is based on the following formula:

$$\text{Downspout Spacing (DS)} = \frac{1200(A)}{R I}$$


A = Area of downspouts (sq. in.)

R = Width of roof to be drained

I = Rainfall intensity in inches/hour
with a 5 minute duration


GENERAL INFORMATION GUTTER AND DOWNSPOUT SIZING (CONT)

Maximum recommended downspout spacing is 50'-0" to limit the effects of thermal expansion. The lengths listed in the charts below apply to slopes up to 3:12.




STANDARD 4" X 6" DOWNSPOUT
MAXIMUM RCOMMENDED DOWNSPOUT SPACING IS 50'-0"

LENGTHS EAVE TO PEAK FT (R)	RAINFALL INTENSITY (I)					
	4in/hr	6 in/hr	8 in/hr	10 in/hr	12 in/hr	14 in/hr
40					60	52
50				58	48	42
60				48	40	35
70			52	42	35	30
80			45	36	30	26
90		54	40	32	27	23
100		48	36	29	24	21



STANDARD 4" X 3 1/2" DOWNSPOUT
MAXIMUM RCOMMENDED DOWNSPOUT SPACING IS 50'-0"

LENGTHS EAVE TO PEAK FT (R)	RAINFALL INTENSITY (I)					
	4in/hr	6 in/hr	8 in/hr	10 in/hr	12 in/hr	14 in/hr
30				56	47	40
40			53	42	35	30
50		56	42	34	28	24
60		47	35	28	24	20
70		40	30	24	20	18
80	53	35	27	21	18	15
90	47	32	24	19	16	14
100	42	28	21	17	14	12



STANDARD 3" X 2" DOWNSPOUT
MAXIMUM RCOMMENDED DOWNSPOUT SPACING IS 50'-0"

LENGTHS EAVE TO PEAK FT (R)	RAINFALL INTENSITY (I)					
	4in/hr	6 in/hr	8 in/hr	10 in/hr	12 in/hr	14 in/hr
15				48	40	34
20		60	45	36	30	25
25		48	36	28	24	20
30		40	30	24	20	17
35	51	34	25	20	17	14
40	45	30	22	18	15	12

GENERAL INFORMATION
EXTERIOR DOWNSPOUT SIZING

metal sales
manufacturing corporation



Corporate Office
(812) 246-1935
www.mtlsales.com

FULL LINE

MAGNA-LOC

SEAM-LOC 24

SNAP-LOC 24

VERTICAL SEAM

PRO-LOC I

PRO-LOC II

PRO-LOC III

MINI-BATTEN

MAXI-BATTEN

IMAGE II

SOFFIT PANEL

STILE

IC72-PANEL

R-PANEL

U-PANEL

SPAN-LINE 36

SPAN-LINE 36A

V-LINE 32

PRO-PANEL II

CLASSIC RIB

5V CRIMP

metal sales
manufacturing corporation



Corporate Office
(812) 246-1935
www.mtlsales.com

GENERAL INFORMATION HANDLING MATERIAL

RECEIVING MATERIAL

It is the responsibility of the customer to unload material from the delivery truck. The customer shall be responsible for providing suitable equipment for unloading of material from the delivery truck.

After receiving material, check the condition of the material, and review the shipment against the shipping list to ensure all materials are accounted for. If damages or shortages are discovered, it should be noted on the Bill of Lading at the time of delivery. A claim should be made against the carrier as soon as possible. Metal Sales is not responsible for any damages or shortages unless they are documented in writing and presented to Metal Sales within 48 hours.

