Corrosion Glossary

natural aging
Spontaneous aging of a supersaturated solid solution at room temperature. See also *aging.* Compare with *artificial aging.*

Nernst equation
An equation that expresses the exact *electromotive force* of a cell in terms of the activities of products and reactants of the cell.

Nernst layer, Nernst thickness
The diffusion layer or the hypothetical thickness of this layer as given by the theory of Nernst, is defined by:
$i_d = n F D (C^o - C)/d$
where, i_d = the diffusion limited current density, D = the diffusion coefficient, C^o = the concentration at the electrode surface, and d= the Nernst thickness. It is a hypothetical thickness which has been found to be 0.05 cm in many cases of unstirred aqueous electrolytes.

neutron embrittlement
Embrittlement resulting from bombardment with neutrons, usually encountered in metals that have been exposed to a neutron flux in the core of a reactor. In steels, neutron embrittlement is evidenced by a rise in the ductile-to-brittle transition temperature.

nitriding
Introducing nitrogen into the surface layer of a solid ferrous alloy by holding at a suitable temperature (below Ac1 for ferritic steels) in contact with a nitrogenous material, usually ammonia or molten cyanide of appropriate composition. Quenching is not required to produce a hard case.

nitrocarburizing
Any of several processes in which both nitrogen and carbon are absorbed into the surface layers of a ferrous material at temperatures below the lower critical temperature and, by diffusion, create a concenteration gradient. Nitrocarburizing is performed primarily to provide an antiscuffling surface layer and to improve fatigue resistance. Comparc with *carbonitriding.*

noble
The positive direction of *electrode potential,* thus resembling noble metals such as gold and platinum.

noble metal
(1) A metal whose *potential* is highly positive relative to the hydrogen electrode. (2) A metal with marked resistance to chemical reaction, particularly to oxidation and to evolution by inorganic acids. The term as often used is synonymous with *precious metal.*

noble potential
A *potential* more cathodic (positive) than the standard hydrogen potential.

normalizing
Heating a ferrous alloy to a suitable temperature above the transformation range and then cooling in air to a temperature substantially below the transformation range.

normal solution
An aqueous solution containing one gram equivalent of the active reagent in 1L of the solution.

normal stress
The stress component perpendicular to a plane on which forces act. Normal stress may be either tensile or compresssive.