

# Sheet and Accessory Selection Guide

## Considerations

- 1. Loading** – Thicker panels will support more load at greater spans.
- 2. Thermal/Condensation** – Thicker panels with more walls have better thermal insulation. Greater insulation (R-Value) reduces heat loss, energy cost, and reduces the chance of condensation.
- 3. Color** – Clear allows the greatest light transmittance, while opal and Softlite offer greater light diffusion. Bronze reduces solar heat gain and provides the most “shade,” but has special design considerations when used.
- 4. Accessories** – The loads and type of structure will determine what fasteners and accessories to use.

## Loading and Sheet Thickness

Loading: Similar to other building materials, the thicker the multiwall polycarbonate sheet, the greater its strength. A key benefit to multiwall is that even at a greater thickness, the sheets are still light and easy to install. The following charts provide spacing information for purlin/grit construction and rafter/stud construction.

### Loading Chart

| Purling Spacing | 20lbs | 35lbs | 40lbs | 45lbs | 50lbs | 60lbs | 75lbs | 80lbs | 95lbs | 100lbs | 105lbs |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| 8mm             | 36    | 30    | 28    | 26    | 24    |       |       |       |       |        |        |
| 10mm            | 42    | 36    | 33    | 31    | 30    | 28    |       |       |       |        |        |
| 16mm 3-Wall     | 48    | 42    | 40    | 39    | 38    | 36    | 30    | 29    | 28    |        |        |
| 25mm 3-Wall     | 48    | 42    | 40    | 39    | 38    | 36    | 30    | 29    | 28    |        |        |
| 16mm 5x-wall    | 63    | 54    | 50    | 48    | 45    | 41    | 38    | 36    | 30    |        |        |
| 25mm 5x-wall    | 90    | 75    | 70    | 66    | 63    | 54    | 50    | 48    | 42    | 39     | 36     |

| Blocking Spacing for Rafter at max 49" O.C. | 20lbs | 35lbs | 40lbs | 45lbs | 50lbs | 60lbs | 75lbs | 80lbs | 95lbs | 100lbs | 105lbs |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| 8mm   | 36    | 30    | 29    | 27    | 25    | 24    |       |       |       |        |        |
| 10mm  | 42    | 36    | 34    | 33    | 28    | 27    |       |       |       |        |        |
| 16mm 3-Wall                                 | 48    | 42    | 40    | 39    | 37    | 36    | 30    | 24    |       |        |        |
| 25mm 3-Wall                                 | 48    | 42    | 40    | 39    | 37    | 36    | 30    | 24    |       |        |        |
| 16mm 5x-wall                                | 66    | 60    | 57    | 54    | 50    | 45    | 43    | 42    | 39    | 35     | 32     |
| 25mm 5x-wall                                | 84    | 75    | 69    | 63    | 58    | 54    | 52    | 51    | 50    | 49     | 48     |

| Blocking Spacing for Rafter at max 24" O.C. | 20lbs | 35lbs | 40lbs | 45lbs | 50lbs | 60lbs | 75lbs | 80lbs | 95lbs | 100lbs | 105lbs |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| 8mm   | 72    | 60    | 54    | 48    | 41    | 36    |       |       |       |        |        |
| 10mm  | 84    | 72    | 66    | 60    | 54    | 48    |       |       |       |        |        |
| 16mm 3-Wall                                 | None  | 84    | 79    | 75    | 73    | 72    |       |       |       |        |        |
| 25mm 3-Wall                                 | None  | 84    | 79    | 75    | 73    | 72    |       |       |       |        |        |
| 16mm 5x-wall                                | None  | 108   | 100   | 96    | 90    | 84    | 72    | 66    | 60    | 56     | 54     |
| 25mm 5x-wall                                | None  | None  | None  | None  | None  | None  | None  | None  | None  | None   | None   |

## Thermal Performance and Sheet Thickness

Thicker panels will have higher R-values and thermal performance. Even if your structure only requires an 8 or 10mm sheet, you may want to consider a 16 or 25mm sheet for the added thermal performance. This is especially true in cold climates. In cold or moderate climates with high humidity (or the high humidity of a greenhouse), thicker panels will help reduce condensation. The added thermal insulation will help prevent cool night and morning temperatures from causing condensation on the inside of the greenhouse. (Note: see installation instructions on how to use spacers to help prevent condensation from dripping at structural supports).

