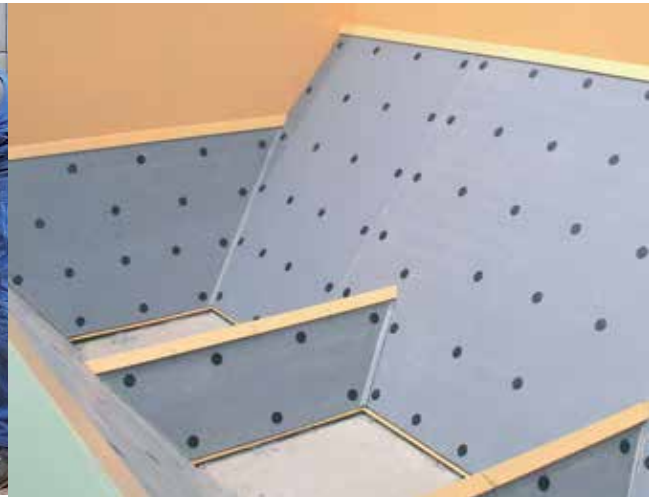


**MATROX**  
HIGH PERFORMANCE POLYMER LINING



FOR BULK MATERIAL HANDLING AND MINING



## KEEP MOVING WITH MATROX!

Matrox is a family of polymer alloys that solve the problems of friction, wear and the flow of material across many industry sectors.

An exceptional low friction surface, outstanding wear resistance, high impact strength, excellent chemical resistance and superior performance in demanding applications characterise the key properties of the product.

### RÖCHLING –

Röchling Engineering Plastics is a world-wide leader with more than 90 years of experience in the development and production of semi finished products made of engineering plastics.

In close co-operation with our customers we developed a range of Matrox grades that are tailored to the different lining applications with specific requirements.

Highly qualified staff, superior material development, state-of-the-art production facilities, laboratories and a certified quality management system are the basis for the quality and economic efficiency.

Our excellent reputation among the world's leading flow consultants and engineering experts in the field of bulk solids flow has been achieved by earning respect based on providing the industry with unmatched consistent, reliable solutions to flow problems.

### MATROX

The new formulation of Matrox has specifically been developed for the bulk material handling and mining industry to reduce typical flow problems of bulk solids in bins, hoppers, chutes, truck beds and other applications. However, every application makes its own special demands on the lining material.

The Matrox range combines the best surface friction qualities with abrasion resistance not only to promote bulk material flow but also to withstand the abrasion of flowing bulk materials in rugged applications under different environmental conditions.

The Matrox grades are based on a specific formulation of Ultra-High-Molecular Weight Polyethylene (PE-UHMW/PE 1000) that has been developed for use as a lining-material either in new construction or as a retrofit.

### ECONOMIC ADVANTAGES

Compared to steel, Matrox has considerable economic benefits.

#### • LOWER COST

The cost for lining an existing bin with Matrox is only about one third of the cost for construction steel.