GENERAL HANDLING

CAUTION

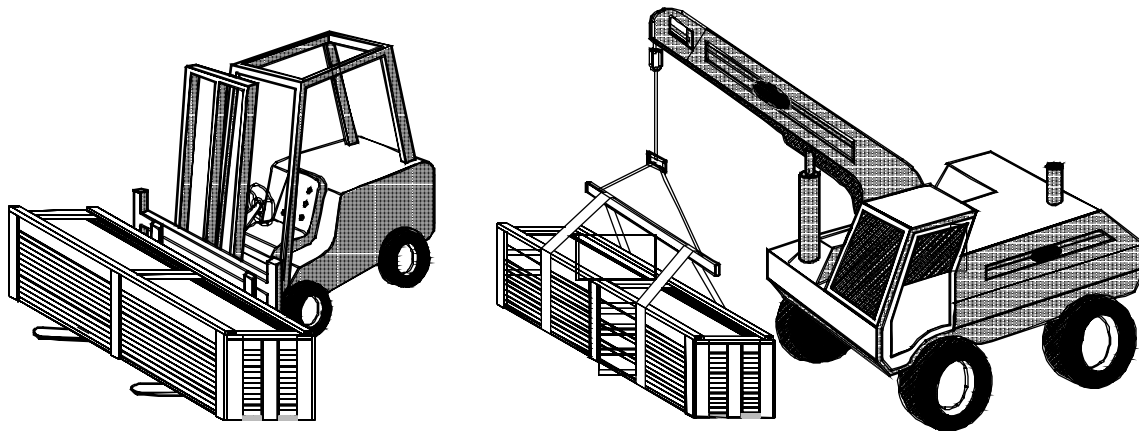
Improper loading and unloading of bundles and crates may result in bodily harm and/or material damage. Metal Sales is not responsible for bodily injuries and/or material damages resulting from improper loading and unloading.

Each bundle should be handled carefully to avoid being damaged. Care should be taken to prevent bending of the panel or abrasion to finish. Whenever possible, the bundle should remain crated until it is located in its place of storage. If bundles must be opened, we recommend you recreate them before lifting. To avoid damage please lift the bundle at its center of gravity.

MECHANICAL HANDLING

FORKLIFT - A forklift may be used for panels up to 20'-0" long. Please make sure the forks are at their maximum separation. Do not transport open bundles. When transporting bundles across rough terrain, or over a longer distance, some means of supporting the panel load must be used.

CRANE - A crane should be used when lifting panels with lengths greater than 20'-0". Please be sure to utilize a spreader bar to ensure the even distribution of the weight to the pick up points. As a rule when lifting panels, no more than 1/3 of the length of the panel should be left unsupported. Never use wire rope because this will damage the panels.



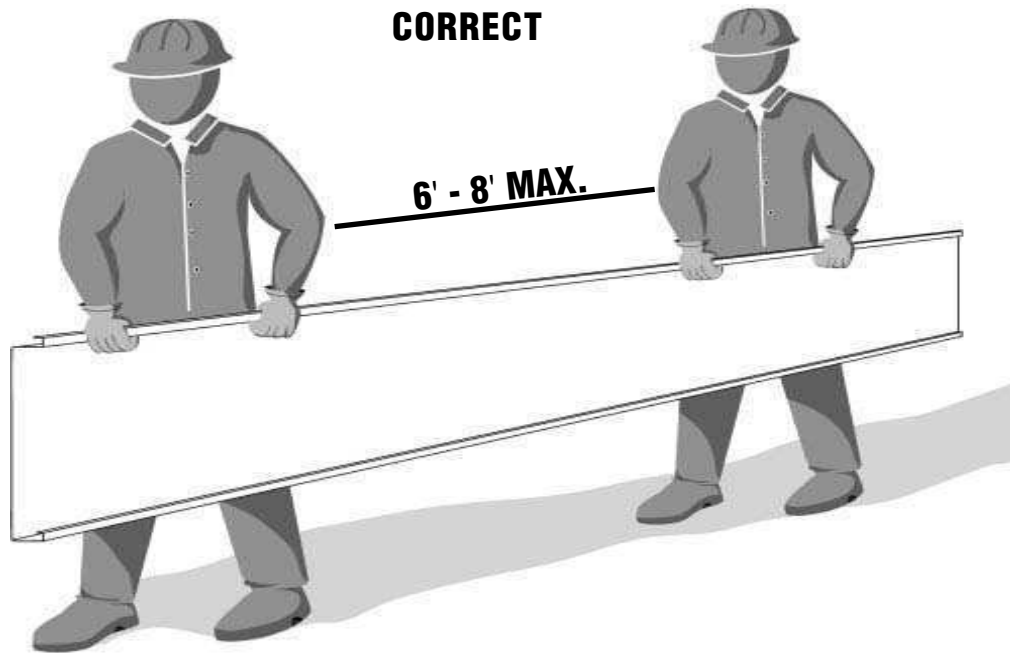
GENERAL INFORMATION HANDLING MATERIAL (CONT.)

