



How does rust form?

by Mike Mortensen - Director of Engineering RBI-USA

Rust corrosion is very detrimental to the operation of a bearing. For proper operation, the rolling surfaces of the bearing must be smooth and free of imperfections. Rust corrosion reduces the smoothness of the surface and strength of the material, leading to a reduction in the life of a bearing.

Iron, oxygen, and water are required for rust to form. Iron atoms will not actively react with oxygen in air molecules, but it will react with oxygen in water molecules. This is because oxygen atoms in the water are not paired together with one another and iron will only react with unpaired oxygen atoms. That is why water or moisture is required for rust to develop on a metal surface.

When a drop of water comes into contact with iron atoms a reaction occurs. The iron atoms readily release electrons and enter the water as positively charged iron ions. The released electrons flow through the metal and combine with the water and the oxygen within the water to produce hydroxide ions. The positively charged iron ions that are now present in the water react with these hydroxide ions and oxygen to produce iron oxide. Iron oxide is the reddish orange material that is commonly referred to as rust?

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