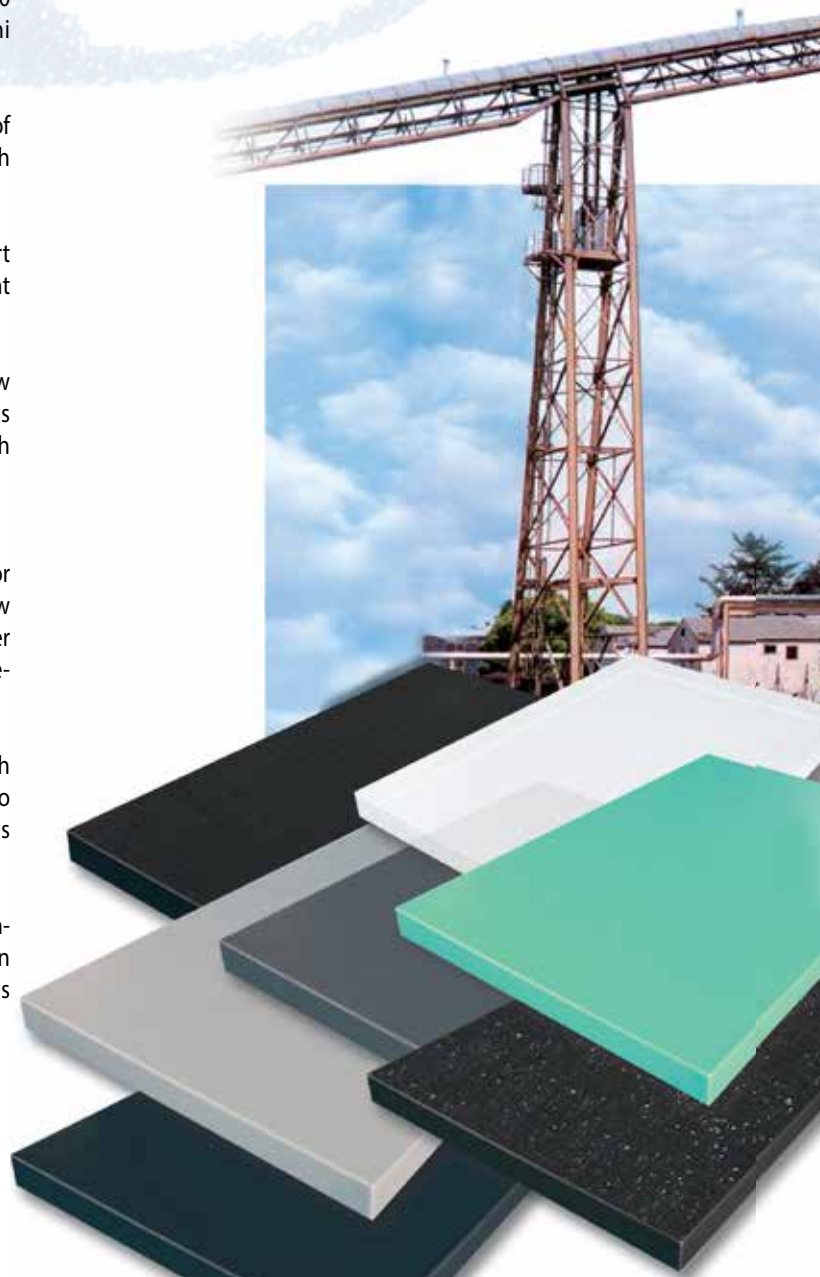
#### • LOWER WEIGHT

For example, the refurbishment of a 200m<sup>2</sup> steel bin, re-lining it with Matrox would achieve a reduction in weight of almost three tons compared to the standard method of welding steel sheets.

Matrox reduces the load on the structure and makes installation work much simpler.

#### • LONGER LIFE SPAN

The life span of Matrox is substantially longer than that of conventional construction steel. In the sand-slurry wear test, Matrox achieved a value of 80 which is 46% better than that of steel at 150 (S235JR).



	Material Thickness	Specific Gravity Thickness g/cm <sup>3</sup>	Weight for 200 m <sup>2</sup> /kg
Steel	3 mm	7.85	4,710
Matrox	10 mm	0.93	1,860

**Weight reduction with Matrox 2,850 kg ~ 60%**



## RELATIVE VOLUMETRIC WEAR ACCORDING TO THE SAND-SLURRY PROCESS

In the sand-slurry test, a mixture of sand and water is used to test the resistance to abrasion of a test sample compared to a defined reference material of PE-UHMW with a molecular weight of 5 million g/mol to which a fixed value of 100 is assigned.

The volume lost by the test sample during the test is then stated as an index compared with that of the reference material. The lower the value achieved, the better the resistance to abrasion.

### TYPICAL APPLICATION

The products of the Matrox range are used in a wide variety of industries that handle bulk materials from the mining level up to and including the final processing or use of the product.

Changes in moisture and particle size affect the product's flowability. Traditional steel surfaces become rough or corroded, causing the bulk material to stick to the steel.

Ultimately productivity and quality control are compromised.

#### MINING

- Off-road truck bed liners
- Hopper liners
- Scrapers
- Stacker/Reclaimer bucket liners
- Shovel liners
- Chute liners
- Dragline bucket liners
- Front-end loader buckets

#### TRANSPORTATION

- Ship holds
- On-road truck bed liners
- Railcars

#### STORAGE AND HANDLING

- Silos, bins, bunkers
- Truck dump hoppers
- Vibratory feeder pans
- Dozer Blade Liners
- Skirting
- Reclaim hoppers
- Rail dump hoppers
- Receiving Hoppers
- Slider beds
- Belt scrapers

#### PROCESSING

- Day bins
- Batch hoppers
- Hoppers
- Feeders
- Surge bins
- Storage silos and bins
- Chutes
- Screw conveyors

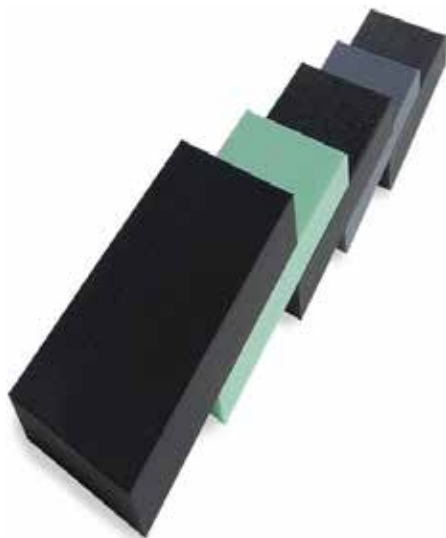
#### BULK MATERIALS HANDLED

- Coal
- Copper Concentrate
- Limestone
- Chemical Powders
- Synthetic Gypsum
- Kaolin Clay
- Salt
- Soap Detergent
- Zinc Concentrate
- Dust
- Bauxite
- Iron Ore
- Clay
- Soda Ash
- Nickel Ore
- Peat
- Potash
- Silica Sand
- Wood Chips
- Phosphate
- Talc



# THE MATROX RANGE OF PRODUCTS

In the field of lining technology, the name Matrox stands for highest quality with regard to resistance to wear and low sliding friction. In order to meet the demanding requirements of the bulk-goods industry, Röchling Engineering Plastics KG has cooperated with bulk-goods experts and users in developing additional lining materials which are ideal for use in many different fields of application. The members of the Matrox product family are: Matrox, Matrox X, Matrox U 110, Matrox EX 60, Matrox SE, and Matrox FC.



