
5.1 Economic Study

Si-COAT® 579™

Elastomeric Anti-Corrosion Coating
versus Epoxy/Urethane Three-Coat System



Case Background

The case outlined below indicates a typical economic benefit that can be realized by using Si-COAT 579 Elastomeric Anti-Corrosion Coating in place of coating of conventional chemistry.

The cost savings realized with Si-COAT stem from a number of factors:

1. Superior adhesion

Because of the advanced chemistry of the Si-COAT technology, adhesion to metal, old coating and other substrates is far superior to that of conventional coatings such as epoxies, urethanes and alkyds, among others. Furthermore, this is achieved with minimal surface preparation. Abrasive blasting is entirely eliminated. This alone represents a significant cost saving resulting from saved time, labor and materials.

2. One-coat system

The fact that Si-COAT 579 is a one-coat system also contributes to an economic benefit. Fewer coats quite simply mean less time, and hence, less money spent on the project.

3. Total ultraviolet (UV) radiation resistance

With Si-COAT's total resistance to UV radiation, the coating has an exceptionally long life. Under severe conditions, Si-COAT is expected to have a service life between 15 to 20 years, and under moderate conditions a service life of 25 years. A severe condition is defined as heavy industrial coupled with heavy fumes and fallout. The rate of steel corrosion in this environment is from 3 to 6 mils (76 to 152 microns) per year. A moderate condition is defined as general industrial without heavy fumes or fallout. The rate of steel corrosion in this environment is 3 mils (76 microns) per year.[†]

For the purpose of this study, two tanks were coated, one with a three-coat IOZ/epoxy/polyurethane system, the other with Si-COAT 579. Each tank was identical, with an umbrella top and of the following dimensions:

Height: 40 ft (12.2 m)
Diameter: 60 ft (18.3 m)
Total Surface Area: 11,000 sq ft (1,022 sq m)

In addition, each tank had roughly the same access and terrain conditions. Si-COAT 579 was applied to approximately 15 mils (381 microns) dry film thickness (DFT).

The tanks were in identical condition. They had each been coated with an acrylic paint 10 years prior. Given the condition of the acrylic paint on each of the two tanks, the tank to be coated with the IOZ/epoxy/polyurethane system required abrasive blasting to white steel.

The Si-COAT coating did not require abrasive blasting in order to achieve proper adhesion to the old coating. A simple high pressure water wash at 5,000 psi (352 kg/cm²) was used in this case.

What follows is a breakdown of all costs incurred in the entire project from mobilization to demobilization. The costs have been separated for each tank/coating system. A further calculation of life cycle cost has been made for each of the coating systems. The IOZ/epoxy/polyurethane system was allotted a 10-year life based on NACE standards. The Si-COAT life cycle cost was calculated on the basis of a 25-year life. Life cycle costs have been expressed in US Dollars per square foot per year (and, US Dollars per square meter per year).[‡]

[†] Corrosion 92 NACE Annual Conference, NACE Paper #335

[‡] Life cycle costs will vary from case to case depending on the structure to be coated, service conditions and logistics of the operation. This study is intended to provide only an illustration of the cost savings possible with Si-COAT coatings. In the vast majority of cases, Si-COAT will cost substantially less than a conventional coating system on a total installed cost basis, both by total project and annualized life cycle cost accounting.

	IOZ/Epoxy/Polyurethane Three-Coat System	Si-COAT® 579™ One-Coat System
VARIOUS COSTS:		
Mobilization/Demobilization	2,400 **	2,400
Rigging Equipment & Associated Labor	1,000	1,000
Tarpaulins or Covering <i>Si-COAT requires no tarping, just covering from water blasting</i>	3,600	1,200
Supervision/Quality Control <i>Si-COAT requires less time on the job, hence lower supervision costs</i>	2,100	1,500
Abrasive Media	5,800	—
Vacuum Loader to Remove Abrasive Media	1,200	—
Labor to Vacuum Abrasive Media	1,800	—
Disposal of Waste Abrasive Media	6,600	—
O/H – Health & Safety <i>epoxy/urethane system requires more safety equipment time than does Si-COAT</i>	340	150
Air Compressor <i>epoxy/urethane system requires more compressor time than does Si-COAT due to abrasive blasting time</i>	3,200	1,200
Abrasive Blasting/Water Blasting Equipment & Spiders <i>spiders were employed when applying both coating systems</i>	3,000	3,000
Travel/Expenses <i>the epoxy/urethane system incurs greater travel/expense costs due to a longer job duration</i>	5,100	2,600
Trucks & Fuel <i>additional fuel is required for the epoxy/urethane system due to longer operation times of the compressor</i>	2,000	1,000
LABOR COSTS:		
Labor to Abrasive Blast, Prime, Apply Intermediate and Finish Coats of Epoxy/Urethane	13,200	
Labor to Water Blast and Apply One Coat of Si-COAT 579		2,800
SUBTOTAL:	51,340	16,850
MATERIAL COSTS:		
Epoxy/Urethane Materials & Thinner	6,380	
Si-COAT 579 @ 15 mils (381 microns) DFT <i>108 US gallons (409 liters) @ \$140/US gallon (\$36.84/liter)</i>		15,120
TOTAL INSTALLED COST:	57,720	31,970
UNITIZED COSTS:		
Cost per Square Foot (per Square Meter) <i>total area coated was 11,000 sq ft (1,022 sq m)</i>	5.25 (56.48)	2.91 (31.28)
Life Expectancy of Coating System	10 years	25 years
Cost per Square Foot per Year (per Square Meter per Year)	0.53 (5.65)	0.12 (1.25)

** All figures are in US Dollars