

# CASE STUDY: Copper Concentrate

TIVAR® 88 High Performance Lining Solution

## THE CASE IN BRIEF

**Application:** Sample Collector

**Quantity:** 1

**Liner:** TIVAR® 88-2, 1" Thick

**Bulk Material:** Copper Concentrate

**Substrate:** Stainless Steel

**Problem:** Abrasion resulting in contamination of ore and wide variations in moisture content

**Date Installed:** 2000

## TIVAR® 88-2 WELDED HOPPER IMPROVES SAMPLE COLLECTOR QUALITY MEASUREMENTS

**Background:** Chile, the world's largest copper mining country, exports vast quantities of copper concentrate. Copper concentrate is an extremely cohesive bulk material that is very difficult to handle. On-line sample collectors are utilized to ensure consistency in the quality of the material being shipped.

**Problem:** At one of Chile's largest export terminals on the Pacific Ocean, significant flow problems were encountered during the ship loading process, specifically in the mild steel sample collector. Two problems were obvious: 1) mild steel particles contaminated the mix due to abrasion as the flowing concentrate passed through the collector; and 2) it was difficult to maintain the moisture content within acceptable limits due to material hang-up. As the concentrate would build up and adhere to the mild steel surface, it would begin to lose some of the moisture. This created a quality control problem as the drier material mixed in with the flowing concentrate. The build-up occurred due to the rough surface condition of the mild steel. Acceptable moisture levels were to be in the 6-8% range.



Before



After - Sample collector manufactured completely with TIVAR® 88-2 eliminates build-up and quality control problems

Plant maintenance personnel were required to be present at all times to prevent blockage in the sample collector and the quality control department was unable to apply useful values to the quality of the material being shipped.

**Solution:** In order to solve this problem, the steel sample collector chute was completely replaced with an identical part manufactured completely from 1"-thick TIVAR® 88-2. At 1/8 the weight of steel, equipment manufactured from TIVAR® 88-2 is lightweight and easy to handle. The TIVAR® 88-2 was quickly formed and welded to the correct shape. Flanges were then welded to the structure so the new TIVAR® 88-2 part could be bolted to the existing equipment.

Because TIVAR® 88-2 is not affected by the corrosion attack in this application, and it has a non-stick surface, it became the ideal material for the application.

**Results:** The sample collector portion of the ship loading process no longer experiences material build-up or contamination. The quality control department is now in a position to trust the values they are recording through the sample collector. This small, simple modification was relatively inexpensive compared to the costs associated with flow and contamination problems.

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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