SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Revision Date 12.07.2013 Version 8.0

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

1.1 Product identifier
Catalogue No. 113303
Product name Bactident® E. coli rapid identification kit for E. coli
KOVACS' indole reagent for microbiology

REACH Registration Number This product is a mixture. REACH Registration Number see section 3.

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses Reagent for analysis
For additional information on uses please refer to the Merck Chemicals portal (www.merck-chemicals.com).

1.3 Details of the supplier of the safety data sheet
Company Merck KGaA * 64271 Darmstadt * Germany * Phone:+49 6151 72-0
Responsible Department EQ-RS * e-mail: prodsafe@merckgroup.com

1.4 Emergency telephone number
Please contact the regional company representation in your country.

SECTION 2. Hazards identification

2.1 Classification of the substance or mixture
Classification (REGULATION (EC) No 1272/2008)
Flammable liquid, Category 3, H226
Acute toxicity, Category 4, Oral, H302
Skin irritation, Category 2, H315
Serious eye damage, Category 1, H318
Specific target organ toxicity - single exposure, Category 3, H335 H336
For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification (67/548/EEC or 1999/45/EC)

<table>
<thead>
<tr>
<th>Classification (EC)</th>
<th>R-Phrase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable R10</td>
<td></td>
</tr>
<tr>
<td>Xn Harmful R22</td>
<td></td>
</tr>
<tr>
<td>Xi Irritant R41 - 37/38</td>
<td></td>
</tr>
<tr>
<td>R67</td>
<td></td>
</tr>
</tbody>
</table>

For the full text of the R-phrases mentioned in this Section, see Section 16.
2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms

- Flammable liquid and vapour
- Harmful if swallowed
- Causes skin irritation
- Causes serious eye damage
- May cause respiratory irritation
- May cause drowsiness or dizziness

Precautionary statements

Prevention
- Keep away from heat
- Wear eye protection

Response
- Wash with plenty of soap and water
- Rinse cautiously with water for several minutes
- Remove contact lenses
- Continue rinsing
- Get medical advice/attention

Contains: n-butanol

Reduced labelling (≤125 ml)

Hazard pictograms

- Flammable liquid and vapour
- Harmful if swallowed
- Causes serious eye damage

Precautionary statements

- Wear eye protection
- Rinse cautiously with water for several minutes
- Remove contact lenses
- Continue rinsing
- Get medical advice/attention

Contains: n-butanol

2.3 Other hazards

None known.
SECTION 3. Composition/information on ingredients

Chemical nature: Mixture of inorganic and organic compounds

3.1 Substance
not applicable

3.2 Mixture

Hazardous components (REGULATION (EC) No 1272/2008)

<table>
<thead>
<tr>
<th>Chemical Name (Concentration)</th>
<th>CAS-No.</th>
<th>Registration number</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-butanol (&gt;= 50 % - &lt;= 100 %)</td>
<td>71-36-3</td>
<td>01-2119484630-38-XXX</td>
<td>Flammable liquid, Category 3, H226, Acute toxicity, Category 4, H302, Specific target organ toxicity - single exposure, Category 3, H335, Skin irritation, Category 2, H315, Serious eye damage, Category 1, H318, Specific target organ toxicity - single exposure, Category 3, H336</td>
</tr>
</tbody>
</table>

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

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</tr>
</thead>
<tbody>
<tr>
<td>hydrochloric acid (&gt;= 10 % - &lt; 20 %)</td>
<td>7647-01-0</td>
<td>01-2119484862-27-XXX</td>
<td>Skin corrosion, Category 1B, H314, Specific target organ toxicity - single exposure, Category 3, H335, Corrosive to metals, Category 1, H290</td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

Hazardous components (1999/45/EC)

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<td>R10, Xn, Harmful; R22, Xi, Irritant; R37/38-41, R67</td>
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<td>7647-01-0</td>
<td>C, Corrosive; R34, Xi, Irritant; R37</td>
</tr>
</tbody>
</table>

For the full text of the R-phrases mentioned in this Section, see Section 16.

SECTION 4. First aid measures

4.1 Description of first aid measures
After inhalation: fresh air. Consult doctor if feeling unwell.

After skin contact: wash off with plenty of water. Remove contaminated clothing.

