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

1.1 Product identifier
Identification of the substance: Microsart® Sample Prep, 2-Propanol
Article number: SMB95-2004
Index No: 603-117-00-0
EC No: 200-661-7
CAS number: 67-63-0
Registration Number (REACH): 01-2119457558-25-xxxx

1.2 Relevant identified uses of the substance or mixture and uses advised against
Uses advised against: none known
Identified uses: laboratory chemicals

1.3 Details of the supplier of the safety data sheet
Company: Sartorius Stedim Biotech GmbH
August-Spindler-Strasse 11
D-37079 Göttingen
Telephone: +49.551.308.0
Telefax: +49.551.308.3289
E-mail: PCR@Sartorius.com

1.4 Emergency telephone number
Emergency telephone number: Poison Centre Munich: +49/(0)89 19240

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008 (CLP)
- Flammable liquid, Category 2: H225, Flam. Liq. 2
- Serious eye damage / eye irritation, Category 2: H319, Eye Irrit. 2
- Specific target organ toxicity - single exposure: H336, STOT SE 3
  (narcotic effects, drowsiness), Category 3

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008 (CLP)
- Pictograms:
  
- Signal word: Danger

- Hazard statements:
  - H225: Highly flammable liquid and vapour.
  - H319: Causes serious eye irritation.
  - H336: May cause drowsiness or dizziness.

- Precautionary statements:
  - prevention
    - P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
    - P280: Wear protective clothing/eye protection.
2-Propanol

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The above mentioned labeling is valid for distribution to industrial user.

2.3 Other hazards
There is no additional information.

SECTION 3: Composition/information on ingredients

3.1 Substances

<table>
<thead>
<tr>
<th>Name of substance</th>
<th>H-statements</th>
<th>m% range</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Propanol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cas number</td>
<td>EC number</td>
<td>Flam. Liq. 2, H225</td>
</tr>
<tr>
<td>67-63-0</td>
<td>200-661-7</td>
<td>Eye Irrit. 2, H319</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STOT SE3, H336</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

4.1 Description of first aid measures

Following inhalation:
Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

Following skin contact:
Rinse skin with water/shower. In all cases of doubt, or when symptoms persist, seek medical advice.

Following eye contact:
Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart. In case of eye irritation consult an ophthalmologist.

Following ingestion
Rinse mouth. Call a doctor if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed
Dizziness, Unconsciousness, Headache, Vomiting, Vertigo, Nausea, Fatigue, Irritation, Dyspnoea

4.3 Indication of any immediate medical attention and special treatment needed
None

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Co-ordinate fire-fighting measures to the fire surroundings
water spray, foam, alcohol resistant foam, dry extinguishing powder, carbon dioxide (CO2)

Unsuitable extinguishing media
water jet
5.2 Special hazards arising from the substance or mixture
Combustible. Vapours are heavier than air, spread along floors and form explosive mixtures with air.
Vapours can form explosive mixtures with air.
Hazardous combustion products
In case of fire may be liberated: carbon monoxide (CO), carbon dioxide (CO2)

5.3 Advice for firefighters
Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
For non-emergency personnel
Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. Avoid contact with skin, eyes and clothes. Do not breathe vapour/spray. Avoidance of ignition sources.

6.2 Environmental precautions
Keep away from drains, surface and ground water. Explosive properties.

6.3 Methods and material for containment and cleaning up
Advises on how to contain a spill
Covering of drains.
Advises on how to clean up a spill
Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents).
Other information relating to spills and releases
Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections
Hazardous combustion products : see section 5.
Personal protective equipment : see section 8.
Incompatible materials : see section 10.
Disposal considerations : see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Provision of sufficient ventilation.

Measures to prevent fire as well as aerosol and dust generation
Keep away from sources of ignition - No smoking. Take precautionary measures against static discharge. Due to danger of explosion, prevent leakage of vapors into cellars, flues and ditches.

Advice on general occupational hygiene
Wash hands before breaks and after work. Keep away from food, drink and animal feeding stuffs. When using do not smoke.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed. Protect from sunlight.
Incompatible substances or mixtures
Observe hints for combined storage.
Consideration of other advice
Ground/bond container and receiving equipment.

Ventilation requirements
Use local and general ventilation.
Specific designs for storage rooms or vessels
Recommended storage temperature: 15 - 25 °C.

