

TB buffer concentrate (10x)

Safety data sheet

Prepared in accordance with Regulation (EC) No. 1907/2006 (REACH)

Version 1.1 | Created: 1 June 2015 | Revised: 12 June 2015

SECTION 1. Identification of the substance/mixture and of the company/undertaking

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|--|---|
| Product name and description | Tris-Borate (TB) buffer concentrate (10x) |
| Trade name/Brand | Not applicable |
| Synonym(s) | TB buffer |
| REACH Number | Not applicable, mixture |
| CAS Number | Not applicable, mixture |
| EC Number | Not applicable, mixture |
| Recommended use | <p>This product is a laboratory preparation for educational use only.</p> <p>Each 50 ml of the concentrated TB buffer should be diluted with 450 ml of distilled or deionised water before use. This diluted solution should be used for <i>protein</i> gel electrophoresis as described in the relevant Teacher's and Students' guides provided by the NCBE. [The agarose powder should be dissolved in diluted TB buffer to make up the gels, while 3 mL of 10% SDS solution should be added to 300 mL of diluted TB, to provide a 'running buffer' for the gel electrophoresis.]</p> <p>Please refer to Section 16 for additional safety guidelines.</p> <p>Please note that this <i>Safety Data Sheet</i> refers to the TB buffer concentrate, not to the diluted TB buffer to be used by students.</p> |
| Uses advised against | Do not use for DNA gel electrophoresis; TBE buffer must be used for DNA. |
| Supplier of the product and of this safety data sheet | <p>National Centre for Biotechnology Education (NCBE) University of Reading 2 Earley Gate Whiteknights READING RG6 6AU United Kingdom</p> <p>T: 0118 9873743 F: 0118 9750140 E: NCBE@reading.ac.uk W: www.ncbe.reading.ac.uk</p> |
| Manufacturer of the product | <p>Severn Biotech Limited Unit 2 Park Lane KIDDERMINSTER DY11 6TJ</p> |
| Emergency telephone number | 0118 9873743 (NCBE, University of Reading. 08.30–17.00 weekdays only) |

SECTION 2. Hazards identification

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| Classification according to Regulation (EC) No. 1272/2008 [CLP] | H315 | Skin corrosion/irritation (Category 2) |
| | H319 | Serious eye Damage/Eye irritation (Category 2) |
| | H335 | Specific target organ toxicity, Single exposure (Category 3) |

Label elements*

WARNING

| | |
|------|----------------------------------|
| H315 | Causes skin irritation |
| H319 | Causes serious eye irritation |
| H335 | May cause respiratory irritation |

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| P260 | Do not breathe dust/mist/vapour/spray |
| P280 | Wear protective gloves/ protective clothing/ eye protection |
| P305 | IF IN EYES: Rinse cautiously with water for several minutes. |
| + P351 | Remove contact lenses, if present and easy to do. Continue rinsing. |
| + P338 | |
| P302+P352 | IF ON SKIN: Wash with plenty of soap and water |



Other hazards

None found.

* Some statements above are omitted from the product label, as the volume of the mixture is less than 125 mL.

SECTION 3. Composition/Information on the ingredients

| Name of component (Synonym) [CLP index number] | Weight (%) | EC (EINECS) number | CAS number | REACH registration number | Classification under Regulation (EC) No 1272/2008 [CLP]* |
|--|------------|--------------------|------------|---------------------------|---|
| Water | 84.24 | 231-791-2 | 7732-18-5 | - | - |
| TRIS (Trometamol; tris(hydroxymethyl)aminomethane; 2-Amino-2-hydroxymethyl-propane-1,3-diol) | 10.43 | 201-064-4 | 77-86-1 | - | Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) STOT SE 3 (H335) |
| Boric acid [005-007-00-2] | 5.33 | 233-139-2 | 10043-35-3 | - | Repr. 1B (H360) |

* These classifications refer to the pure (100%) substances, not necessarily to the mixture supplied.

For the full text of the safety classifications (H-statements), refer to Section 16.

Note on boric acid

Boric acid, along with all boron compounds, is categorised by the European Union as a Substance of Very High Concern (SVHC). Usually the presence of an SVHC at $\geq 0.1\%$ would trigger additional hazard warnings on the product label and safety data sheet.

