HAMAKYU®
Conveyors & Engineering Plastic Solutions

SYSTEM TIVAR® ENGINEERING
TURNKEY SOLUTIONS

MITSUBISHI CHEMICAL ADVANCED MATERIALS

SystemTIVAR® Engineering

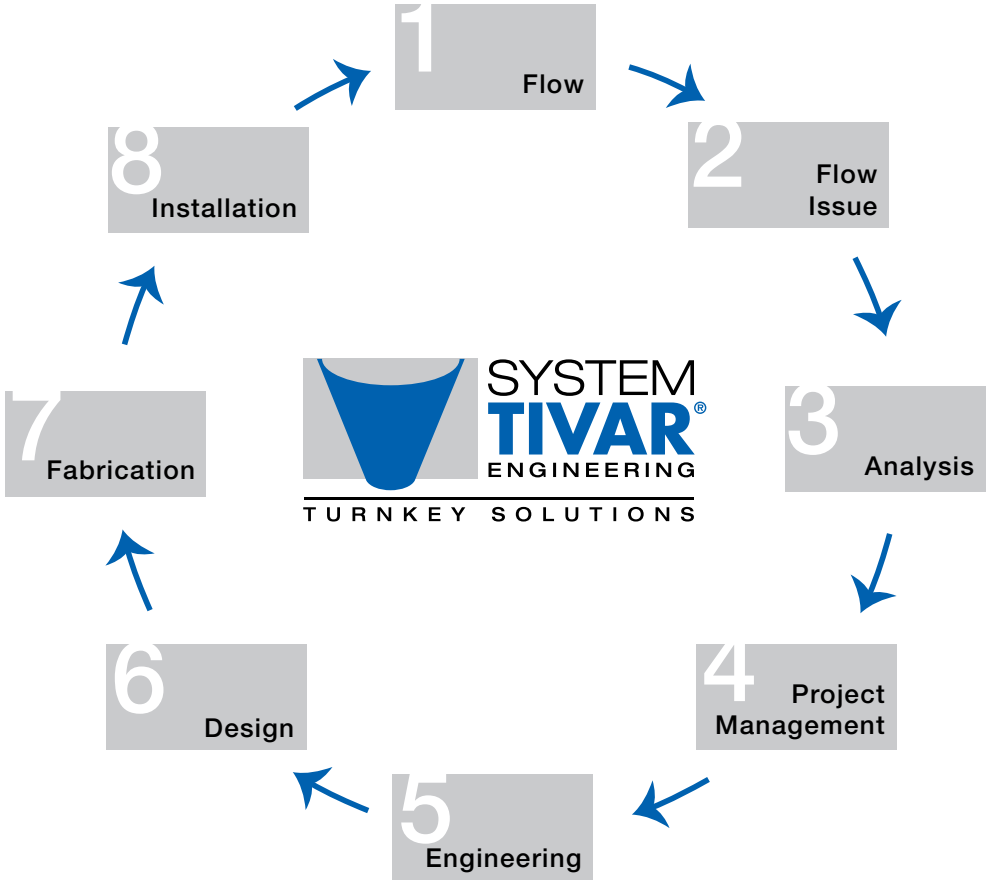
TIVAR® 88 and TIVAR® 88-2 Lining Solutions for Bulk Material Flow Challenges

SystemTIVAR® Engineering

Solutions for Bulk Material Flow Challenges

Mitsubishi Chemical Advanced Materials manufactures engineered lining solutions, to ensure that the handling of bulk goods is safer, easier, and more efficient. Almost any bulk material application profits from improved flow properties, thanks to the extensive product portfolio offerings from Mitsubishi Chemical Advanced Materials.

In addition to providing the manufactured solution, the SystemTIVAR® Engineering Team has several capabilities including on-site analysis, custom liner designs, the pre-fabrication of kits, and turnkey installation support, anywhere around the globe. From small, to large scale projects – our local SystemTIVAR® Engineering Teams are ready to provide guidance and a solution to your most difficult bulk material flow challenges!



