

SAFETY DATA SHEET

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier:

BFR₁

1.2. Relevant identified uses of the substance or mixture and uses advised against:

Conductivity buffer solution. Industrial laser water treatment for system chillers for industrial use.

1.3. Details of the supplier of the safety data sheet:

Information about the distributor:

Richardson Electronics Benelux BV

Kruisweg 811, Building IV

Hoofddorp, 2132 NG

The Netherlands

Tel: (1)630-208-2683

1.3.1. Responsible person:

Daniel Rafdahl

E-mail:

danr@rell.com

1.4. Emergency telephone number:

United Kingdom: National Poisons Information Service (NPIS)

NHS 111 (England), NHS 24 (Scotland) or NHS Direct (Wales) – dial 111

In Northern Ireland contact your local GP

Healthcare Professionals: UK NPIS 0344 892 0111

Chemtrec: +44 20 3807 3798

USA:

Chemtrec: Regional: +44 20 3885 0382

USA Local: +1-703-527-3887

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture:

Classification according to Regulation (EC) No 1272/2008 (CLP):

Not considered as hazardous mixture.

Hazard statements: No hazard statements.

2.2. Label elements:

Hazard statements: No hazard statements.

Precautionary statements: No precautionary statements.

2.3. Other hazards:

The product has no other known specific hazards for human or environment.

Results of PBT and vPvB assessment: This mixture does not contain any components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1 % or higher in accordance with Annex XIII of Regulation 1907/2006/EC.

Endocrine disrupting property: The mixture does not contain any components considered to have endocrine disrupting properties in accordance with Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1 % or higher.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. **Substances:**
Not applicable.

3.2. **Mixtures:**

Description	CAS number	EC number / ECHA list number	REACH registration number	Conc. (%)	Classification according to Regulation (EC) No 1272/2008 (CLP)		
					Pictogram, signal word code(s)	Hazard class and category code(s)	Hazard statement code(s)
Sodium sulphate*	7757-82-6	231-820-9	01-2119519226- 43-0106	<25	-	not classified	-
Water	7732-18-5	231-791-2	-	>75	-	not classified	-

*: Classification specified by the manufacturer; the substance is not listed in Annex VI of the Regulation (EC) No 1272/2008.

It does not contain any other substance considered to be hazardous to health or to the environment or its concentration does not reach the level specified in the relevant legislation and therefore it does not need to be included in the safety data sheet.

SECTION 4: FIRST AID MEASURES

4.1. **Description of first aid measures:**

General information: In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

INGESTION:

Measures:

- Call a poison centre or doctor if you feel unwell.
- If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration.
- Do NOT induce vomiting unless directed to do so by medical personnel.
- Never give anything by mouth to an unconscious person.

INHALATION:

Measures:

- Call a poison centre or doctor if you feel unwell.

SKIN CONTACT:

Measures:

- Wash with plenty of soap and water for at least 15 minutes.
- Call a poison centre or doctor if you feel unwell.

EYE CONTACT:

Measures:

- Rinse cautiously with water for at least 15 minutes.
- Remove contact lenses, if present and easy to do.
- Continue rinsing.
- Immediately call a poison centre or doctor.

4.2. **Most important symptoms and effects, both acute and delayed:**

Inhalation: May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge.

Skin: May cause skin irritation. Signs/symptoms may include localized redness, swelling, itching.

Eyes: May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing.

Ingestion: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhoea.

4.3. **Indication of any immediate medical attention and special treatment needed:**

No special treatment needed; treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

- 5.1. **Extinguishing media:**
 - 5.1.1. **Suitable extinguishing media:**
Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.
 - 5.1.2. **Unsuitable extinguishing media:**
No unsuitable extinguishing media known other than product can splatter above 100°C.
- 5.2. **Special hazards arising from the substance or mixture:**
In case of fire, smoke and other combustion products (sulphur oxides, sodium oxides) may be formed; the inhalation of such combustion products can have serious adverse effects on health.
- 5.3. **Advice for firefighters:**
Wear self-contained breathing apparatus for firefighting if necessary.
Cool the fire affected containers with water spray.