There is, however, a European Union 'harmonised classification' specifically for boric acid (which is widely used in building materials, cosmetics etc) meaning that additional hazard labelling is only required at $\geq 5.5\%$. Typically, a 10x TB concentrate contains approximately 5% boric acid, which, depending upon the exact proportions of boric acid and other components used, may or may not trigger additional hazard statements. For this reason some 10x TB concentrates, although all essentially the same product, are labelled as being more hazardous than others.

Our 10x TB concentrate is formulated to fall below the threshold at which additional safety warnings would be required, and it is diluted ten-fold before use, making it far safer to handle.

SECTION 4. First aid measures

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| General information | The principal hazards from this concentrate are skin and eye contact. |
| Inhalation | Move the casualty to fresh air. If respiratory problems occur, consult a doctor. |
| Skin contact | Remove contaminated clothing, which can then be washed as normal. Wash TB concentrate off the skin immediately with plenty of water. Seek medical attention if irritation occurs. |
| Eye contact | Check for and remove contact lenses if present. Rinse opened eye immediately with running water, also wash under the eyelids, for several minutes. Seek medical advice if irritation persists. |
| Ingestion | Rinse out mouth with water, then drink plenty of water. Do not induce vomiting. Seek medical help immediately. |
| Self-protection of the first aider | Rinse your hands with water after handling anything that has been contaminated with the TB buffer solution. |
| Most important symptoms and effects, both acute and delayed | Irritation to the skin and eyes. |
| Indication of any immediate medical attention and special treatment | First Aid as outlined above, decontamination of clothing <i>etc</i> , treatment by a medical professional if symptoms persist. |
| Advice to doctor | Treat symptomatically. |

SECTION 5. Fire fighting measures

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| Suitable extinguishing media | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| Extinguishing media which must not be used for safety reasons | No information available. |
| Special hazards arising from the substance or mixture | Thermal decomposition can lead to the release of irritating gases and vapours. |
| Advice for fire fighters | As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapours. |

SECTION 6. Accidental release measures

The volumes of TB buffer concentrate that are likely to be used in a school are small enough that any spill can be cleaned up easily and safely. The principal dangers are skin and eye contact, as described in Section 4 above.

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| Personal precautions, protective equipment and emergency procedures | Ensure adequate ventilation. Wear personal protective equipment, such as a lab coat, gloves and eye protection. Keep students away from the spill. |
| Environmental precautions | The TB buffer concentrate should not be released into the environment. If it enters drains <i>etc</i> , it should be washed away (diluted) with plenty of water. |
| Methods and materials for containment and cleaning up | Soak up the concentrate with inert absorbent material (e.g., paper towels or sawdust). Place the waste in a suitable, closed container (e.g., a plastic bag) for disposal. Wash away any residue with plenty of water. |

SECTION 7. Handling and storage

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| Precautions for safe handling | Ensure good ventilation. Wear personal protective equipment, such as a lab coat, gloves and eye protection. Do not get into eyes, on skin or clothing. Washing and eye wash facilities should be available in the work area. Prevent the formation of aerosols. Do not breathe in vapours or dust from dried-up buffer solution. Do not ingest. |
| Conditions for safe storage | Keep the TB buffer concentrate in a tightly-closed container. Store in a dry, cool and well-ventilated place. Do not refrigerate the concentrate, although note that the <i>diluted</i> TB buffer should be stored in a fridge at 3–5 °C. |

SECTION 8. Exposure control/personal protection

Control parameters

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| Exposure limits | The product as supplied does not contain any hazardous materials with occupational exposure limits established by regulatory bodies. |
| Biological limit values | The product as supplied does not contain any hazardous materials with occupational exposure limits established by regulatory bodies. |
| Derived no effect level | No information available. |
| Predicated no effect level | No information available. |

Personal protective equipment

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| Eye protection | Wear safety glasses. Ensure that eyewash stations are close at hand, in case of accidental splashes into the eyes. |
| Hand protection | Protective gloves. |
| Skin and body protection | Wear appropriate protective gloves and a lab coat to prevent skin exposure. |
| Respiratory protection | Not required. |
| Hygiene measures | Handle in accordance with good industrial hygiene and safety practice. |
| Environmental exposure controls | No information available. |