Technical Data	Test Method	Unit	Value
Specific Gravity	ISO 1183	g/cm <sup>3</sup>	0.93
Min/Max Service Temperature in Air		°C	-260 to +90
Tensile Strength Yield		MPa	>20
Tensile Strength Break		MPa	>40
Impact Resistance Notched Impact Strength	DIN 53505	MJ/mm <sup>2</sup>	No Break
Co-efficient of Thermal Expansion		mm/(mmxK) x 10 <sup>-6</sup>	180
Relative Abrasion loss by Sand Slurry Polystone 7000 = 90			70



## MATROX CLASSIC

Matrox is the classic lining material in our range and has general characteristics of a very high standard. Matrox has a very low co-efficient of sliding friction which is particularly important for the bulk transport and storage of glutinous or tacky materials.

### CHARACTERISTICS

- Very low coefficient of sliding friction
- Very high resistance to wear and abrasion
- High notched-bar impact strength
- Very low water absorption
- High resistance to chemicals
- High resistance to temperature

### FIELDS OF APPLICATION

- Transport industry
- Truck bed lining
- Bin and hopper linings



Matrox: Lining material for glutinous bulk solids.

## MATROX X

Coarse-grained solids with sharp edges make extreme demands on the lining material, thus the development of Matrox X. This is our premium product and possesses at optimum sliding properties the highest hardness and resistance to wear of all the members of the Matrox product family.

### CHARACTERISTICS

- Excellent resistance to abrasion
- Very high surface hardness
- Good sliding characteristics
- High impact strength
- Very good resistance to chemicals

### FIELDS OF APPLICATION

- Mining
- Mining vehicles
- Truck beds
- Hopper linings



Matrox X: The premium lining for extreme conditions.

## MATROX U 110

This material has the characteristics necessary for transporting hot bulk goods such as tar or asphalt. Matrox U 110 contains a number of additives which allow the material to be used for longer periods of time at temperatures up to 190°C. When planning linings for bulk solids with temperatures as high as this, the thermal expansion of the material must be taken into account at the design stage.

### CHARACTERISTICS

- Very high temperature stability
- Low coefficient of sliding friction
- High resistance to abrasion
- Contains additives which inhibit oxidation
- Good resistance to chemicals
- Very low moisture absorption

### FIELDS OF APPLICATION

- Truck beds
- Bulk-solid containers
- Bin linings
- Conveyor ducts
- Hoppers



Matrox U 110: The ideal material for hot bulk solids.

## MATROX FC

With its official approval, Matrox FC is ideal as a lining material for contact with bulk goods in the food industry.

### CHARACTERISTICS

- FDA-approved
- High resistance to wear
- High impact strength
- Very low coefficient of sliding friction
- Low moisture absorption

### FIELDS OF APPLICATION

- Food industry
- Goods wagons
- Bin lining



Matrox FC: According to FDA approval, suitable for contact with foodstuffs.

## MATROX SE

Matrox SE is recommended for use in areas where it is advisable or obligatory to use materials which are highly inflammable. This lining material represents an excellent combination of good sliding characteristics and high resistance to wear and also possesses flame inhibiting qualities of class V0 according to the international test process UL94.

### CHARACTERISTICS

- Flame-inhibiting (UL94, class V0)
- High resistance to wear
- High impact strength
- Good sliding characteristics
- UV-resistant
- Anti-static

### FIELDS OF APPLICATION

- Mining
- Truck beds
- Hoppers



Matrox SE: Ideal (among other things) for linings in the mining industry.

## MATROX EX60

Because of its permanently antistatic quality, Matrox EX 60 is especially suitable for applications in areas where there is a risk of explosion. The material also has a high impact resistance and excellent UV stability. This means that it is ideal for outdoor use, e.g. in open-cast mining.

### CHARACTERISTICS

- Permanently anti-static
- High resistance to wear
- High impact strength
- UV resistant

### FIELDS OF APPLICATION

- Open-cast mining
- Truck beds
- Excavator-shovel liners
- Conveyor ducts
- Hopper lining



Anti-static: Matrox EX 60 in open-cast mining where explosion risk is high.