SECTION 6: ACCIDENTAL RELEASE MEASURES

- 6.1. **Personal precautions, protective equipment and emergency procedures:**
 - 6.1.1. **For non-emergency personnel:**
Allow only well-trained experts wearing suitable protective clothing to abide in the field of accident.
 - 6.1.2. **For emergency responders:**
Ensure adequate ventilation.
Use personal protective equipment as required.
Avoid dust formation.
- 6.2. **Environmental precautions:**
Dispose of the spillage and the resulting waste according to the applicable environmental regulations. Do not allow the product and the resulting waste to enter sewers/soil/surface or ground water. Notify the respective authorities in accordance with local law in the case of environmental pollution immediately.
- 6.3. **Methods and material for containment and cleaning up:**
Collect the spilled product with absorbent then place into a suitable, closed, properly labelled chemical waste container for removal/disposal.
Avoid dust formation.
- 6.4. **Reference to other sections:**
For further and detailed information see Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

- 7.1. **Precautions for safe handling:**
Observe conventional hygiene precautions.
Avoid contact with skin and eyes.
Avoid inhalation of vapor or mist.
For precautions see section 2.
Handle in accordance with good industrial hygiene and safety practice.
Keep away from food, drink, and animal feeding stuffs.
Do not eat, drink, or smoke when using this product.
Remove and wash contaminated clothing and gloves, including the inside, before-use.
Wash hands before breaks and after work.
Technical measures:
No special measures required.
Precautions against fire and explosion:
No special measures required.
- 7.2. **Conditions for safe storage, including any incompatibilities:**
Technical measures and storage condition:
Keep container tightly closed in a dry and well-ventilated place.
Opened containers should be carefully closed and stored in a vertical position to avoid any leakage.
Storage class (TRGS 510, Germany): Class 13 (data given by the manufacturer).
Incompatible materials: See Section 10.5.
Packaging material: No special prescriptions.
- 7.3. **Specific end use(s):**
Apart from the uses mentioned in section 1 no other specific uses are stipulated.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters:

Occupational exposure limit values (EH40/2005 Workplace exposure limits):

The components of the mixture are not regulated with exposure limit value.

Sodium sulphate (CAS: 7757-82-6):

DNEL

Data for WORKERS

Inhalation - Systemic Effects

Long-term: 20 mg/m³ - repeated dose toxicity

Inhalation - Local Effects:

Long-term: 20 mg/m³ - repeated dose toxicity

Source: EU - ECHA

Data for the GENERAL POPULATION

Inhalation - Systemic Effects

Long-term: 12 mg/m³ - repeated dose toxicity

Inhalation - Local Effects:

Long-term: 12 mg/m³ - repeated dose toxicity

Source: EU - ECHA

PNEC values		
Compartment	Value	Note(s)
Freshwater	no data	no notes
Marine water	no data	no notes
Freshwater sediment	no data	no notes
Marine water sediment	no data	no notes
Sewage Treatment Plant (STP)	no data	no notes
Intermittent release	no data	no notes
Secondary poisoning	no data	no notes
Soil	no data	no notes

8.2. Exposure controls:

In case of a hazardous material with no controlled concentration limit it is the employer's duty to keep concentration levels down to a minimum achievable by existing scientific and technological means, where the hazardous substance poses no harm to workers.

8.2.1. **Appropriate engineering controls:**

In pursuance of work is proper foresight needed to avoid leaking onto clothes and floors and to avoid contact with eyes and skin.

