

Restriction enzymes (dried)

Safety data sheet

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

Version 1.1 | Created: 5 February 2015 | Revised: 1 June 2015

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

Product name and description	Dried restriction enzymes (<i>Bam</i> HI, <i>Hind</i> III and <i>Eco</i> RI)
Trade name/Brand	Not applicable.
Synonym(s)	None.
REACH Number	Not applicable, mixture.
CAS Number	Not applicable, mixture.
EC Number	Not applicable, mixture.
Recommended use	This product is a laboratory preparation for educational use only. The dried restriction enzymes should be used as described in the relevant NCBE Teacher's and Students' guides (see Section 16).
Uses advised against	None
Supplier of the product and of this safety data sheet	National Centre for Biotechnology Education (NCBE) University of Reading 2 Earley Gate Whiteknights READING RG6 6AU United Kingdom T: 0118 9873743 F: 0118 9750140 E: NCBE@reading.ac.uk W: www.ncbe.reading.ac.uk
Manufacturer of the product	National Centre for Biotechnology Education (NCBE) University of Reading 2 Earley Gate Whiteknights READING RG6 6AU United Kingdom T: 0118 9873743 F: 0118 9750140 E: NCBE@reading.ac.uk W: www.ncbe.reading.ac.uk
Emergency telephone number	0118 9873743 (NCBE, University of Reading. 08.30–17.00 weekdays only)

SECTION 2. Hazards identification

Classification according to Regulation (EC) No. 1272/2008 [CLP] Unclassified

Label elements None required

Other hazards None

SECTION 3. Composition/information on 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]
Trehalose (α,α -Trehalose; α -D-glucopyranosyl-(1 \rightarrow 1)- α -D-glucopyranoside)	~98	202-739-6	6138-23-4	-	-

* The other components of the mixture are a reaction buffer, glycerol, restriction enzyme, bromophenol blue and other minor ingredients. The enzyme preparation, once rehydrated with water, will only be used in microlitre volumes. Once hydrated, the enzymes denature rapidly and are unlikely to present any hazard at all.

SECTION 4. First Aid measures

General information	This mixture is not hazardous.
Inhalation	Move the victim to fresh air. If the victim has stopped breathing artificial respiration and/or oxygen may be necessary. Call a doctor immediately.
Skin contact	Rinse the affected area with water.
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 occurs.
Ingestion	No action necessary.
Self-protection of the first aider	Rinse your hands with water if you spill restriction enzyme solution on them.
Most important symptoms and effects, both acute and delayed	Not applicable.
Indication of any immediate medical attention and special treatment	Not applicable.
Advice to doctor	Treat symptomatically.

SECTION 5. Fire-fighting measures

Extinguishing media

Not applicable.

Special hazards arising from the substance or mixture

None known.

Advice for firefighters

Not applicable.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Not applicable.

Environmental precautions

Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Wipe up any spills of the solution of restriction enzyme with absorbent material (e.g., paper towels) and water. Dispose of the paper towels in the normal waste.

Reference to other sections

See Section 13 for disposal instructions.

SECTION 7. Handling and storage

Precautions for safe handling

Wear a lab coat to prevent spills from damaging clothing.

Conditions for safe storage, including any incompatibilities

Keep the pouch of dried enzymes tightly closed, with a silica gel sachet inside and at room temperature (moisture will cause the enzyme to degrade). Do not refrigerate or freeze.

Specific end use(s)

In the various NCBE kits, DNA solution is added to the dried restriction enzymes, then incubated so that the DNA is cut by the enzyme. Once diluted, the enzymes are heat-labile, so their activity stops after they have been incubated for 60 minutes or more. The enzymes will not cut methylated DNA.

SECTION 8. Exposure control/personal protection

Control parameters

Exposure limits

Components with workspace control parameters

Component	CAS Number	Workplace exposure limit	Legal basis
Glycerol, mist	56-81-5	Long term exposure limit (8 hour time-weighted average reference period) 10 mg/m ³	UK. EH40 WEL

Biological limit values

No information available.

Derived no effect level

No information available.

Predicated no effect level

No information available.

SECTION 9. Physical and chemical properties

Appearance	Dark blue crystalline material.
Physical state	Solid.
Odour	Odourless.
Odour threshold	Does not apply, as the mixture is odourless.
pH	~7.0–8.0 when dissolved in water @ 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)	No data available.
Explosion limits	No data available.
Vapour pressure	No data available.
Vapour density	No data available.
Density @ 20 °C	No data available.
Relative density	No data available.
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.
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

Reactivity	No information available.
Chemical stability	When stored dry and at room temperature, the product is stable.
Possibility of hazardous reactions	No known hazardous reactions.
Conditions to avoid	Do not freeze or refrigerate. Avoid moisture as this will lead to degradation of the enzyme.
Incompatible materials	No information available.
Hazardous decomposition products	No hazardous decomposition products.

SECTION 11. Toxicological information

Acute toxicity	No information available.
Irritation	No information available.
Corrosivity	No information available.
Sensitisation	No information available.
Repeated dose toxicity	No information available.
Carcinogenicity	No information available.
Mutagenicity	No information available.
Toxicity for reproduction	No information available.

SECTION 12. Ecological information

Toxicity	No information available.
Persistence and degradability	The enzyme is biodegradable.
Bioaccumulative potential	No information available.
Mobility in soil	No information available.
Results of PBT and vPVB assessment	No information available.
Other adverse effects	None known.

SECTION 13. Disposal considerations

Waste from residues/unused product	Wash down a foul water drain with 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	Dispose of in normal waste according to local regulations. The tubes are made of polypropylene and can be recycled.

SECTION 14. Transport information

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

Not regulated.

Schools and colleges in the UK should refer to *Topics in Safety*, which includes chapters on both practical microbiology and work with DNA: *Topics in safety* (2001) [Third edition] Association for Science Education. ISBN: 0863573169.

An updated (October 2014) version of Chapter 16, covering work with DNA, can be found on the NCBE's web site: www.ncbe.reading.ac.uk and on the Association for Science Education's web site: www.ase.org.uk

SECTION 16. Other information

Please refer to the Teacher's guide which accompanies the NCBE kit you are using. This can be downloaded from the NCBE's Web site: www.ncbe.reading.ac.uk

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 1 June 2015, when the older (67/548/EEC [DSD]) safety classifications were deleted.

END OF SAFETY DATA SHEET