



Boric Acid and Disodium Tetraborates

Raw Materials for use in Metalworking Fluids

Revised July 2010

Boric Acid, Borates and Corrosion Inhibitors

Boric acid is the parent acid of borate minerals which are found naturally in the earth's crust. Borate minerals have been extracted and used commercially for over 100 years. Boric acid and related borate compounds have many uses in a wide variety of applications as diverse as medicinal products, heat resistant ceramics and in agriculture as micronutrients. In all that time, they have been considered to be of low hazard and have been used safely for generations.

Boric acid is used as a starting material for the production of a group of corrosion inhibitors that are widely used in water-mix metalworking fluids.

Classification of the Raw Materials

In spite of considerable industry and downstream user opposition based on decades of safe human experience, EC regulators decided to classify boric acid, boric oxide and specific sodium borate salts for reproductive toxicity. Under the new CLP Regulation, they are classified as Category 1B reproductive toxins, equivalent to Category 2 under the old Dangerous Substances Directive. The new classification and labelling requirements for boric acid are summarised below.

- **Classification:** Repr 1B; H360FD
- **Labelling:** Pictogram: GHS08
Signal Word: Danger
Hazard Statements: May damage fertility. May damage the unborn child.
- **Regulatory Reference:** Regulation (EC) No 1272/2008 of the European Parliament and Council as amended by Commission Regulation (EC) No 790/2009

Scope of the New Classification

The new classification applies to boric acid, boric oxide and several sodium borates including borax. Where these substances are present in preparations or mixtures, specific concentration limits apply before the preparation also has to be classified and labelled in the same way. For boric acid it is 5.5%, which means that only those preparations containing 5.5% or more of *free* boric acid have to be classified in this way. The specific concentration limits of the other newly classified borates are broadly in line with their borate content.

Other borates and reaction products of boric acid are not included within the new requirements. Their classification is likely to be discussed amongst members of the appropriate SIEFs (Substance Information Exchange Forums) as part of their registration under the REACH Regulation.

The new classification has no effect on transport regulations. Boric acid and the other classified borates are not considered dangerous goods for transport.

Consequence of Classification – The Candidate List

The new hazard based classification brings boric acid and the other classified borates into the scope of one of the risk reduction measures of the REACH Regulation. A stated aim of REACH is the protection of human health and the environment, an objective that is fully supported by the UKLA and the members of the Metalworking Fluid Product Stewardship Group. In order to achieve this protection, REACH introduces a process in which those substances that are considered to pose an unacceptably high risk to human health and the environment may be removed from the market unless there is a justifiable need for them to remain.

With its new hazard based classification, boric acid falls into the scope of these provisions, as it meets one of the hazard criteria for Substances of Very High Concern (SVHCs). At this stage, there is no evidence to suggest that borates pose an “unacceptably high risk” to human health or the environment. The process for SVHC substances that might ultimately lead to their authorisation, exemption or removal from the market can be briefly summarised as follows:

- Identification as an SVHC
- Entry onto the Candidate List
- Prioritisation for Authorisation
- Addition to the Annex XIV List of Substances subject to Authorisation

At each stage of this process, there is no certainty that a substance at one stage will necessarily proceed to the next, although if a substance completes the final stage, it will be potentially removed from the market for all uses that are not exempted or for which authorisations have not been granted.

Boric acid and disodium tetraborate salts have reached the second stage in this process. They were added to the Candidate List in June 2010. Entry onto the Candidate List places some legal obligations on suppliers of those substances, but it does not restrict their use in any way.

Boric Acid – a Starting Material for Corrosion Inhibitors

Boric acid is used as a starting material in the production of a range of corrosion inhibitor additives that are widely used in metalworking fluids. The additives are most commonly manufactured by reaction and subsequent complex formation of boric acid with alkanolamines. The corrosion inhibitors are produced by additive manufacturers for use by metalworking fluid formulators. Some formulators also use boric acid themselves. Consequently, the specific nature of the active ingredients in the corrosion inhibitors is complex and they can vary significantly in their chemistry.

Given this complexity, it is a matter for individual manufacturers and formulators to determine the chemical nature of their products and to advise their downstream users accordingly.

Users of Metalworking Fluids

The reaction conditions and the choice of whether to add boric acid directly or to use a manufactured additive are options faced by each fluid producer. If in any doubt about whether your fluid contains any free boric acid, your UKLA Metalworking Fluid Product Stewardship Group supplier will be pleased to answer any queries.

Some fluids might contain low levels of free boric acid, whereas others might not contain any detectable amounts. Irrespective of this, the addition of certain borates to the Candidate List may place legal obligations on your supplier, but *it does not restrict the use of borates in any way*. Metalworking fluids from UKLA Metalworking Fluid Product Stewardship Group suppliers remain just as safe as they were before borates appeared on the Candidate List.

The Metalworking Fluid Product Stewardship Group

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The Metalworking Fluid Product Stewardship Group exists to promote the industry's commitment to the development, manufacture and marketing of safe and effective metalworking fluid products. It will assist in the education of users, enhance the health and safety provision to both the members and their customers' employees, protect the environment and provide qualified, reviewed information to industry, trade unions, Government and the general public.

Member companies have each subscribed to the principles of product stewardship in respect of their metalworking fluids businesses and have signed a commitment to a common code of ethics.

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