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

8.2.2. **Individual protection measures, such as personal protective equipment:**

- Eye/face protection:** If there is a splash hazard, use appropriate protective glasses (EN ISO 16321-1:2022; EN 166).
- Skin protection:**
 - Hand protection:** Use appropriate protective gloves (EN 374).
Consult manufacturer specifications for further information. Materials: natural rubber/nitrile rubber/neoprene/PVC.
 - Other:** Wear protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
- Respiratory protection:** Not required under normal use conditions. Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
When workers are facing concentrations above the exposure limit, they must use appropriate certified respirators.
Large scale/emergency use: Use a NIOSH/MSHA or European Standard EN 136 approved respirators if exposure limits are exceeded or if irritation or other symptoms are experienced
Small scale/Laboratory use: Maintain adequate ventilation: Recommended half mask: - Particle filtering: N149:2001.
Recommended filter type: particle filter.
- Thermal hazards:** No thermal hazards known.

8.2.3. Environmental exposure controls:

Do not let product enter drains.

The requirements detailed in Section 8 assume skilled work under normal conditions and usage of the product for appropriate aims. If conditions differ from normal or work is carried out under extreme conditions, an expert's advice is necessary before deciding upon further protective measures.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties:

Parameter	Value / Test method / Remarks
1. Physical state	liquid
2. Colour	clear to colourless
3. Odour, odour threshold	characteristic
4. Melting point/freezing point	ca. 0 °C
5. Boiling point or initial boiling point and boiling range	ca. 100 °C
6. Flammability	non-flammable
7. Lower and upper explosion limit	no data*
8. Flash point	no data*
9. Auto-ignition temperature	no data*
10. Decomposition temperature	no data*
11. pH	5 – 8
12. Kinematic viscosity	no data*
13. Solubility in water in other solvents	completely soluble no data*
14. Partition coefficient n-octanol/water (log value)	no data*
15. Vapour pressure	no data*
16. Density and/or relative density	no data*
17. Relative vapour density	no data*
18. Particle characteristics	no data*

9.2. Other information:

9.2.1. Information with regard to physical hazard classes:

No further data available or not applicable for the product.

9.2.2. Other safety characteristics:

Evaporation rate: 1.0

*: The manufacturer did not carry out any tests on this parameter for the product or the results of the tests are not available at the time of publication of the data sheet, or the property is not applicable for the product.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity:

No reactivity known.

10.2. Chemical stability:

Stable under normal conditions.

10.3. Possibility of hazardous reactions:

No hazardous reactions known.

10.4. Conditions to avoid:

Contact with incompatible materials. Sources of ignition. Exposure to heat.

10.5. Incompatible materials:

Sodium sulfate: strong acids, aluminium, magnesium.

10.6. Hazardous decomposition products:

No hazardous decomposition products known.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008:

Acute toxicity: Based on available data, the classification criteria are not met.

Skin corrosion/irritation: Based on available data, the classification criteria are not met.

Serious eye damage/irritation: Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation: Based on available data, the classification criteria are not met.

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity: Based on available data, the classification criteria are not met.

Reproductive toxicity: Based on available data, the classification criteria are not met.

STOT-single exposure: Based on available data, the classification criteria are not met.

STOT-repeated exposure: Based on available data, the classification criteria are not met.

Aspiration hazard: Based on available data, the classification criteria are not met.

11.1.1. Summaries of the information derived from the test conducted:

No data available.

11.1.2. Relevant toxicological properties:

No data available about the product.

Information about the components:

Sodium sulphate (CAS: 7757-82-6):

Acute toxicity:

LD50 (oral, mouse): 5989 mg/kg

LD50 (intravenous, rabbit): 1220 mg/kg

11.1.3. Information on likely routes of exposure:

Ingestion, inhalation, skin contact, eye contact.

11.1.4. Symptoms related to the physical, chemical and toxicological characteristics:

Inhalation: May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge.

Skin: May cause skin irritation. Signs/symptoms may include localized redness, swelling, itching.

Eyes: May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing.

Ingestion: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhoea.

11.1.5. Delayed and immediate effects as well as chronic effects from short and long-term exposure:

No data available.

11.1.6. Interactive effects:

No data available.

11.1.7. Absence of specific data:

No information.

11.2. Information on other hazards:

Endocrine disrupting properties:

Endocrine disrupting property: The mixture does not contain any components considered to have endocrine disrupting properties in accordance with Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1 % or higher.