## Color Selection and Light Transmittance

Multiwall polycarbonate comes in several color options. Clear and Softlite offer high light & solar transmission. Softlite has 100% light diffusion which is ideal for growing and offers privacy. White and opal are great for creating shade. Bronze offers shade, but special installation steps are needed to prevent noise from the expansion and contraction of the sheet, as its dark color causes it to go through greater temperature changes. Because of the ribbed profile of multiwall polycarbonate, even clear sheets do not have perfect visual clarity, the ribs will distort the view. Thicker (16mm and 25mm) sheets minimize this, but the ribs are still visible. If clear views are required, consider adding a glass window, or using a small portion of solid sheet.

**VLT** – Visual Light Transmittance. The amount of light that transfers through the sheet.

**SHGC** – Solar Heat Gain Coefficient. The amount of heat energy that transfers through the sheet. The higher SHGC, the warmer it will be under the sheet.

## Fasteners Selection

There are several fasteners used for the installation of multiwall sheets with Base and Cap. Some of these fasteners are selected based on sheet thickness and the quantity of base and cap required. Others are determined by the structure that the base and cap are being attached to. See below for information on all screw types.

### For Wood Buildings

1. **Attaching MWS sheets, corner profiles, and U-profiles to structural frame**
  - a. #10 x 2" wood screws with 3/4" sealing washers for 8mm, 10mm & 16mm polycarbonate
  - b. #10 x 2-1/2" wood screws with 3/4" sealing washers for 25mm polycarbonate

(Wood Buildings Continued)

- c. Frequency: Fasten sheets every 24" O.C. mid sheet for 48" sheets, 1/3rds for 72" wide sheets. At peak, lower edge of sheets, and openings fasten 12" O.C. For high wind loads from 90-110mph, increase frequency to 12" O.C.
- 2. Attaching base profile to structure**
    - a. 1-5/8" Wood Screws (if using treated wood, confirm screws appropriate for use with treated wood)
    - b. Frequency: 3/4" from ends and 12" O.C.
  - 3. Attaching cap profile to base**
    - a. Included with order based on profile color and panel thickness
    - b. Frequency: 1" from ends and 12" O.C.
  - 4. Attaching U-profile to sheets**
    - a. Included with U-Profile. Self-drilling screws, do not pre-drill
    - b. Frequency: 8" O.C. at eave, 12" O.C. at lower edge of wall

## For Metal Buildings

- 1. For attaching MWS sheets, corner profiles, and U-profiles to structural frame**
  - a. #12 x 1-1/2" self-drilling metal screws with 3/4" sealing washers for 8mm, 10mm & 16mm polycarbonate
  - b. #12 x 2" self-drilling metal screws with 3/4" sealing washers for 25mm polycarbonate
  - c. Frequency: Fasten sheets every 24" O.C. mid sheet for 48" sheets, 1/3rds for 72" wide sheets. At peak, lower edge of sheets, and openings fasten 12" O.C. For high wind loads from 90-110mph, increase frequency to 12" O.C.
- 2. Attaching base profile to structure**
  - a. 1-1/2" self-drilling metal screws
  - b. Frequency: 3/4" from ends and 12" O.C.
- 3. Attaching cap profile to base**
  - a. Included with order based on profile color and panel thickness
  - b. Frequency: 1" from ends, 12" O.C.
- 4. Attaching U-profile to sheets**
  - a. 3/8" Self drilling screws, Included with U-Profile. Do not pre-drill
  - b. Frequency: 8" O.C. at eave, 12" O.C. at lower edge of wall