

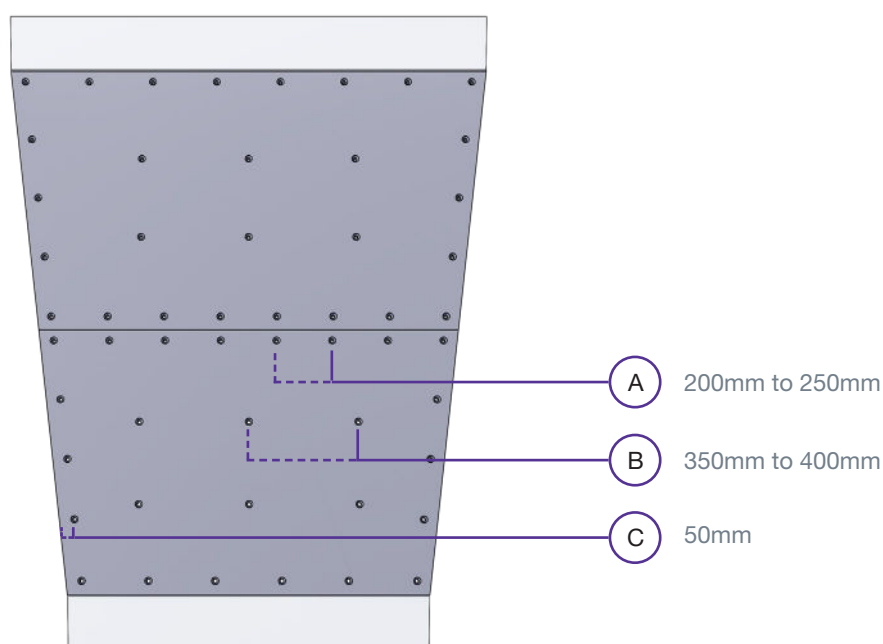
## Installation Guidelines

### Polyethylene Flow Linings

In these guidelines we will cover some simple techniques and considerations that will dramatically improve the performance and reliability of your lining project over the long term. This guide is designed to help you find the best way to apply Matrox Premium polyethylene sheets and other types of UHMWPE sheet to typical material-flow applications found within the UK concrete industry or similar. It is important to note that this is not a method statement.

We recommend that you follow as many of the points below as you can. If it isn't practical to follow a particular point in your application then consider how else you might achieve a similar effect or guard against the same potential issue. In general it is critically important to; use enough fixing points, pay careful attention to the layout of the sheets, and guard against material being forced in behind the sheets over time. We will refer to the latter as material ingress.

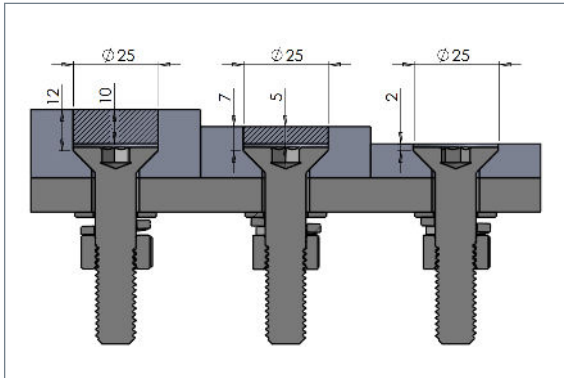
Please bear in mind that applications of this kind can vary tremendously in terms of material flow characteristics, chutework geometry and operating conditions. Many storage vessels were never specifically designed to handle the materials that they now work with and it is possible that the application is inherently limited. All other things being equal however, we believe that Matrox Premium polyethylene will give the best possible results.



#### Fixing points

The quantity and placement of fixing points is critically important and the image above shows how we recommend placing fixing points in an example chute face. Fixing points should be placed all the way around the perimeter of each lining material panel and set 50mm in from the edges. From notation 'A' you can see that perimeter fixings should be spaced 200mm to 250mm apart and from notation 'B' you can see that fixings in the centre of the panels should then be set 350mm to 400mm apart.

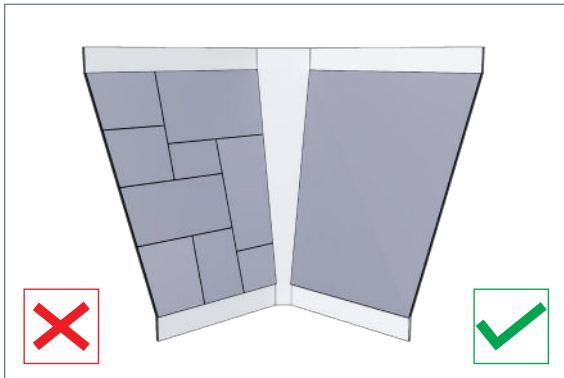




### Fixings

We recommend using our M12 countersunk socket head bolt kits for 10mm, 15mm and 20mm sheets. We recommend recessing all fixing holes and then using Matrox plugs for the thicker sheets as shown. This will give your installation the best performance and longevity.

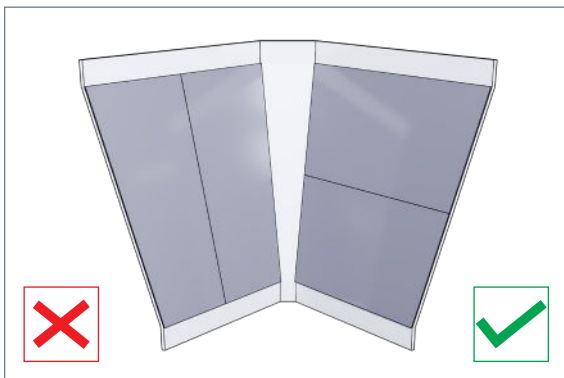
To fit these we recommend drilling 25mm countersunk holes to the depth of either 7mm for 15mm sheets or 12mm for 20mm sheets. The plugs can then be pressed into place level with the surface. Other specialist fixing methods are available.



