

Corrosion Glossary

Galvanic

Pertaining to the current resulting from the coupling of dissimilar electrodes in an electrolyte

galvanic anode

A metal which because of its relative position in the galvanic series, provides *sacrificial protection* to metals that are more noble in the series, when coupled in an electrolyte.

galvanic cell

A cell in which chemical change is the source of electrical energy. It usually consists of two dissimilar conductors in contact with each other and with an electrolyte. or of two similar conductors in contact with each other and with dissimilar electrolytes.

galvanic corrosion

Accelerated corrosion of a metal because of an electrical contact with a more noble metal or nonmetallic conductor in a corrosive electrolyte.

galvanic couple

A pair of dissimilar conductors, commonly metals, in electrical contact. See also *galvanic corrosion*.

galvanic couple potential

See *mixed potential*.

galvanic current

The electric current that flows between metals or conductive nonmetal in a *galvanic couple*.

galvanic series

A list of metals and alloys arranged according to their relative corrosion potentials in a given environment. Compare with *electromotive series*.

galvanize

To coat a metal surface with zinc using any of various processes.

galvanneal

To produce a zinc-iron alloy coating on iron or steel by keeping the coating molten after hot dip galvanizing until the zinc alloys completely with the base metal.

galvanometer

An instrument for indicating or measuring a small electric current by means of a mechanical motion derived from electromagnetic or electrodynamic forces produced by the current.

galvanostatic

An experimental technique where by an *electrode* is maintained at a constant current in an *electrolyte*.

gaseous corrosion

Corrosion with gas as the only corrosive agent and without any aqueous phase on the surface of the metal. Also called dry corrosion.

Gibbs free energy

The thermodynamic function $3G = 5H - TSS$, where H is enthalpy, T is absolute temperature. and S is entropy. Also called free energy, free enthalpy, or Gibbs function.

glass electrode

A glass membrane *electrode* used to measure pH or hydrogen-ion activity.

grain

An individual crystal in a polycrystalline metal or alloy; it may or may not contain twinned regions and subgrains; a portion of a solid metal (usually a fraction of an inch in size), in which the atoms are arranged in an orderly pattern.

grain boundary

A narrow zone in a metal corresponding to the transition from one crystallographic orientation to another, thus separating one *grain* from another; the atoms in each grain are arranged in an orderly pattern; the irregular junction of two adjacent grains is known as a grain boundary.

grain-boundary corrosion

Same as intergranular corrosion.

See also *interdendritic corrosion*.

graphitic corrosion

Deterioration of gray cast iron in which the metallic constituents are selectively leached or converted to corrosion products leaving the graphite intact. The term *graphic quotation* is commonly used to identify this form of corrosion, but is not recommended because of its use in metallurgy for the decomposition of carbide to graphite; deterioration of gray cast iron in which the metallic constituents are selectively leached or converted to corrosion products leaving the graphite intact. See also *dealloying* and *selective leaching*.

graphitization

A metallurgical term describing the formation of graphite in iron or steel, usually from decomposition of iron carbide at elevated temperatures. Not recommended as a term to describe *graphitic corrosion*.

green liquor

The liquor resulting from dissolving molten melt from the kraft recovery furnace in water. See also *kraft process* and *smelt*.

Green Rot

A form of high-temperature corrosion of chromium-bearing alloys in which green chromium oxide (Cr_2O_3) forms, but certain

gamma iron

The face-centered cubic form of pure iron, stable from 910 to 1400 °C (1670 to 2550 °F).

General corrosion

A form of deterioration that is distributed more or less uniformly over a surface; See *uniform corrosion*.

other alloy constituents remain metallic; some simultaneous carburization is sometimes observed.

groundbed

A buried item, such as junk steel or graphite rods, that serves as the *anode* for the *cathodic protection* of pipelines or other buried structures. See also *deep groundbed*.