

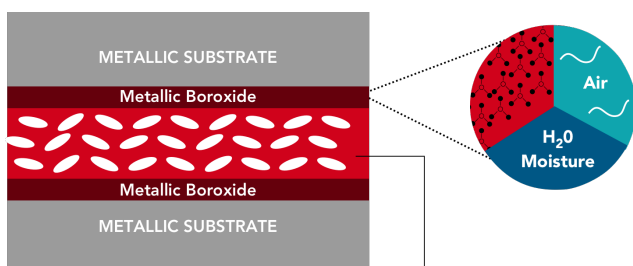
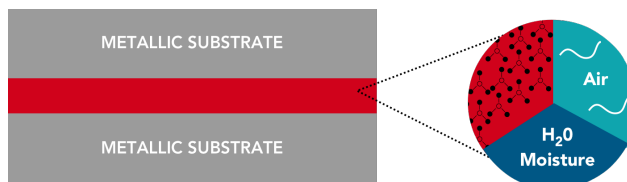
BORIC ACID

BORIC ACID IS INTRODUCED

Boric acid (H_3BO_3) is introduced to a metallic substrate in the presence of water (H_2O).

INTERACTION

Covalent interaction between the metallic substrate, boric acid (H_3BO_3) and water (H_2O), forms a metallic boroxide (B_2O_3) boundary layer that bonds to the substrate, forming a corrosion-resistant barrier.



**BORIC ACID
CRYSTALLINE
PLATELETS**

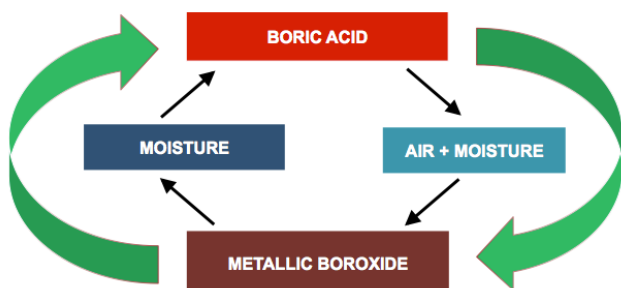
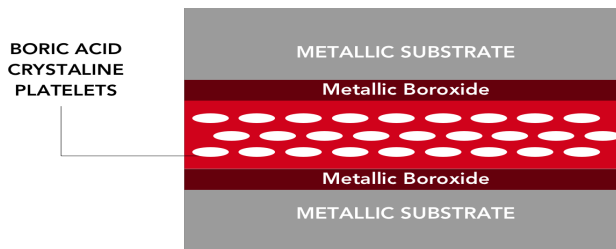
CRYSTALLINE PLATELETS

The remaining boric acid molecules form into layers of crystalline platelets, each of which is a triclinic lattice of molecules strongly bound together by a macromolecular ionic (electromagnetic) bond.

Any abraded metallic boroxide and crystalline platelets spontaneously react with available moisture, replenishing the free boric acid ($\text{B}_2\text{O}_3 + 3\text{H}_2\text{O} > 2\text{H}_3\text{BO}_3$).

ALIGNMENT

Aligned by the mechanical motion of the substrate, the platelets form stacked layers with very small (0.318 nm) spaces between.



LOW FRICTION

The inter-platelet layers are bound by weak "Van der Waals" forces, allowing a very low coefficient of friction.

SELF-RENEWING CYCLE

Interaction between free boric acid (H_3BO_3), Metallic boroxide (B_2O_3), air and moisture (H_2O), leads to a self-replenishing cycle, filling in any abraded gaps in the metallic boroxide and crystalline platelets.