7.3 Specific end use(s)
n.a.v.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)

<table>
<thead>
<tr>
<th>Country</th>
<th>Name of agent</th>
<th>CAS No</th>
<th>Identifier</th>
<th>TWA [ppm]</th>
<th>TWA [mg/m³]</th>
<th>STEL [ppm]</th>
<th>STEL [mg/m³]</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB</td>
<td>propan-2-ol</td>
<td>67-63-0</td>
<td>WEL</td>
<td>400</td>
<td>999</td>
<td>500</td>
<td>1.250</td>
<td>EH40/2005</td>
</tr>
</tbody>
</table>

Notation
STEL Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period unless otherwise specified
TWA Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours' time-weighted average

Relevant DNELs/DMELs/PNECs and other threshold levels

Human health values

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Threshold level</th>
<th>Protection goal, route of exposure</th>
<th>Used in</th>
<th>Exposure time</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>888 mg/kg</td>
<td>human, dermal</td>
<td>Worker (industry)</td>
<td>chronic – systemic effects</td>
</tr>
<tr>
<td>DNEL</td>
<td>500 mg/m³</td>
<td>human, inhalatory</td>
<td>Worker (industry)</td>
<td>chronic – systemic effects</td>
</tr>
</tbody>
</table>

Environmental values

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Threshold level</th>
<th>Environmental compartment</th>
<th>Exposure time</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNEC</td>
<td>140.9 mg/l</td>
<td>Freshwater</td>
<td>Short-term (single instance)</td>
</tr>
<tr>
<td>PNEC</td>
<td>140.9 mg/l</td>
<td>Marine water</td>
<td>Short-term (single instance)</td>
</tr>
<tr>
<td>PNEC</td>
<td>2,251 mg/l</td>
<td>Sewage treatment plan (STP)</td>
<td>Short-term (single instance)</td>
</tr>
<tr>
<td>PNEC</td>
<td>552 mg/kg</td>
<td>Freshwater sediment</td>
<td>Short-term (single instance)</td>
</tr>
<tr>
<td>PNEC</td>
<td>552 mg/kg</td>
<td>Marine sediment</td>
<td>Short-term (single instance)</td>
</tr>
<tr>
<td>PNEC</td>
<td>160 mg/kg</td>
<td>Water</td>
<td>Short-term (single instance)</td>
</tr>
<tr>
<td>PNEC</td>
<td>28 mg/kg</td>
<td>Soil</td>
<td>Short-term (single instance)</td>
</tr>
<tr>
<td>PNEC</td>
<td>140.9 mg/l</td>
<td>water</td>
<td>continuous</td>
</tr>
</tbody>
</table>
8.2 Exposure controls
Individual protection measures (personal protective equipment)

Respiratory protection : Respiratory protection necessary at: Aerosol or mist formation.
Type: A (against organic gases and va- pors with a boiling point of > 65 °C, colour code: Brown).

Hand protection : Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

type of material
NBR (Nitrile rubber)
material thickness
0.4 mm
breakthrough times of the glove material
>480 minutes (permeation: level 6)

Eye/face protection : Use safety goggle with side protection.

Skin- and body protection : Lab coat

other protection measures : Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Flame-retardant protective clothing.

Environmental exposure controls
Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance
Physical state : liquid (fluid)
Colour : colourless
Odour : like alcohol
Odour threshold : 1-196 ppm

Other physical and chemical parameters
pH (value) : n.av.
Melting / freezing point : -89°C
Initial boiling point and boiling range : 82°C at 1.013 hPa
Flash point : 12°C (closed cup)
Evaporation rate : n.av.
Flammability (solid, gas) : not relevant (fluid)

Explosion limits
Lower explosion limit (LEL) : 2 Vol.-% (50 g/m³)
Upper explosion limit (UEL) : 13,4 Vol.-% (330 g/m³)
Explosion limits of dust clouds : not relevant
Vapour pressure : 43 hPa at 20°C
               60.2 hPa at 25°C
Density       : 0.786 g/cm³ at 20°C
Vapour density: 2.07 (air = 1)
Bulk density  : n.ap.
Relative density : Information on this property is not available.

Solubility(ies)
Water solubility : miscible in any proportion

Partition coefficient
n - Octanol / water (log KOW) : 0.05 (OECD Guideline 107)

Auto-ignition temperature : 425°C – (DIN 51794)
Decomposition temperature : n.v.
Viscosity               : dynamische viscosity
                         2.2 mPa s at 20°C
                         2.1 mPa s at 25°C

Explosive properties   : none
Oxidising properties  : none

SECTION 10: Stability and reactivity

10.1 Reactivity
Risk of ignition. Vapours can form explosive mixtures with air.

10.2 Chemical stability
The material is stable under normal ambient and anticipated storage and handling conditions of
temperature and pressure.

10.3 Possibility of hazardous reactions
Exothermic reaction with: Iron, Amines, Nitric acid, Oxidisers, Aldehydes
Danger of explosion: Hydrogen peroxide, Chlorates

10.4 Conditions to avoid
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. - UV-
radiation/sunlight.

10.5 Incompatible materials
Different plastic and rubber

10.6 Hazardous decomposition products
Hazardous combustion products: see section 5.
SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity:
Shall not be classified as acutely toxic.