Coal Receiving Hopper Liner

Salt Hopper Liner

Steel Plant Basins

Key Markets

- Power Plants
- Cement
- Mining
- Steel Mills
- Product Manufacturing (Food, Litter, Fertilizer, etc.)
- Foundries
- Gypsum Wallboards
- Sand
- Food Processing and Packaging

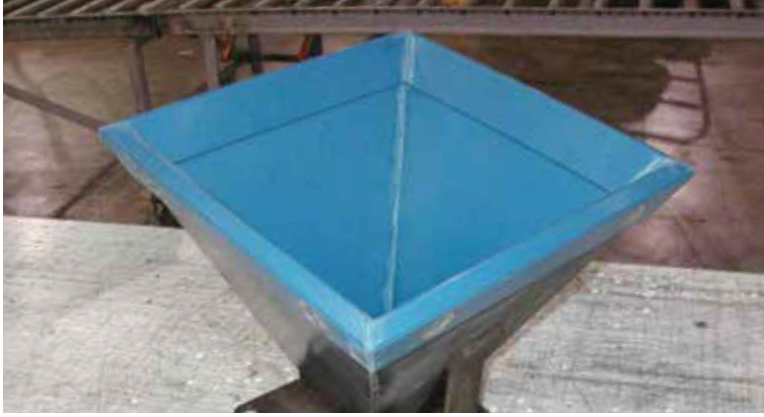
Applications

- Bins
- Hoppers
- Chutes
- Tubes
- Bunkers
- Conveyors
- Vibratory Pans
- Off-Road Truck Beds
- Stand Pipes

Key Benefits

- Promotes reliable and steady bulk material flow
- Abrasion, chemical and corrosion-resistant
- Low coefficient of friction (COF)
- No moisture absorption
- Reduces and/or eliminates plugging, arching, ratholing and erratic flow
- Ease of installation
- Can be welded and formed to meet exact dimensions
- UV Resistant prevents premature degradation of material
- In dusty or volatile environments, ESd protects against the build-up of electrical charges

Drop-In Liners Solve Flow Problems



TIVAR® 88-2 lined receiving hopper provides reliable bulk material flow

TIVAR® 88 liners prevent plugging problems

Product Application: TIVAR® 88-2 Receiving Bin Liner

Problem: Original truck dump hopper liner was wearing, causing efficiency issues during production, prompting an immediate need for replacement

Solution: Replaced with ¾" TIVAR® 88-2 liner kit with oversized panels, corner profiles, and T profiles. This eliminated seams and ensured that the installation process was completed in a timely manner

Benefits: TIVAR® 88-2 liner resulted in increased life, and improved flow and plant efficiencies

Four outlet phosphate receiving hopper lined with TIVAR® 88-2

Product Application: Concrete Receiving Hopper

Problem: Flow of PRB coal was not possible in concrete receiving hoppers.

Solution: TIVAR® 88-2 UHMW-PE anti-static was used to line the hoppers and completely eliminate flow problems.

Benefits: Mass flow of coal now possible, eliminating sticking and "ratholing."

Lining Materials

Sticky bulk materials such as coal, bauxite, copper, concentrates, potash, clay, overburden and other cohesive materials require a surface that allows them to move from point A to point B, seamlessly. TIVAR® 88 and TIVAR® 88-2 have a low Coefficient of Friction (COF) that permits materials to move freely and discharge without hang-up.

TIVAR® 88

The TIVAR® 88 line of materials is considered the best linings materials in the bulk handling industry. As the original formulation in the TIVAR® 88 line, TIVAR® 88 is a premium glass-filled grade that offers low moisture absorption and chemical resistance. Designed specifically to combat flow stoppage, prevent dead volume, and frequent fillings in chutes and hoppers, TIVAR® 88 can tackle any challenge associated with material handling.

TIVAR® 88-2

TIVAR® 88-2 can be fabricated and welded for any application that requires a seamless drop-in liner, a framed-in liner, or a replacement liner. This TIVAR® grade is a premium lubricant-filled, and UV stabilized product that offers the lowest Coefficient of Friction (COF) of our TIVAR® 88 line of materials.

Electro Static Dissipative (ESd)

In dusty or volatile environments, TIVAR® 88 ESd and TIVAR® 88-2 ESd grades prevent the build-up of electrical charges.

TIVAR® 88-2: Silicone additives provide smooth surfaces for bulk materials to slide

SystemTIVAR® Engineering Tip:

Other common TIVAR® materials for bulk material handling applications include TIVAR® BurnGuard, TIVAR® H.O.T., and TIVAR® Cleanstat.

TIVAR® 88 and TIVAR® 88-2 liners can be designed to fit into a variety of structures with various geometries

TIVAR® 88 liners are sized specifically to your equipment & provide stress-free installation

Rail cars lined with TIVAR® 88-2 prevent sticking of sub-bitumi-nous and lignite coals

A TIVAR® 88-2 tube liner inserted into a steel down comer or standpipe: eliminates sticking and bridging issues

Welding & Fastening Technologies

Mitsubishi Chemical Advanced Materials has welding and fastening technologies, making it possible to offer oversized liner panels that can be installed with minimal fasteners. This includes custom drop-in liners, framed-in liners, or pre-fabricated liner kits.