Other information:

No data available.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity:

The mixture is not classified as hazardous for the environment.

Information about the components:

Sodium sulphate (CAS: 7757-82-6):

LC50 (Lepomis macrochirus): 4380 mg/l/96 hours

EC50 (Daphnia magna): 2564 mg/l/48 hours

LC50 (Gambusia affinis): 120 mg/l/96 hours

12.2. Persistence and degradability:

Soluble in water. Persistence is unlikely, based on information available.

12.3. Bioaccumulative potential:

Bioaccumulation is unlikely.

Information about the components:

Sodium sulphate (CAS: 7757-82-6):

log Pow: -3

- 12.4. **Mobility in soil:**
The product is water soluble and may spread in water systems. Will likely be mobile in the environment due to its water solubility. Highly mobile in soils.
- 12.5. **Results of PBT and vPvB assessment:**
This mixture does not contain any components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1 % or higher in accordance with Annex XIII of Regulation 1907/2006/EC.
- 12.6. **Endocrine disrupting properties:**
Endocrine disrupting property: The mixture does not contain any components considered to have endocrine disrupting properties in accordance with Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1 % or higher.
- 12.7. **Other adverse effects:**
Information about the components:
Sodium sulphate (CAS: 7757-82-6):
Water hazard class (WGK, German regulation, self-classification): 1 – slightly hazardous for water.

SECTION 13: DISPOSAL CONSIDERATIONS

- 13.1. **Waste treatment methods:**
Disposal according to the local regulations.
- 13.1.1. **Information regarding the disposal of the product:**
Dispose of in accordance with applicable regulations.
Chemical waste generators must determine whether a discarded chemical is classified as hazardous waste.
Consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.
List of Waste Code:
No waste disposal key according to the List of Waste Code (LoW code) can be determined for this product, as only the purpose of application defined by the user enables an allocation. The LoW code number has to be determined after a discussion with a waste disposal specialist.
- 13.1.2. **Information regarding the disposal of the packaging:**
Dispose of in accordance with applicable regulations.
The uncleaned packaging has to be disposed of in the same manner as the product itself.
Empty remaining contents. Do not re-use empty containers.
- 13.1.3. **Physical/chemical properties that may affect waste treatment options shall be specified:**
No data available.
- 13.1.4. **Sewage disposal:**
No data available.
- 13.1.5. **Special precautions for any recommended waste treatment:**
No data available.

SECTION 14: TRANSPORT INFORMATION

ADR/RID; ADN; IMDG; IATA:
Not subject to the conventions of carriage of dangerous goods.

- 14.1. **UN number or ID number:**
No UN or ID number.
- 14.2. **UN proper shipping name:**
No proper shipping name.
- 14.3. **Transport hazard class(es):**
No transport hazard classes.
- 14.4. **Packing group:**
No packing group.
- 14.5. **Environmental hazards:**
None.
- 14.6. **Special precautions for user:**
No relevant information available.
- 14.7. **Maritime transport in bulk according to IMO instruments:**
Not applicable.

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture:

REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive (EC) No 1999/45 and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive (EEC) No 76/769 and Commission Directives (EEC) No 91/155, (EEC) No 93/67, (EC) No 93/105 and (EC) No 2000/21

REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives (EEC) No 67/548 and (EC) No 1999/45, and amending Regulation (EC) No 1907/2006

COMMISSION REGULATION (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

The mixture does not contain ≥ 0.1 % of substances on the candidate list for authorisation of substances of very high concern (SVHC) under Regulation (EC) No 1907/2006 (REACH).

15.2. Chemical safety assessment: Has not been carried out.

SECTION 16: OTHER INFORMATION

Information regarding the revision of the safety data sheet:

The safety data sheet has been revised according to Regulation (EU) 2020/878 (Section 1-16).

The composition and hazard classification of the mixture were not modified compared to the previous version.

This safety data sheet supersedes all previous versions according to Annex II of Regulation (EC) No 1907/2006.

Literature references / data sources:

Previous version of the safety data sheet (November 2022).

