



Protecting Petroleum Storage Tanks against Corrosion

A guide for owners and operators of underground storage tanks

This is a general guide to laws and regulations about underground and aboveground storage tanks and an aid in minimizing potential risks; it does not replace those laws and regulations, which take precedence over any information contained herein. If your tank system is located in Kinney, Uvalde, Medina, Bexar, Comal, Hays, Travis, or Williamson County, additional requirements related to the protection of the Edwards or the Trinity Aquifer may apply (Title 30, Texas Administrative Code [30 TAC], Chapters 213 and 214). In addition to the laws and TCEQ rules, local governments and other state and federal agencies may have rules that apply. The owner and operator are responsible for ensuring compliance with all applicable laws and regulations.

What is corrosion protection and what is its purpose?

Corrosion protection is a method of slowing or preventing metal components of a UST system from rusting or otherwise corroding or oxidizing. Its purpose is to ensure the structural integrity of the UST system so releases do not occur. All buried UST system components that store or convey regulated substances (such as gasoline, diesel, or used oil) are required to be properly protected from corrosion, regardless of age, date of installation, or operational status.

What are my options?

Since Dec. 22, 1988, all newly installed USTs have been required to meet comprehensive corrosion protection standards.

Acceptable methods of corrosion protection include:

1. **Noncorrodible material.** Use of a material that will not corrode when exposed to soil or water, such as fiberglass for tanks or piping. If the entire system is noncorrodible, the flexible connectors are the only metal components that need to be protected.
2. **Electrical isolation** involves the protection of below ground metal components by putting them in an open area such as a sump, manway, vault, or pit.
3. **Secondary containment** is a method of installing a wall or jacket around metal tanks or piping that meets specific standards for corrosion protection and protects the primary wall of the steel tank from the corrosive elements of the soil and groundwater.

What is cathodic protection?

Cathodic protection is an option for protecting a UST system from corrosion.

There are two types of cathodic protection systems: sacrificial and impressed current.

- **Sacrificial anode.** An anode is connected to the metal structure. The anode, usually made of zinc or magnesium, is wired to the metal component and corrodes instead of the tank or piping. This method is usually used on smaller structures, such as flexible connectors that connect fiberglass piping to a fiberglass tank.
- **Impressed current.** Through anodes connected to the system through a rectifier, an electrical current is introduced that will inhibit the corrosion of metal components to the system. The anode is wired to the tank in the same manner as in the sacrificial system, but the metal component has such a large surface area that it requires greater protection. A rectifier pushes a low-voltage current through the impressed current cathodic system. The rectifier is usually located on the wall of the facility and has a gauge capable of reading the voltage output of the system.

Federal regulations require that the cathodic protection system be installed and designed by a corrosion specialist. In Texas, a corrosion specialist must be a licensed professional engineer, or designated as a corrosion specialist by a nationally recognized trade group, such as the National Association of Corrosion Engineers.

Once the cathodic protection system is installed, it must be tested by a corrosion specialist three to six months after installation and every three years thereafter. An operational test for impressed current systems is also required every 60 days to ensure that the rectifier is working properly. This operational test may be performed by the owner or operator of the UST system. Wildly varied rectifier readings may indicate a problem, and you should contact your corrosion specialist or corrosion technician for specific instructions. Rectifier readings should be kept for at least five years.

Testing frequency

All corrosion-protection systems must be tested at installation, three to six months later, and every three years after. Additionally, for impressed current systems, the rectifier must be read every 60 days.

What records do I need to keep?

Generally you need to keep records to document that you are operating your UST system in compliance with applicable rules. Keep all installation documentation relating to corrosion protection, including information from the manufacturer of the tank and piping and cathodic protection system. Keep a log of all rectifier readings and test records. A sample blank log follows this

document. Keep all test records and log readings for at least five years. Installation records should be kept for the life of the UST system.

Where do I find more information?

The complete requirements for corrosion protection may be found at 30 TAC 334.49.

The National Association of Corrosion Engineers Web site at <www.nace.org> has a list of corrosion specialists and corrosion technicians.

For confidential environmental compliance assistance for small businesses and local governments, contact Small Business and Local Government Assistance via the hot line at 800-447-2827 or online at <www.sblga.info>.



60-Day Record of Impressed Current Cathodic Protection

If you have questions on how to complete this form or about the Petroleum Storage Tank (PST) program, please contact Small Business and Local Government Assistance at its hot line, 800-447-2827, or online at <www.sblga.info>.

Facility Information

Facility Name:	Facility ID No.:
Street Address:	City, State, Zip:

Instructions

- This form may be used to document operational checks of the cathodic protection system rectifier at least once every 60 days.
- If your rectifier is so equipped, you should also record the output voltage and current, and the number of hours indicated on the meter.
- Any significant variance should be reported to your corrosion professional so that any necessary repairs or adjustments can be made.
- Every three years your cathodic protection should be tested by a corrosion specialist or corrosion technician.
- Keep this form on file for at least five years.

Impressed Current Rectifier Data

Rectifier Manufacturer:	Rated DC Output: _____ Volts _____ Amps
Rectifier Model:	Rectifier Serial Number: _____
What is the "as designed" or most recently recommended rectifier output? _____ Volts _____ Amps	