	MATROX	MATROX X	MATROX U 110	MATROX EX 60	MATROX SE	MATROX FC
Resistance to wear	●	●	◐	◐	◐	◐
Impact strength	◐	◐	◐	●	◐	◐
Sliding characteristics	●	◐	◐	◐	◐	◐
Antistatic properties	○	○	○	●	●	○
UV resistance	●	◐	◐	●	●	◐
Service temp. °C continuous	-250...80	-250...80	-250...110	-250...80	-250...80	-250...80
Service temp. °C briefly	-250...130	-250...130	-250...190	-250...130	-250...130	-250...130
Delivery Program	Ex Stock	On Request	On Request	On Request	On Request	Ex Stock

● very good    ◐ good    ◑ satisfactory    ◒ moderate    ○ not good

#### SHEET SIZES - Ex Stock Dotmar

Matrox is available in the following sheet sizes:

Dimensions	Typical Thicknesses*
2000 x 1000 mm	12 – 25mm
3000 x 1000 mm	
3000 x 2000 mm	

\* If required, also available in thicknesses from 1 to 200 mm.

#### SHEET SIZES - Available on Request Röchling

Other grades available in the following sheet sizes:

Dimensions	Typical Thicknesses*
3050 x 1250 mm	6 – 50 mm
4000 x 2000 mm	
6000 x 2000 mm	
6000 x 2500 mm (MegaSheet)	

\* If required, also available in thicknesses from 1 to 200 mm.

# MATROX COILS AND TRUCK LINING APPLICATIONS

## MATROX COIL AND TRUCK LINING APPLICATIONS

Compared to steel & aluminium, Matrox has considerable economic benefits.

**MATROX COILS** - Available on request.

The roll can be cut to specification and offers cost advantages such as:

- easy installation
- less welding work
- fewer fixing elements
- waste reduction - better yields



Matrox coils: Ideal for lining on road dump-truck beds.



## BETTER UNLOADING

With Matrox coils it is possible to line virtually any on road dump truck quickly and easily. The material is available in thicknesses from 6.3 to 15 mm, in widths of up to 5 metres and lengths up to 14.6 metres.

The hang up of material, especially with older or worn truck beds makes unloading more time-consuming. It may also be more dangerous if the load does not move until the tipping angle is very high and slips out of the bed suddenly and rapidly. Lining with Matrox ensures reliable discharge. In this way, the load can slide off the bed at a low tipping angle without leaving any significant residue. This shortens the time required to unload, reduces carry back and makes the process safer.





# UNLOAD BETTER WITH MATROX

## UNDERSTANDING FLOW PROBLEMS

Cohesive bulk materials do not flow easily e.g. in chutes and hoppers. They stick to the walls and will affect productivity. This is a common problem because most bins were designed without a thorough understanding of the bulk material being handled. Moisture, storage time at rest and other factors affect the flow properties of the bulk material.

Arching and ratholes are two common problems that usually develop when either the outlet is too small or when the hopper lining material does not promote flow due to shallow wall angles or rough wall conditions caused by corrosion.

Segregation will occur if material discharges from the bin in a funnel flow pattern. The centre portion of the bin empties first, followed by the material along the walls. This creates segregation because as the bin was loaded the finer particles collect in the centre of the bin under the charging point while the coarse particles roll to the periphery of the bin along the walls. In order to remix the material during discharge a mass flow pattern is required to minimize or eliminate segregation.

Matrox reduces the friction between the bulk material and the walls of the hopper and thus allows the material to flow out and to empty the hopper completely.

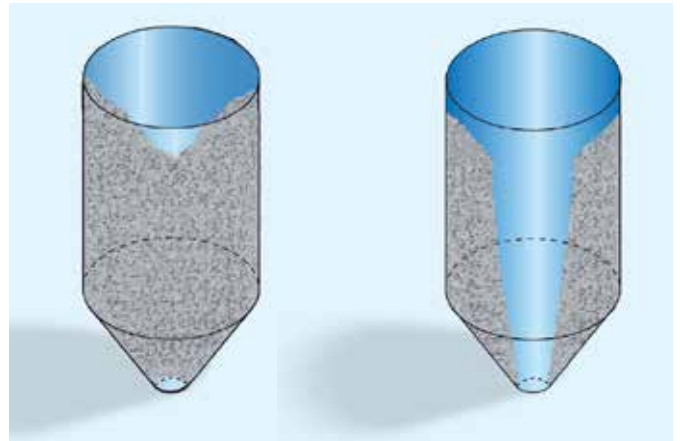
## RESULTS OF FLOW PROBLEMS

- Delayed start-up - increased cost
- Limited live storage
- Spontaneous combustion (stagnant coal)
- Quality compromised
- Segregation
- Silo vibrating or shaking
- Silo structural failure
- Wear of equipment
- Process out-of control
- Operator intervention