### Sheet layout - Eliminate sheet joints

It is highly desirable that you eliminate as many sheet boundaries or 'joints' as you possibly can at the design stage. It is best to use single, uninterrupted pieces of material.

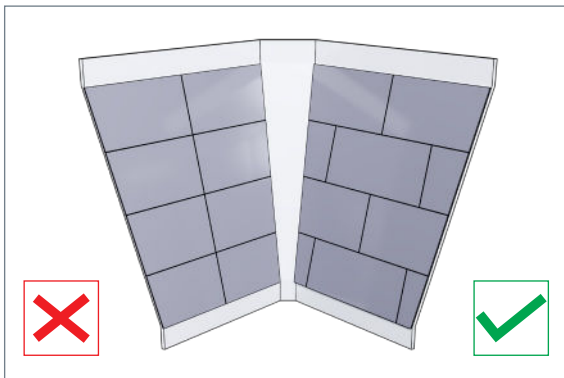
This is partially to give your installation the best performance but also because all sheet boundaries or joints are potential access points where material ingress can occur.



### Sheet layout - Joint orientation

Due to the size and shape of the surfaces you are trying to line it may not be possible or practical to cut out each face as a single piece. In this case some sheet joints are inevitable.

To give the best protection against material ingress, we recommend choosing a layout which minimises the amount of vertical joints. Use horizontal joints instead where possible.

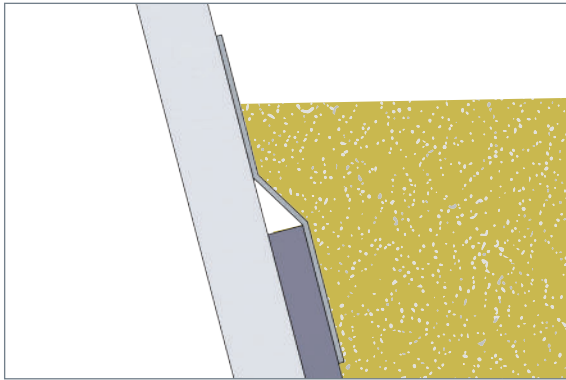


### Sheet layout - Interrupting vertical joints

For lining bigger faces you will need to use multiple sheets of lining material and it is inevitable in such cases that there will be more sheet joints to consider.

This isn't necessarily an issue, but again to protect against material ingress we recommend that you lay the sheets out in such a way that it breaks up any long vertical sheet joints.

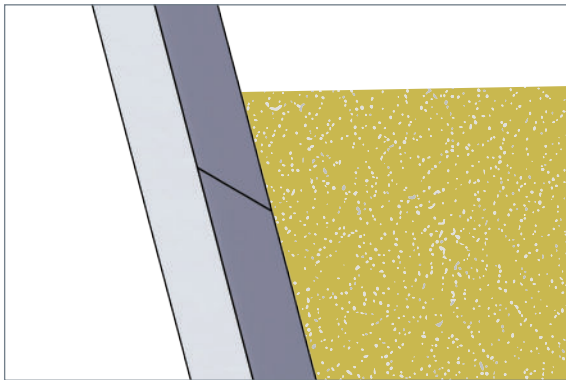




### Edge capping

Again, to protect against material ingress, it is important to cap off the top edge of the uppermost sheets of material. Our 3mm stainless steel 'Z bars' are economical, durable and are available from stock.

It is recommended that these top edges are kept out of the regular flow of material by making sure they are positioned sufficiently high up the surfaces that you are lining.



### Overlapping joints

Again, to protect against material ingress, consider how the sheets will be butted up against one another. Our recommendation can be seen here on the left.

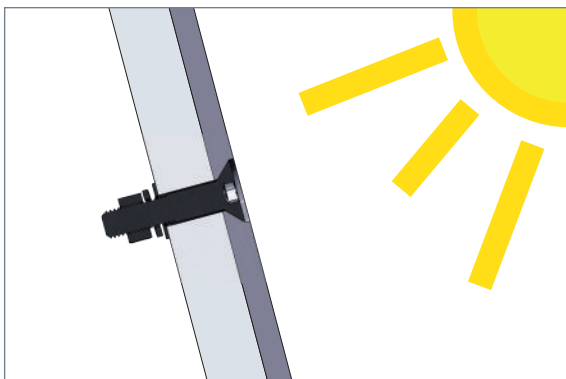
The sheets aren't physically joined together here but a backwards sloping chamfer has been cut onto both the upper and lower sheets such that the leading edge of the top sheet overlaps the back edge of the lower sheet.



### Corner options

Most chutes, bins and hoppers are rectangular in shape, meaning that lining material sheets will meet each other at 90 degrees. With challenging materials this angle can cause material flow issues.

For best results, we recommend that chamfer plates or even circular fillet plates are added to the corners of the chute work before the installation of the lining material. This will promote material flow.



### Temperature

This guide does not cover high-temperature applications but it is important to note that Matrox and UHMWPE's in general have a coefficient of thermal expansion 10 times greater than that of steel.

Remember to plan for this if your application is likely to see temperature fluctuations or will be exposed to the sun. If this is the case then the recommendation is to increase the number of fixing points.

