

NITRIC ACID STORAGE TANK STAIR SUPPORT REPAIR

ID: 10286



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PROBLEM

During inspection of the N4 Nitric Acid Storage Tank, Customer discovered that several welds attaching the roof access stair support brackets to the tank roof had separated. These brackets are critical for supporting the stairway used to access the top of the tank for inspection and maintenance activities.

Traditional welding repairs would have required hot work on the tank, introducing additional safety concerns, permitting requirements, and potential operational impacts. Customer needed a safe, engineered solution that could restore the structural attachment of the stair supports while avoiding welding on the asset.

APPLICATION SITUATION

Instead of bringing in welders, hot work permits, fire watch, and potentially impacting the tank, customer chose a Belzona engineered repair. The cold-bonded solution restored the stair supports without welding, allowing the repair to be completed in a single mobilization while minimizing safety risks, downtime, and overall repair costs. The result was a fast, durable solution that got the tank access structure back into service with minimal disruption to operations.

APPLICATION METHOD

The repair area was prepped by removing the existing coating and corrosion to create a solid surface for bonding. Belzona 7311 was then used to rebuild the failed weld areas and bond custom-fabricated steel plates between the tank roof and stair supports. Once the plates were secured, two layers of Belzona 9341 reinforcement fabric were installed and saturated with Belzona 7311 to create a high-strength composite repair. After curing, the repair was coated with Belzona 5721 to protect against UV exposure and weathering.

BELZONA FACTS

No Hot Work Required – Eliminated the need for welding, fire watches, hot work permits, and the associated safety risks.

Reduced Downtime – Repair was completed in a single mobilization without impacting tank operations.

Cost Savings – Avoided the expense of welding contractors, tank modifications, and potential outages required for a traditional repair.

Engineered Solution – Repair was designed to meet or exceed the strength requirements of the original welded connection.

Long-Term Protection – Belzona 5721 topcoat provides UV and weather resistance for extended service life.

Alternative Considered – Conventional welding and bracket replacement would have required significantly more planning, permitting, and safety controls.

Why Belzona? – Belzona provided a safe, durable, and engineered cold-bonded repair that restored the stair support structure while minimizing risk, cost, and disruption to the customer.

INDUSTRY

Chemical & Petrochemical

LOCATION

Geismar

APPLICATION DATE

June 2026

PRODUCTS

Belzona 5721

Belzona 7311

SUBSTRATE

Stainless-steel

PHOTOS

1. Failed welds on the stair support brackets had separated from the tank roof, creating a structural concern and requiring an engineered repair solution without the use of hot work.
2. Two layers of Belzona 9341 reinforcement fabric were embedded into Belzona 7311 over the bonded plates, creating a high-strength composite system that restored the structural connection.
3. Two layers of Belzona 9341 reinforcement fabric were embedded into Belzona 7311 over the bonded plates, creating a high-strength composite system that restored the structural connection.
4. The completed repair was finished with a protective coat of Belzona 5721, providing long-term UV and weather resistance while restoring the stair support system without hot work.

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