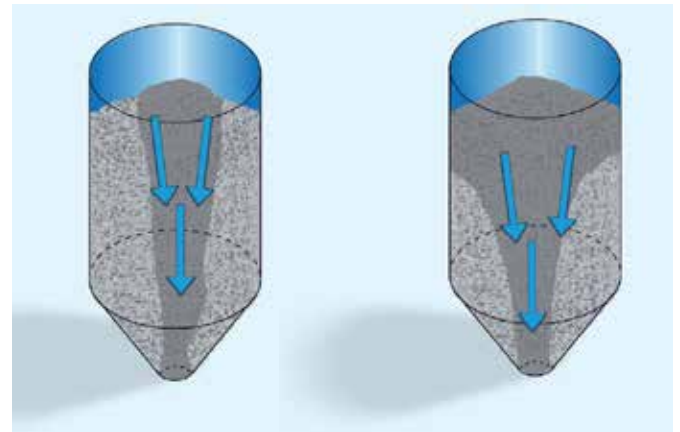
## TYPICAL FLOW PATTERNS

Funnel flow is referred to as first-in last-out and is ideal for free flowing bulk materials. The bulk material discharges from the bin through a small channel in the centre of the bin above the outlet and the material along the wall remains stationary until the end.

Mass flow is referred to as first-in first-out and is required for cohesive bulk materials. It is defined as all the material is in motion whenever any is withdrawn.



Typical problems: Arches (left) and Ratholes (right) occur when the lining material does not promote the bulk material flow.



Funnel Flow: The flowing material (dark grey) is forming a funnel, while the rest (grey) is sticking to the walls of the bin.



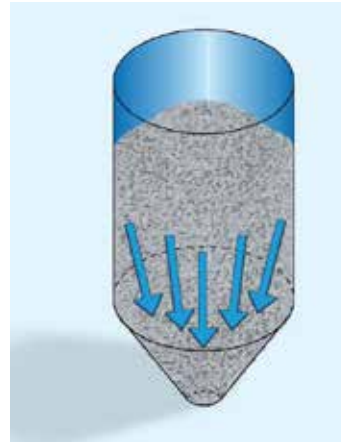
Rathole: The centre portion of the bin empties first in the form of a funnel (Photo Courtesy of Solids Handling Technologies, Inc.).



Matrox was tested against various grades of coal with different moisture contents and time at rest (> 72 h). The wall angles required to achieve mass flow vary according to the surface friction of the lining material on the hopper wall.

In order to create mass flow, the hopper walls must be smooth and steep enough and the outlet must be large enough to prevent arching. Please note the different wall angles required to create mass flow in the following chart.

The following chart shows the different wall angles required to create an optimised mass flow for different lining materials.



Mass Flow:  
All the material is in motion. Optimum flow is achieved.

### Recommended cone wall angles to achieve maximum mass flow for different wall materials

Bulk Material	Diameter of Cone Outlet	Flow Rate	Wall Material		
			Polystone® Matrox	Stainless Steel acc. DIN 1.4301	UHMW-PE
PRB Coal with 29 % moisture	2 ft. (610 mm)	continuous after 3 days rest	56° 60°	81° 81°	62° 63°
	8 ft. (2,440 mm)	continuous after 3 days rest	55° 59°	78° 78°	60° 62°
PRB Coal with 36 % moisture	2 ft. (610 mm)	continuous after 3 days rest	59° 65°	88° 90°	64° 68°
	8 ft. (2,440 mm)	continuous after 3 days rest	57° 62°	76° 78°	58° 63°

Summary of wall friction test results from Jenike & Johanson, Inc., PRB is a sub-bituminous coal mined in the USA, Degrees measured from horizontal.

### ESTIMATED WEAR LIFE

The following chart shows the estimated life expectancy of a 1/2" (12,7 mm) thick Matrox liner in a mass flow circular bin having the following dimensions:

- total silo height is 65 ft. (1,981.2 cm)
- hopper section has a 25 ft. (762.0 cm) vertical height
- 25 ft diameter with a 2 ft. (60.96 cm) diameter outlet

Coal Handled	Estimated Life of 1/2" (12,7 mm) Thick Matrox Liner in years
Bituminous	> 17
Sub-Bituminous (PRB)	> 35
Lignite	> 50

# FIXING TECHNOLOGY

## FIXING SYSTEMS

Matrox is installed by mechanically fastening it to the substrate using bolted or welded fasteners. Both types are acceptable and are usually chosen based on the requirements of the application and the structure being lined. With qualified installers that understand the complex field of bulk material handling, proper installation by a qualified distributor or installer is critical to the life expectancy of the liner.

### FIXING SYSTEM: STUD WELDING

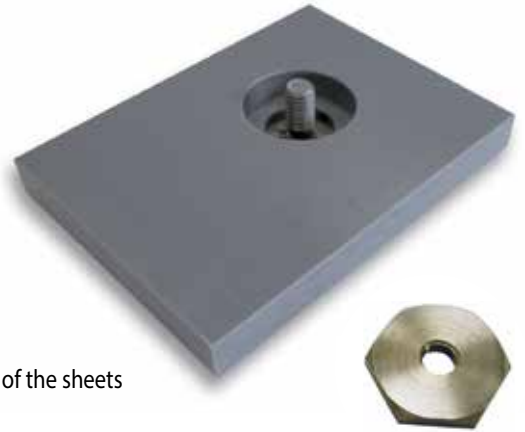
In order to fix linings in position, the sheet is always pre-drilled at the fixing points using a special drill or CNC Router. The distance between the individual fixing points depends on the geometry, material thickness and the material of the container being lined, the operating conditions and the type of fixing process selected.

