

CASE STUDY:

Copper Concentrate

TIVAR® 88 High Performance Lining Solution

THE CASE IN BRIEF

Application: Transfer Chute

Quantity: 1 Chute

Liner: TIVAR® 88, 3/4" Thick

Bulk Material: Copper Concentrate

Substrate: Mild Steel

Problem: Sticking, no flow conditions

Date Installed: 1999

TIVAR® 88 CHUTE LINER SOLVES COPPER CONCENTRATE FLOW PROBLEMS

Background: Chile, the world's largest copper mining country, exports vast amounts of copper concentrate. Copper concentrate is an extremely cohesive bulk material that is very difficult to handle.

Problem: One of the largest copper mines faced serious problems with their ship loading system because the copper concentrate did not flow as expected. The main load-out chute, handling copper concentrate at 800-900 TPH, was constructed of mild steel in a rectangular shape. Problems occurred in the interior corners of the chute when the concentrate contained a higher percent of moisture (normal moisture levels are 8-9.5%). The material would build-up in the corners, and this build-up would eventually block the chute. High costs associated with having employees monitor and ensure material flow, as well as demurrage charges due to excessive ship loading time, were unacceptable.

Solution: It was not practical nor economically feasible to have a dedicated group of employees on stand-by during the ship loading process to address the no-flow or restricted flow condition.

Quadrant Engineering Plastic Products was contacted to provide insight into a proposed solution. Since the existing rectangular chute presented initial problems in the corners of the chute, the proposed solution was to modify the rectangular chute so it would be round.

Due to the very low coefficient of friction, excellent release properties along with the light weight and easy formability, TIVAR® 88 was the ideal material to use in this modification. The 3/4"-thick TIVAR® 88 liner was chosen for this application was easily rolled into the correct diameter and then inserted into the new round steel chute. The beauty of this installation was the ease in which the TIVAR® 88 could be formed without the use of special equipment.

Results: The TIVAR® 88 chute lining and chute modification improved loading system operation by 35% and is considered a success by the copper mine.



Original rectangular shape transfer chute.



New round steel loading chute is lined with TIVAR®88.

Important: Most plastics will ignite and sustain flame under certain conditions. Caution is urged where any material may be exposed to open flame or heat generating equipment. Use Material Safety Data Sheets to determine auto-ignition and flashpoint temperatures of material or consult Quadrant Engineering Plastic Products.

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