SECTION 9. Physical and chemical properties

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| Appearance | Clear, colourless. |
| Physical state | Liquid. |
| Odour | Odourless. |
| Odour threshold | Does not apply, as the mixture is odourless. |
| pH | 8.2–8.4 @ 20 °C |
| Melting point / Range | No data available. |
| Boiling point / Range | > 100 °C @ 760 mm Hg. |
| Flash point | Not applicable; does not flash. |
| Evaporation rate | No data available. |
| Flammability (solid, gas) | Not applicable as the mixture is a liquid. |
| Explosion limits | No data available. |
| Vapour pressure | No data available. |
| Vapour density | No data available. |
| Density @ 20 °C | ~ 1.05 g / ml |
| Relative density | Not applicable as the mixture is a liquid. |
| Solubility in water | Readily soluble. |
| Solubility in other solvents | No data available. |
| Partition coefficient: n-octanol/water | No data available. |
| Autoignition temperature | No data available. |
| Decomposition temperature | No data available. |

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| Viscosity | No data available. |
| Explosive properties | No data available. |
| Oxidising properties | No data available. |

Other information

No additional information relevant to the safe use of the substance.

SECTION 10. Stability and reactivity

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| Reactivity | No information available. |
| Chemical stability | When stored at room temperature, the product is stable. |
| Possibility of hazardous reactions | None in normal use. |
| Conditions to avoid | Do not freeze or refrigerate. Avoid excess heat. |
| Incompatible materials | Strong oxidising agents. |
| Hazardous decomposition products | Nitrogen oxide (NO _x); Carbon monoxide (CO); Carbon dioxide (CO ₂). |

SECTION 11. Toxicological information

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| Acute toxicity | TRIS: LD50 Oral 5.9 g/kg (Rat) |
| Irritation | On the skin: no irritant effect; On the eye: irritating effect. |
| Corrosivity | No information available. |
| Sensitisation | No sensitising effects known. |
| Repeated dose toxicity | No information available. |
| Carcinogenicity | No information available. |
| Mutagenicity | No information available. |
| Toxicity for reproduction | Animal tests of boric acid show effects on reproduction, but at the low concentration supplied in this product, this is not thought to be a problem (see Section 3). |
| Developmental effects | No information available. |
| Target organs | None known. |
| Other adverse effects | The toxicological properties have not been fully investigated. |
| Endocrine disruptor information | None known. |

SECTION 12. Ecological information

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| Ecotoxicity effects | Do not empty into drains without dilution (see Section 13). |
| Toxicity | No information available. |
| Persistence and degradability | Biodegradable. |
| Bioaccumulative potential | Not expected to bioaccumulate. |
| Mobility in soil | No information available. |
| Results of PBT and vPVB assessment | Not applicable. |
| Other adverse effects | None known. |

SECTION 13. Disposal considerations

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| Waste from residues/unused product | Wash down a foul water drain with plenty of water. Wipe up any spills of the solution with absorbent material (e.g., paper towels) and water. Dispose of the paper towels in the normal waste. |
| Contaminated packaging | Rinse with water and dispose of in normal waste according to local regulations. Recycle (the bottles are HDPE) where appropriate facilities are available. |

SECTION 14. Transport information

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| UN number | Not applicable. |
| UN proper shipping name | Not applicable. |
| Transport hazard class | Not applicable. |
| Packaging group | Not applicable. |
| Environmental hazards | Not applicable. |

SECTION 15. Regulatory information

Chemical Safety Assessment A Chemical Safety Assessment has not been carried out.

SECTION 16. Other information

Full text of GHS hazard statements

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|------|--|
| H315 | Causes skin irritation. |
| H319 | Causes serious eye irritation. |
| H335 | May cause respiratory irritation. |
| H360 | May damage fertility. May damage the unborn child. |

Please refer to the Teacher's guide that accompanies the NCBE *Protein power kit*. This can be downloaded from the NCBE's Web site: www.ncbe.reading.ac.uk

This Safety Data Sheet should be read in conjunction with that for SDS concentrate, which is mixed with the diluted TB buffer before use. Once diluted, the SDS is not thought to pose a safety hazard (the SDS concentration would be ~0.1% SDS — a lower concentration of SDS than is found in products like hair shampoos, which may contain 5–10% SDS).

The principal hazards of the diluted TB buffer and SDS would be to the eyes, and therefore a risk assessment may suggest that suitable eye protection (safety glasses) should be worn. Gloves are not usually necessary, but any spills on the skin should be washed off immediately with plenty of tap water.

The information given in this Safety Data Sheet is based on the present state of our knowledge.

This Safety Data Sheet has been compiled and is solely intended for this product.

This Safety Data Sheet was revised on 12 June 2015 to correct a minor typographical error.

END OF SAFETY DATA SHEET