When the sheets are bolted into position with studs and hex nuts, we recommend a nominal distance of 250 mm. The distance between the holes and the edge of the sheet should not exceed 50 mm.

When the pre-drilled lining sheet is positioned in the container it is used as a template for welding.

For stud welding, stud is welded to match a hole in the sheet to the metal surface below.

A hexagon nut is then screwed onto the stud. For lining purposes, nuts and threaded bolts, size M8 have proved to be most suitable. For simpler installation on uneven surfaces, we have special threaded studs with predetermined breaking points.



### Advantages:

- Easy removal of the sheets

### Ideal applications

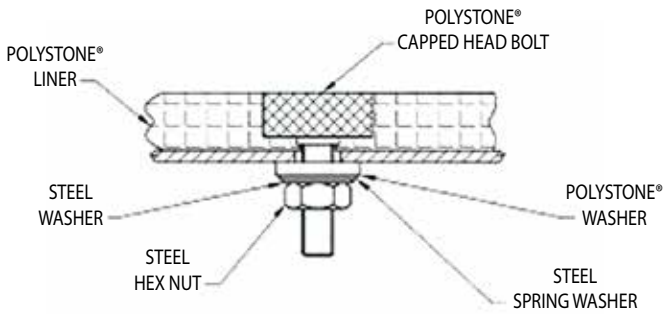
- For thicker sheets >12mm

### Equipment required

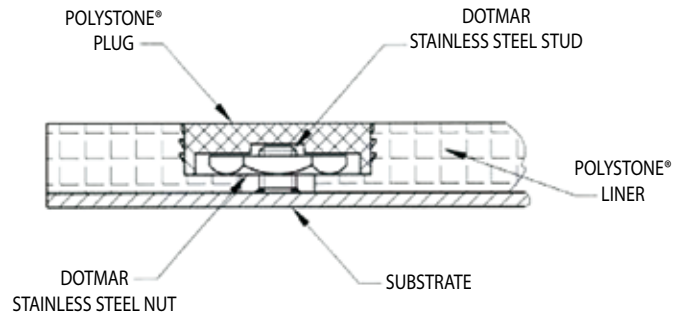
- Suitable graduated drill
- Stud-welding unit
- Threaded studs (if necessary with pre-determined breaking point)
- Hex nuts
- Fixing tool for tightening the disk nuts.

A stud-firing tool can also be used to mount the lining sheets.

### POLYSTONE® CAPPED HEAD BOLT: INSTALLATION SYSTEM



### DOTMAR STAINLESS STEEL M8 STUD, NUT AND POLYSTONE® PLUG: INSTALLATION SYSTEM



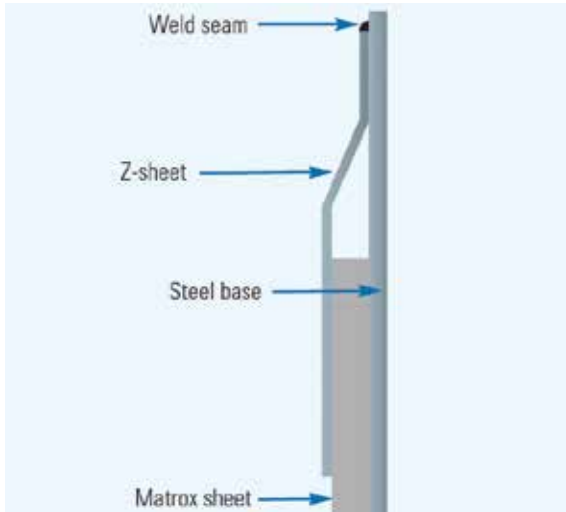
Bulk Materials Handling and Thermoplastic Linings is specialist area of study. Consult experts in the field for reliable guidance and correct installation.



**EDGE PROTECTION**

When installing all types of lining, the top row of sheets must be protected by a sealing strip to prevent material from working its way under the sheets. The strips may be of aluminium (truck bed) or stainless steel plates.

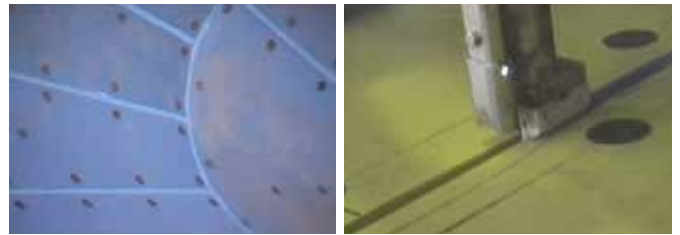
When fixing the strips, ensure that the material can expand and contract freely due to thermal effects.



