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## HSLA STEEL AND CAST IRON CORROSION IN NATURAL SEAWATER

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### Abstract

The corrosion products of high strength low-alloyed steel and of cast iron, maintained a prolonged period in natural seawater, were analyzed. A part of the corrosion products are soluble compounds of divalent and trivalent iron, the iron dissolution being accelerated when divalent ions are formed and in the case of the aerated seawater. The solid corrosion product formed during corrosion in seawater is principally oxy-hydroxide (FeOOH), but were identified small quantities of Fe<sub>2</sub>O<sub>3</sub>, Fe<sub>3</sub>O<sub>4</sub> and some crystals of sodium chloride polluted with calcium and magnesium. The FT-IR measurements have pointed out that the FeOOH have a poly-molecular structure. In dynamic heating conditions the decomposition of solid rust take place by three distinct processes: adsorbed water elimination, dehydroxylation of the FeOOH to amorphous Fe<sub>2</sub>O<sub>3</sub> and crystallization of Fe<sub>2</sub>O<sub>3</sub>.

*Key words:* cast iron, HSLA steel, iron oxyhydroxide, seawater corrosion, thermogravimetry

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