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

4.2 Most important symptoms and effects, both acute and delayed
irritant effects, Cough, depressed respiration, Shortness of breath, Drowsiness, Dizziness, narcosis, inebriation, Nausea, Vomiting, cardiovascular disorders, drowsiness, CNS disorders

4.3 Indication of any immediate medical attention and special treatment needed
No information available.

SECTION 5. Firefighting measures

5.1 Extinguishing media
Suitable extinguishing media
Carbon dioxide (CO2), Foam, Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Combustible.
Vapours are heavier than air and may spread along floors.
Forms explosive mixtures with air at elevated temperatures.
Pay attention to flashback.
Development of hazardous combustion gases or vapours possible in the event of fire.
Fire may cause evolution of:
Hydrogen chloride gas, nitrous gases, nitrogen oxides

5.3 Advice for firefighters
Special protective equipment for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information
Cool closed containers exposed to fire with water spray. Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Avoid substance contact. Do not breathe vapours, aerosols. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

6.2 Environmental precautions
Do not empty into drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills.
Observe possible material restrictions (see sections 7 and 10).
Take up with liquid-absorbent and neutralising material (e.g. Chemizorb® H⁺, Merck Art. No. 101595). Dispose of properly. Clean up affected area.

6.4 Reference to other sections
Indications about waste treatment see section 13.
SECTION 7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed in a well-ventilated place, away from sources of ignition and heat. Store at +2°C to +8°C.

The data applies to the entire pack.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8. Exposure controls/personal protection

8.1 Control parameters

Derived No Effect Level (DNEL)

- **n-butanol (71-36-3)**
  - Worker DNEL, Local effects inhalation: 310 mg/m³
  - Consumer DNEL, Local effects inhalation: 55 mg/m³
  - Consumer DNEL, Systemic effects oral: 3,125 mg/kg Body weight

- **hydrochloric acid (7647-01-0)**
  - Worker DNEL, acute Local effects inhalation: 15 mg/m³
  - Worker DNEL, longterm Local effects inhalation: 8 mg/m³

Predicted No Effect Concentration (PNEC)

- **n-butanol (71-36-3)**
  - PNEC Fresh water: 0.082 mg/l
  - PNEC Fresh water sediment: 0.178 mg/kg
  - PNEC Marine water: 0.0082 mg/l
  - PNEC Marine sediment: 0.0178 mg/kg
  - PNEC Aquatic intermittent release: 2.25 mg/l
  - PNEC Sewage treatment plant: 2476 mg/l
8.2 Exposure controls

**Engineering measures**
Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

**Individual protection measures**
Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

**Eye/face protection**
Tightly fitting safety goggles

**Hand protection**
full contact:
- Glove material: Nitrile rubber
- Glove thickness: 0,40 mm
- Break through time: > 480 min

splash contact:
- Glove material: polychloroprene
- Glove thickness: 0,65 mm
- Break through time: > 120 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 730 Camatri® -Velours (full contact), KCL 720 Camapren® (splash contact).
The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.
This recommendation applies only to the product stated in the safety data sheet supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

**Other protective equipment**
Flame retardant antistatic protective clothing

**Respiratory protection**
required when vapours/aerosols are generated.
Recommended Filter type: filter ABEK
The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.
Environmental exposure controls
Do not empty into drains.
Risk of explosion.

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form: liquid
Colour: yellow
Odour: characteristic odour
Odour Threshold: No information available.
pH: < 1 at 20 °C
Melting point: No information available.
Boiling point: No information available.
Flash point: 36 °C
Evaporation rate: No information available.
Flammability (solid, gas): No information available.
Lower explosion limit: No information available.
Upper explosion limit: No information available.
Vapour pressure: No information available.
Relative vapour density: No information available.
Relative density: 0.92 g/cm³ at 20 °C
Water solubility: soluble at 20 °C
Partition coefficient: n-octanol/water: No information available.
Auto-ignition temperature: No information available.
Decomposition temperature: No information available.
Viscosity, dynamic: No information available.
Explosive properties: Not classified as explosive.
SECTION 10. Stability and reactivity

10.1 Reactivity
- has a corrosive effect
- Vapour/air-mixtures are explosive at intense warming.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions
- Risk of explosion with:
  - Alkali metals, conc. sulfuric acid
- Risk of ignition or formation of inflammable gases or vapours with:
  - carbides, lithium silicide, Fluorine, Strong oxidizing agents, chromium(VI) oxide
- Generates dangerous gases or fumes in contact with:
  - Aluminium, hydrides, formaldehyde, Metals, strong alkalis, Sulphides
- Exothermic reaction with:
  - Amines, potassium permanganate, salts of oxyhalogenic acids, semimetallic oxides, semimetallic hydrogen compounds, Aldehydes, vinylmethyl ether, Alkaline earth metals, strong reducing agents, Acid chlorides