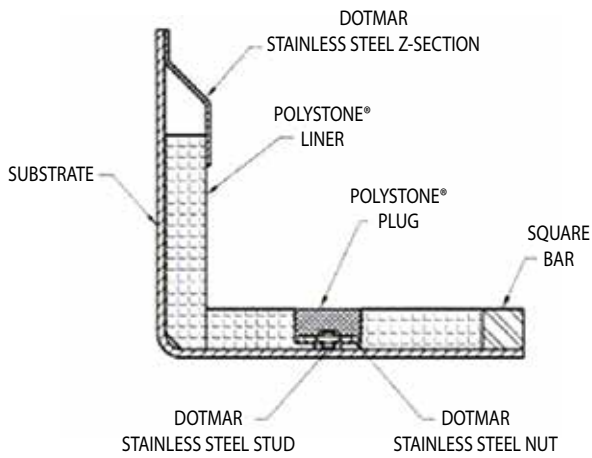
**LINER JOINTS: FUSION WELDING**

DOTMAR strongly recommends fusion welding of the joints between the sheets. If the joints are not welded they will open and close due to thermal expansion and contraction of the liner material. Fusion welding provides a totally sealed liner and eliminates ingress of material behind the liner. Material build up between the joints or behind the liner will result in lifting of the liner, thus exposing the liner to premature wear and a shorter service life.

Material caught between the joints can also cause hang up and interrupted flow, hence defeating the purpose of lining. Joints to be welded are prepared prior to the panels being fastened to the substrate. Welds can be ground, planed or polished flush with liner for fine powder applications.



**POLYSTONE® MATROX™: INSTALLATION SYSTEM**



Dotmar offers a high level of applications advice, technical support and full turn-key project management on an international basis.





# PROJECT EXAMPLES

## LINING IS A MATTER OF EXPERIENCE

The choice of lining material depends on a number of factors such as the type of bulk solid, the geometry of the object being lined as well as other factors affecting the flow of material and amount of wear. Dotmar has a wealth of experience in lining technology going back over 40 years. This experience is at your service. We can advise you on the right type of lining material and fixing technology for your application. Our priorities are the durability and efficiency of the lining.

## TRUCK-BED LININGS

Depending on their shape, truck beds have number of different problem areas. Material sticks in the corners, the flow is impeded and the bed is exposed to additional wear. Depending on the design of the bed, the shape, grain-size, moisture content and temperature of the bulk solid, we recommend the following products:

We recommend:

- Matrox EX 60
- Matrox SE
- Matrox SI 12
- Matrox FC

For applications involving heavy impact stresses, we can also supply a combination of the above Matrox types and polyurethane.



Professional lining: Z-sheets attached to the truck bed prevent material from drifting under the lining sheet.



Mining vehicle. Matrox X-lined truck bed for ore transport in Australia.



Comparison between Matrox and steel. The material adheres to large areas of the unlined steel surface. The area lined with Matrox is almost completely free.



Strongly anchored: Installation of Matrox sheets in a funnel-shaped dump truck using the stud-welding process.

**HOPPER AND SILO LINING**

One of the main challenges in lining hoppers and silos is the high amount of wear caused by the impact of material falling from a height. The funnel-shaped outlet causes problems with regard to core and mass flow. Special safety regulations or, for example, the handling of foodstuffs, create additional demands.



View into a hopper from below. With large-grained bulk goods, which may cause serious localised wear, lining the exposed parts with Matrox will considerably prolong the life span of the hopper.



Coal hopper in a power station lined with Matrox EX 60. Operating reliability and uninterrupted infeed of raw material are essential in the power industry.



Emptying a bin: The Matrox lining of the bin ensures even and undisrupted loading of the bulk material.



Hopper lining with weld stud, nuts & plugs. The distribution of fixing points can be clearly seen.



Universal in application: Because of their various fields of use, the lining of goods wagons must be suitable for all types of material.

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1800 170 001  
sales@dotmar.com.au

www.dotmar.co.nz  
0800 650 750  
sales@dotmar.co.nz



## Polystone MATROX Installation Survey

### CLIENT CONTACT DETAILS

Company: \_\_\_\_\_ Date: \_\_\_\_\_

Address: \_\_\_\_\_ Ph: \_\_\_\_\_

Contact: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_ Mob: \_\_\_\_\_

### MINING APPLICATIONS - Please tick appropriate boxes

- |   |   |
|---|---|
| <input type="checkbox"/> Belt Scrapers                  | <input type="checkbox"/> Railear Liners           |
| <input type="checkbox"/> Bunker Liners                  | <input type="checkbox"/> Reclaimer Buckets        |
| <input type="checkbox"/> Chain Conveyor Flights         | <input type="checkbox"/> Screw Conveyor Liners    |
| <input type="checkbox"/> Chute Liners                   | <input type="checkbox"/> Self-unloading Ships     |
| <input type="checkbox"/> Conveyor Skirting              | <input type="checkbox"/> Silo Liners              |
| <input type="checkbox"/> Cyclones                       | <input type="checkbox"/> Slider Beds              |
| <input type="checkbox"/> Drag Chain Conveyor Liners     | <input type="checkbox"/> Storage Bin Liners       |
| <input type="checkbox"/> Dragline Buckets               | <input type="checkbox"/> Surge Bin Liners         |
| <input type="checkbox"/> Dust Collection Hopper Liners  | <input type="checkbox"/> Transfer Chute Liners    |
| <input type="checkbox"/> Front End Loader Bucket Liners | <input type="checkbox"/> Under Chain Guides       |
| <input type="checkbox"/> Hopper Liners                  | <input type="checkbox"/> Wear Strips              |
| <input type="checkbox"/> Off-Road Truck Liners          | <input type="checkbox"/> Vibrating Bin Discharges |
| <input type="checkbox"/> Pugmill Paddles                | <input type="checkbox"/> Vibratory Feeders        |

