Borates in industrial fluids

Borates are well established and widely used in the manufacture of industrial fluids such as antifreezes, lubricants, brake fluids, metalworking fluids, water treatment chemicals and fuel additives. Borates' function in these fluids are:

- Corrosion inhibition
- Buffering action
- Freezing point reduction
- Boiling point elevation
- Lubrication
- Stabilization of thermal oxidation
- Prevention of sludge formation
- Reduction in moisture sensitivity

Applications

Antifreezes (engine coolant)
Glycol-based antifreezes can oxidize to produce corrosive organic acids in automotive coolant systems. The buffering action of borates keeps the pH above 7—preventing acid formation and inhibiting corrosion.

Lubricants
Borate polyols and polyamines in lubricants form an extremely resilient film on metal load-bearing surfaces. This film improves load capacity and protects from wear and tear. Potassium borates are used in high pressure lubricants due to their stable dispersion of microspheres.

Brake fluids
Brake fluids are moisture sensitive. Absorption of water by the system reduces the boiling point of the fluid and can cause vapor-lock. Borate esters in brake fluids act to prevent vapor-lock.

About U.S. Borax

U.S. Borax, part of Rio Tinto, is a global leader in the supply and science of borates—naturally-occurring minerals containing boron and other elements. We are 1,000 people serving 500 customers with more than 1,700 delivery locations globally. We supply 30% of the world’s need for refined borates from our world-class mine in Boron, California, about 100 miles northeast of Los Angeles. We pioneer the elements of modern living, including:

- Minerals that make a difference: Consistent product quality secured by ISO 9001:2015 registration of its integrated quality management systems
- People who make a difference: Experts in borate chemistry, technical support, and customer service
- Solutions that make a difference: Strategic inventory placement and long-term contracts with shippers to ensure supply reliability

About 20 Mule Team® products

20 Mule Team borates are produced from naturally occurring minerals and have an excellent reputation for safety when used as directed. Borates are essential nutrients for plants and key ingredients in fiberglass, glass, ceramics, detergents, fertilizers, wood preservatives, flame retardants, and personal care products.

20 Mule Team Borax products in industrial fluids:
Borax decahydrate
Neobor® borax pentahydrate
Optibor® boric acids
Boric oxide
Potassium pentaborate
Potassium tetraborate
Sodium metaborate 4 mol
Sodium metaborate 8 mol

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