TIVAR® 88-2 Drop-In Liners

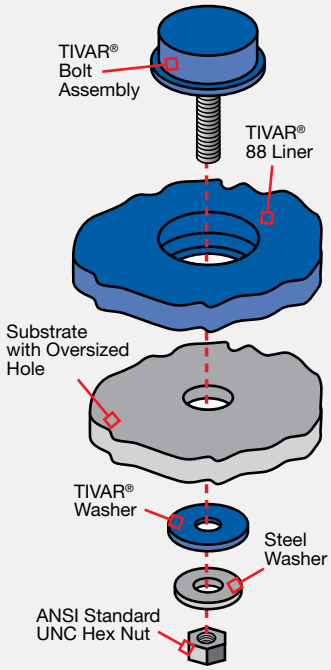
TIVAR® Fastening Systems

For a smooth and durable finish that promotes flow, Mitsubishi Chemical Advanced Materials recommends using one of System TIVAR® Engineering's fastener systems. TIVAR® capped elevator bolts, weld washers, stud weld, and concrete expansion anchors, are all designed to:

- Ensure the fastener surface is flush with the liner
- Prevent leaks
- Resist corrosion and material abrasion
- Allow for liner expansion and contraction
- Eliminate vibration
- Eliminate bridging caused by material hang-up on regular fasteners

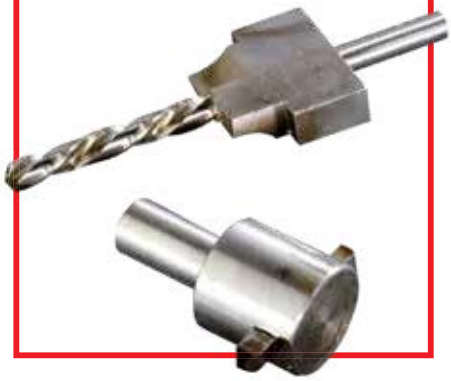
TIVAR® Capped Elevator Bolt System

- Eliminates bolt head wear
- Eliminates corrosion
- Eliminates material turbulence and hang-up
- Provides smooth surface



Fasteners

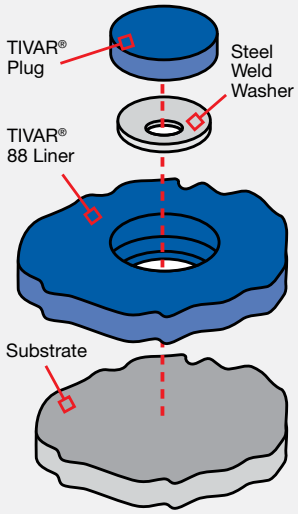
Counterbore Tools



Leading Edge Protector

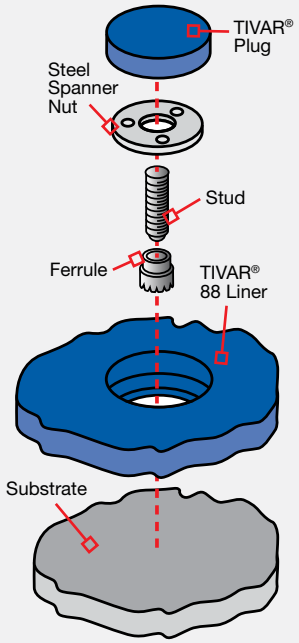
Weld Washer System

- Eliminates drilling of substrates
- Minimizes need for multi-person installation
- Provides smooth transition of material and minimizes material turbulence and material hang-up when TIVAR® plug is utilized



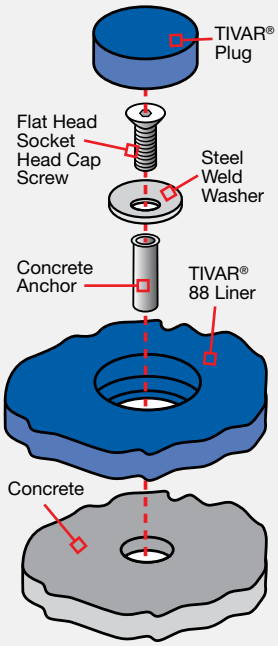
Stud Weld System

- Eliminates drilling of substrate
- Eliminates need for multi-person installation
- Minimizes material turbulence and material hang-up when TIVAR® 88 plug is utilized



Concrete Expansion System

- Excellent grip strength
- Eliminates need for multi-person installation
- Minimizes material turbulence and material hang-up when TIVAR® 88 plug is utilized



Leading Edge Protectors

SystemTIVAR® Engineering's leading edge protectors are the final touch for any lining installation. Manufactured from either mild steel or stainless steel, these particular edge protectors are installed over all TIVAR® 88 liner leading edges. This final step prevents the migration of materials between the liner and substrate, which could cause the liner to pull away from the substrate.