MANUAL HANDLING

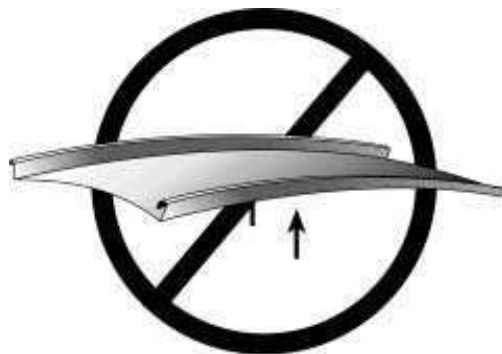
When using unpainted Acrylic Coated Galvalume®, care should be taken to prevent staining of material. Clean gloves should be worn at all times to prevent a reaction with salts found on bare skin. Installers should wear rubber sole shoes to keep from scuffing material while walking on the roof.

Handling of individual panels should be done carefully and properly to avoid bending or damaging. Panels should be carried by grasping the edge of the panel so that the panel is vertical to the ground. The panel should not be carried with the panel horizontal to the ground as this could cause the panel to buckle or bend in the center.

Normally individual panels can be handled by people placed every 6'-0" to 8'-0" along the length of the panel.



INCORRECT



GENERAL INFORMATION
HANDLING MATERIAL

FULL LINE

MAGNA-LOC

SEAM-LOC 24

SNAP-LOC 24

VERTICAL SEAM

PRO-LOC I

PRO-LOC II

PRO-LOC III

MINI-BATTEN

MAXI-BATTEN

IMAGE II

SOFFIT PANEL

STILE

IC72-PANEL

R-PANEL

U-PANEL

SPAN-LINE 36

SPAN-LINE 36A

V-LINE 32

PRO-PANEL II

CLASSIC RIB

5V CRIMP

metal sales
manufacturing corporation

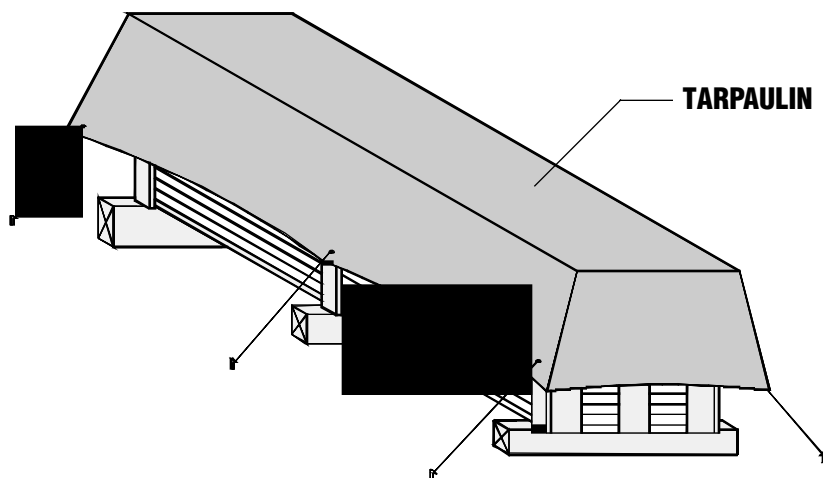
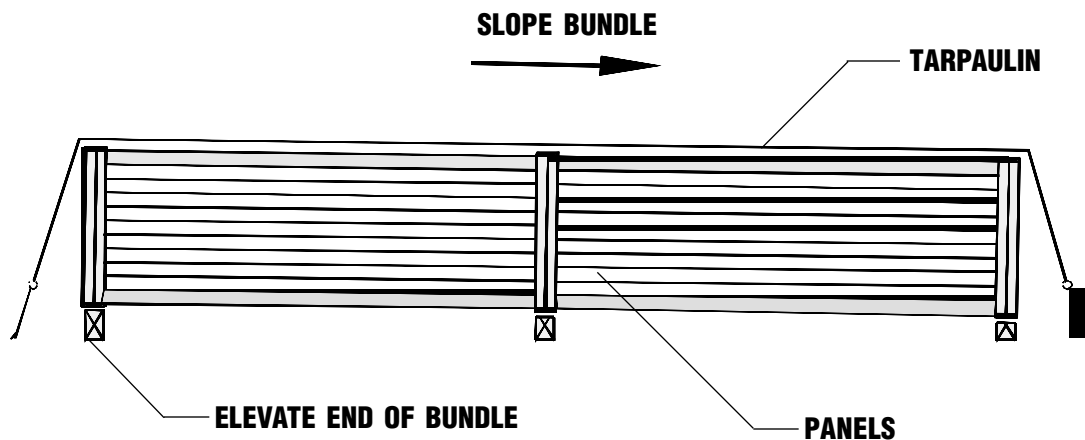