<table>
<thead>
<tr>
<th>Exposure route</th>
<th>Endpoint</th>
<th>Value</th>
<th>Species</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalative: vapour</td>
<td>LC50</td>
<td>37.5 mg/l/4h</td>
<td>Rat</td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>LC50</td>
<td>5,045 mg/kg</td>
<td>Rat</td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>LC50</td>
<td>12,800 mg/kg</td>
<td>Rabbit</td>
<td></td>
</tr>
</tbody>
</table>

Skin corrosion/irritation: Shall not be classified as corrosive/irritant to skin.
Serious eye damage/eye irritation: Causes serious eye irritation.
Respiratory or skin sensitisation: Shall not be classified as a respiratory or skin sensitiser.

Summary of evaluation of the CMR properties:
Shall not be classified as germ cell mutagenic, carcinogenic nor as a reproductive toxicant.

Specific target organ toxicity - single exposure: May cause drowsiness or dizziness.
Specific target organ toxicity - repeated exposure: Shall not be classified as a specific target organ toxicant (repeated exposure).
Aspiration hazard: Shall not be classified as presenting an aspiration hazard.

Symptoms related to the physical, chemical and toxicological characteristics
If inhaled: breathing difficulties
If swallowed: vomiting, aspiration hazard, pneumonia
If on skin: repeated exposure may cause skin dryness or cracking
If in eyes: n.av.
Other information: Headache, Narcosis, Unconsciousness, Nausea, Vertigo

SECTION 12: Ecological information

12.1 Toxicity
acc. to 1272/2008/EC: Shall not be classified as hazardous to the aquatic environment.

Aquatic toxicity (acute)

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
<th>Species</th>
<th>Source</th>
<th>Exposure time</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC50</td>
<td>&gt;13,000 mg/l</td>
<td>Daphnia magna</td>
<td></td>
<td>48 Hours</td>
</tr>
<tr>
<td>EC50</td>
<td>&gt;1,000 mg/l</td>
<td>Scenedesmus quadra cauda</td>
<td></td>
<td>72 Hours</td>
</tr>
<tr>
<td>EC50</td>
<td>1,400 mg/l</td>
<td>Bluegill (Lepomis macrochirus)</td>
<td></td>
<td>96 Hours</td>
</tr>
</tbody>
</table>
12.2 Persistency and degradability

The substance is readily biodegradable.

Theoretical Oxygen Demand: 2.396 mg/mg
Theoretical Carbon Dioxide: 2.197 mg/mg

<table>
<thead>
<tr>
<th>Process</th>
<th>Degradation rate</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biotic/abiotisch</td>
<td>95 %</td>
<td>21 d</td>
</tr>
<tr>
<td>Oxygen depletion</td>
<td>53 %</td>
<td>5 d</td>
</tr>
</tbody>
</table>

12.3 Bioaccumulative potential

Does not significantly accumulate in organisms.
n-octanol/water (log KOW) : 0,05

12.4 Mobility in soil
n.av.

12.5 Results of PBT and vPvB assessment
n.av.

12.6 Other adverse effects
Slightly hazardous to water.

SECTION 13: Disposal considerations

13.1 Waste treatment methods
This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

Sewage disposal-relevant information
Do not empty into drains.

Waste treatment of containers/packagings
It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used.

13.2 Relevant provisions relating to waste
The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

13.3 Remarks
Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions.

SECTION 14: Transport information

14.1 UN number : 1219

14.2 UN proper shipping name : ISOPROPANOL
Hazardous ingredients : 2-Propanol
14.3 Transport hazard class(es)
   Class : 3 (flammable liquids)

14.4 Packing group
   : II (substance presenting medium danger)

14.5 Environmental hazards
   : none (non-environmentally hazardous acc. to the
dangerous goods regulations)

14.6 Special precautions for user
   Provisions for dangerous goods (ADR) should be complied within the premises.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code
   The cargo is not intended to be carried in bulk.

14.8 Information for each of the UN Model Regulations

   **Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)**
   UN number : 1219
   Proper shipping name : ISOPROPANOL
   Particulars in the transport document : UN1219, ISOPROPANOL, 3, II, (D/E)
   Class : 3
   Classification code : F1
   Packaging group : II
   Danger label(s) : 3

   Special provisions (SP) : 601
   Excepted quantities (EQ) : E2
   Limited quantities (LQ) : 1 L
   Transport category (TC) : 2
   Tunnel restriction code (TRC) : D/E
   Hazard identification No : 33
   Emergency Action Code : 2YE

   **International Maritime Dangerous Goods Code (IMDG)**
   UN number : 1219
   Proper shipping name : ISOPROPANOL
   Particulars in the shipper's declaration : UN1219, ISOPROPANOL, 3, II, 12°C c.c.
   Class : 3
   Packaging group : II
   Danger label(s) : 3
SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

Regulation 649/2012/EU concerning the export and import of hazardous chemicals (PIC)
Not listed.