Methods used for the classification according to Regulation (EC) No 1272/2008:

Based on the calculation method carried out on the basis of the known hazards of the components, not considered as a hazardous mixture.

Relevant hazard statements (code and full text) of Sections 2 and 3: No relevant statements.

Training advice: No data available.

Full text of the abbreviations in the safety data sheet:

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.

ADR: Agreement concerning the International Carriage of Dangerous Goods by Road.

ATE: Acute Toxicity Estimate.

AOX: Adsorbable organic halides.

BCF: Bioconcentration factor.

BOD: Biological Oxygen Demand.

CAS number: Chemical Abstract Service number.

CLP: Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.

CMR effects: Carcinogenic, mutagenic, reprotoxic effects.

COD: Chemical Oxygen Demand.

CSA: Chemical Safety Assessment.

CSR: Chemical Safety Report.

DNEL: Derived-No-Effect-Level.

ECHA: European Chemical Agency.

EC: European Community.

EC number: EINECS and ELINCS numbers (see also EINECS and ELINCS).

EEC: European Economic Community.

EEA: European Economic Area (EU + Iceland, Liechtenstein and Norway).

EINECS: European Inventory of Existing Commercial Chemical Substances.
ELINCS: European List of Notified Chemical Substances.
EN: European Norm.
EU: European Union.
EuPCS: European Product Categorisation System.
EWC: European Waste Catalogue (replaced by LoW – see below).
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.
IATA: International Air Transport Association.
ICAO-TI: Technical Instructions for the Safe Transport of Dangerous Goods by Air.
IMDG: International Maritime Dangerous Goods.
IMO: International Maritime Organization.
IMSBC: International Maritime Solid Bulk Cargoes.
IUCLID: International Uniform Chemical Information Database.
IUPAC: International Union of Pure and Applied Chemistry.
Kow: n-Octanol - Water Partition Coefficient.
LC50: Lethal concentration resulting in 50 % mortality.
LD50: Lethal dose resulting in 50 % mortality (median lethal dose).
LoW: List of Waste.
LOEC: Lowest Observed Effect Concentration.
LOEL: Lowest Observed Effect Level.
NOEC: No Observed Effect Concentration.
NOEL: No Observed Effect Level.
NOAEC: No Observed Adverse Effect Concentration.
NOAEL: No Observed Adverse Effect Level.
OECD: Organization for Economic Cooperation and Development.
OSHA: Occupational Safety and Health Administration.
PBT: Persistent, Bioaccumulative and Toxic.
PNEC: Predicted No Effect Concentration.
QSAR: Quantitative Structure Activity Relationship.
REACH: Regulation 1907/2006/EC concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals.
RID: Regulations Concerning the International Transport of Dangerous Goods by Rail.
SCBA: Self Contained Breathing Apparatus.
SDS: Safety Data Sheet.
STOT: Specific Target Organ Toxicity.
SVHC: Substances of Very High Concern.
UN: United Nations.
UVCB: Chemical Substances of Unknown or Variable Composition, Complex Reaction Products or of Biological Materials.
VOC: Volatile Organic Compound.
vPvB: very Persistent and very Bioaccumulative.

This safety data sheet had been prepared on the basis of information provided by the manufacturer/supplier and conform to the relevant regulations.

The information, data and recommendations contained herein are provided in good faith, obtained from reliable sources and believed to be true and accurate as of the date issued; however, no representation is made as to the comprehensiveness of the information.

The SDS shall be used only as a guide for handling the product; in the course of handling and using the product other considerations may arise or be required.

Users are cautioned to determine the appropriateness and applicability of the above information to their particular circumstances and purposes and assume all risk associated with the use of this product.

It is the responsibility of the user to fully comply with local, national and international regulations concerning the use of this product.

Safety data sheet was prepared by:
MSDS-Europe
International branch of ToxInfo Kft.

Professional help regarding
the explanation of the safety
data sheet:
+36 70 335 8480; info@msds-europe.com
www.msds-europe.com