### GENERAL QUESTIONS - Please tick appropriate boxes

#### Is the problem:

- Flow
- Wear
- Other

#### Does the problem cause:

- Stoppages
- OH & S issues
- Environmental issues
- Labour issue
- Mechanical issues

#### Action required:

- Send bulk solids handling data sheet
- Organise site visit



## Polystone Bulk Solids Handling Data Sheet

### CLIENT CONTACT DETAILS

Company: \_\_\_\_\_ Date: \_\_\_\_\_  
Address: \_\_\_\_\_ Ph: \_\_\_\_\_  
Contact: \_\_\_\_\_ Fax: \_\_\_\_\_  
E-mail: \_\_\_\_\_ Mob: \_\_\_\_\_

### GENERAL QUESTIONS, COMMON TO ALL APPLICATIONS.

Material being handled \_\_\_\_\_ Characteristics:  Sharp  Angular  Hard  Soft  Other

Mixture percentage, if applicable \_\_\_\_\_ Particle size \_\_\_\_\_ Moisture content \_\_\_\_\_ Material mass \_\_\_\_\_ kg/m<sup>3</sup>

Temperature range expected during application \_\_\_\_\_ °C to \_\_\_\_\_ °C Tonnes per hr \_\_\_\_\_

What is the present liner? (be specific and include original thickness) \_\_\_\_\_

How long has the liner lasted? \_\_\_\_\_, if other liners have been used in this application,

what were they? \_\_\_\_\_ How long did they last? \_\_\_\_\_

What problems exist in this application? Sticking \_\_\_\_\_% Corrosion \_\_\_\_\_% Other (Specify) \_\_\_\_\_

### SPECIFIC QUESTIONS. DO NOT PROCEED UNLESS THE ABOVE SECTION IS COMPLETE.

#### CHUTES

Width: \_\_\_\_\_ Length: \_\_\_\_\_ Tonnes per hr: \_\_\_\_\_  
Velocity: \_\_\_\_\_ m/sec Belt speed: \_\_\_\_\_ m/sec  
Incline angle: \_\_\_\_\_° from horizontal  
Is chute straight or change direction? \_\_\_\_\_  
How does material enter chute? \_\_\_\_\_  
What is the angle of impact from the horizontal? \_\_\_\_\_°  
Draw a sketch for additional information.

#### TRUCKS

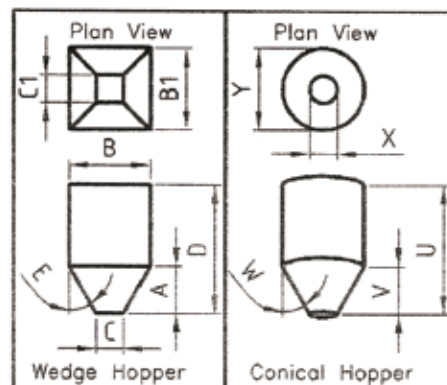
Distance of drop into the bed \_\_\_\_\_ m  
Approx number of loads per day \_\_\_\_\_  
If hauling overburden, what is the largest rock size expected to be hauled? \_\_\_\_\_  
What is the percentage of rock compared to dirt? \_\_\_\_\_%  
Is the bed heated? \_\_\_\_\_ Can the heat be diverted? \_\_\_\_\_  
Do they haul asphalt? \_\_\_\_\_  
What is the bed made of? \_\_\_\_\_

#### OTHER APPLICATIONS

Type of equipment \_\_\_\_\_  
Give description \_\_\_\_\_  
Draw sketch on separate sheet of paper if necessary.

#### HOPPER DIMENSIONS

Wedge Type:  
A \_\_\_\_\_ B \_\_\_\_\_ B1 \_\_\_\_\_ C \_\_\_\_\_ C1 \_\_\_\_\_ D \_\_\_\_\_ E \_\_\_\_\_°  
Conical Type:  
U \_\_\_\_\_ V \_\_\_\_\_ W \_\_\_\_\_° X \_\_\_\_\_ Y \_\_\_\_\_  
Angle measured from the vertical \_\_\_\_\_°  
Does hopper remain full most of the time? \_\_\_\_\_  
Is there a constant impact area during charging? \_\_\_\_\_  
Explain problems that occur during operation or discharge of the hopper: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_





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