Regulation 1005/2009/EC on substances that deplete the ozone layer (ODS)
Not listed.

Regulation 850/2004/EC on persistent organic pollutants (POP)
Not listed.

Restrictions according to REACH, Annex XVII
Not listed.

List of substances subject to authorisation (REACH, Annex XIV)
Not listed.

Seveso Richtlinie

<table>
<thead>
<tr>
<th>No</th>
<th>Dangerous substance/hazard categories</th>
<th>Qualifying quantity (tonnes) for the application of lower and upper-tier requirements</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>P5c</td>
<td>flammable liquids (cat. 2, 3)</td>
<td>5.000</td>
<td>50.000</td>
</tr>
</tbody>
</table>

Notation

51) Flammable liquids, categories 2 or 3 not covered by P5a and P5b

Limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products (2004/42/EC, Deco-Paint Directive)
VOC-Content 100 %

Directive on industrial emissions (VOCs, 2010/75/EU)
VOC-Content 100 %

Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) - Annex II
Not listed.

Regulation 166/2006/EC concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)
Not listed.

Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD)
Not listed.
National inventories
Substance is listed in the following national inventories:
EINECS/ELINCS/NLP (Europe)
REACH (Europe)

15.2 Chemical Safety Assessment
For this substance a chemical safety assessment has been carried out.

SECTION 16: Other information

16.1 Abbreviations and acronyms

<table>
<thead>
<tr>
<th>Abbr.</th>
<th>Descriptions of used abbreviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADN</td>
<td>Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)</td>
</tr>
<tr>
<td>ADR</td>
<td>Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)</td>
</tr>
<tr>
<td>CLP</td>
<td>Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures</td>
</tr>
<tr>
<td>CMR</td>
<td>Carcinogenic, Mutagenic or toxic for Reproduction</td>
</tr>
<tr>
<td>DMEL</td>
<td>Derived Minimal Effect Level</td>
</tr>
<tr>
<td>DNEL</td>
<td>Derived No-Effect Level</td>
</tr>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Commercial Chemical Substances</td>
</tr>
<tr>
<td>ELINCS</td>
<td>European List of Notified Chemical Substances</td>
</tr>
<tr>
<td>EmS</td>
<td>Emergency Schedule</td>
</tr>
<tr>
<td>GHS</td>
<td>&quot;Globally Harmonized System of Classification and Labelling of Chemicals&quot; developed by the United Nations</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Dangerous Goods Code</td>
</tr>
<tr>
<td>index No</td>
<td>the Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008</td>
</tr>
<tr>
<td>MARPOL</td>
<td>International Convention for the Prevention of Pollution from Ships (abbr. of &quot;Marine Pollutant&quot;)</td>
</tr>
<tr>
<td>NLP</td>
<td>No-Longer Polymer</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent, Bioaccumulative and Toxic</td>
</tr>
</tbody>
</table>
2-Propanol

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<table>
<thead>
<tr>
<th>PNEC</th>
<th>Predicted No-Effect Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>ppm</td>
<td>parts per million</td>
</tr>
<tr>
<td>REACH</td>
<td>Registration, Evaluation, Authorisation and Restriction of Chemicals</td>
</tr>
<tr>
<td>RID</td>
<td>Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)</td>
</tr>
<tr>
<td>STEL</td>
<td>short-term exposure limit</td>
</tr>
<tr>
<td>TWA</td>
<td>time-weighted average</td>
</tr>
<tr>
<td>VOC</td>
<td>Volatile Organic Compounds</td>
</tr>
<tr>
<td>vPvB</td>
<td>very Persistent and very Bioaccumulative</td>
</tr>
<tr>
<td>WEL</td>
<td>workplace exposure limit</td>
</tr>
</tbody>
</table>

Key literature references and sources for data
Regulation (EC) No. 1272/2008 (CLP, EU GHS)

16.2 List of relevant phrases (code and full text as stated in chapter 2 and 3)

<table>
<thead>
<tr>
<th>Code</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>H225</td>
<td>highly flammable liquid and vapour</td>
</tr>
<tr>
<td>H319</td>
<td>causes serious eye irritation</td>
</tr>
<tr>
<td>H336</td>
<td>may cause drowsiness or dizziness</td>
</tr>
</tbody>
</table>

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.