Corporate Office
(812) 246-1935
www.mtlsales.com

GENERAL INFORMATION STORAGE

Please inspect panels for moisture accumulation. If moisture has formed, the panels should be unbundled, wiped dry, and allowed to dry completely. Once dry, carefully restack the panels and loosely recover allowing for ample air circulation.

Bundled sheets should be stored high enough off of the ground to allow for air circulation and prevent contact with accumulating water. If possible, elevate one end of the bundle to allow any moisture to run off the panels. Metal Sales recommends covering the bundle with a tarpaulin. Do not use tight fitting plastic-type tarpaulins as panel bundle covers. While they may provide protection from heavy downpours, they can also retard necessary ventilation and trap heat and moisture that may accelerate metal corrosion. If panels are to be stored in possible bad weather, we suggest they be stored inside. Extended storage of panels in a bundle is not recommended. **Under no circumstances should the sheets be stored near or come in contact with salt water, corrosive chemicals, ash or fumes generated or released inside the building or nearby plants, foundries, plating works, kilns, fertilizer, and wet or green lumber.**



GENERAL INFORMATION FIELD CUTTING AND TOUCH-UP

FIELD CUTTING

Tin snips or a "nibbler" type electric tool are recommended for field cutting Metal panels. Cutting the steel generates slivers or metal chips. These slivers and metal chips must be immediately removed from the Metal panels because they will damage the finish and shorten the life of the product.

One method of preventing this problem is to flip the metal panels over when cutting. This allows the slivers and metal chips to be brushed from the back side and avoids damaging the paint on the top side of the panels.

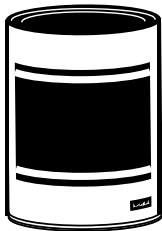
When cutting metal panels, goggles must be worn for eye protection.

CAUTION

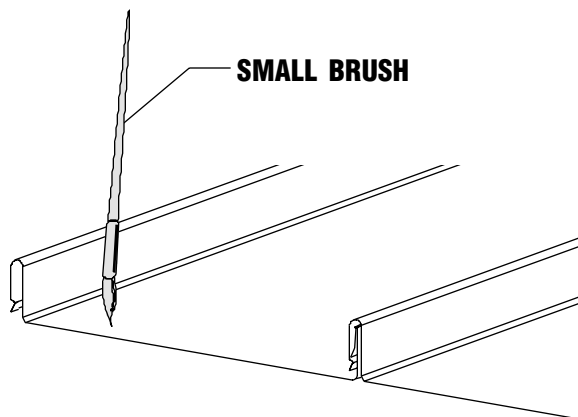
All product surfaces should be free of debris at all times. Installed surfaces should be wiped clean at the end of each work period. Never cut panels over metal surfaces. Metal shavings will rust on the surface, voiding the warranty.

TOUCH-UP PAINT

All painted panels and flashings have a factory applied baked on finish. Handling and installing panels may result in some small scratches or nicks to the paint finish. Touch-up paint is available in matching colors from Metal Sales. It is recommended that a small brush be used to apply touch-up paint to those areas that are in need of repair. Touch-up paint does not have the superior chalk and fade resistance of the factory applied paint finish and will normally discolor at an accelerated rate. Aerosol paint should not be used because of the overspray that may occur.



TOUCH-UP PAINT



SMALL BRUSH

GENERAL INFORMATION

FIELD CUTTING AND TOUCH-UP

metal sales
manufacturing corporation



Corporate Office
(812) 246-1935
www.mtlsales.com