10.4 Conditions to avoid
- Heating.

10.5 Incompatible materials
- various metals, rubber, various plastics

10.6 Hazardous decomposition products
in the event of fire: See section 5.

SECTION 11. Toxicological information

11.1 Information on toxicological effects

Mixture

Acute oral toxicity
Acute toxicity estimate: 1.242 mg/kg
Calculation method

absorption
Symptoms: Nausea, Vomiting, Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract., Risk of aspiration upon vomiting., Aspiration may cause pulmonary oedema and pneumonitis.

Acute inhalation toxicity

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:., damage of respiratory tract
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Acute dermal toxicity
This information is not available.

Skin irritation
Mixture causes skin irritation.

Eye irritation
Mixture causes serious eye damage.

Sensitisation
This information is not available.

Germ cell mutagenicity
This information is not available.

Carcinogenicity
This information is not available.

Reproductive toxicity
This information is not available.

Teratogenicity
This information is not available.

Specific target organ toxicity - single exposure
Mixture may cause drowsiness or dizziness.
Mixture may cause respiratory irritation.

Specific target organ toxicity - repeated exposure
This information is not available.

Aspiration hazard
This information is not available.

11.2 Further information
Quantitative data on the toxicity of this product are not available.
Further toxicological data:
After absorption:
CNS disorders, Dizziness, inebriation, drop in blood pressure, cardiovascular disorders,
depressed respiration, narcosis
Damage to:
Liver, Kidney
Further data:
Other dangerous properties can not be excluded.
Handle in accordance with good industrial hygiene and safety practice.

Components

n-butanol

Acute oral toxicity
LD50 rat: 790 mg/kg (RTECS)

Acute inhalation toxicity
LC50 rat: > 18 mg/l; 4 h (highest concentration to be prepared) (IUCLID)
LC50 human: 0,08 mg/l(IUCLID)

Acute dermal toxicity
LD50 rabbit: 3.400 mg/kg (RTECS)

Skin irritation
rabbit
Result: Irritations (IUCLID)
Eye irritation
rabbit
Result: Severe irritations
OECD Test Guideline 405

Germ cell mutagenicity
Genotoxicity in vitro
Ames test
Salmonella typhimurium
Result: negative
(IUCLID)

hydrochloric acid
Acute inhalation toxicity
LC50 rat: 4.74 mg/l; 1 h (RTECS)

SECTION 12. Ecological information

12.1 Toxicity
No information available.

12.2 Persistence and degradability
No information available.

12.3 Bioaccumulative potential
No information available.

12.4 Mobility in soil
No information available.

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6 Other adverse effects
Additional ecological information
Biological effects:
Caustic even in diluted form.
Harmful effect due to pH shift.
Further information on ecology
Discharge into the environment must be avoided.

Components
n-butanol
Toxicity to fish
LC50 Leuciscus idus (Golden orfe): 1.200 - 1.700 mg/l; 96 h (IUCLID)

Toxicity to daphnia and other aquatic invertebrates
EC50 Daphnia magna (Water flea): 1.983 mg/l; 48 h
DIN 38412

Toxicity to algae
IC50 Desmodesmus subspicatus (green algae): > 500 mg/l; 72 h (IUCLID)

Toxicity to bacteria
EC10 Pseudomonas putida: 2.250 mg/l; 16 h (IUCLID)

Biodegradability
98 %; 28 d
OECD Test Guideline 301E
Readily biodegradable.
Ratio BOD/ThBOD
BOD5 33 %
(IUCNID)

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

**hydrochloric acid**

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

### SECTION 13. Disposal considerations

*Waste treatment methods*
See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

### 14. Transport information

#### Land transport (ADR/RID)
- **14.1 UN number**: UN 3316
- **14.2 Proper shipping name**: CHEMICAL KIT
- **14.3 Class**: 9
- **14.4 Packing group**: II
- **14.5 Environmentally hazardous**: --
- **14.6 Special precautions for user**: yes
- **Tunnel restriction code**: E

#### Inland waterway transport (ADN)
Not relevant

#### Air transport (IATA)
- **14.1 UN number**: UN 3316
- **14.2 Proper shipping name**: CHEMICAL KIT
- **14.3 Class**: 9
- **14.4 Packing group**: II
- **14.5 Environmentally hazardous**: --
- **14.6 Special precautions for user**: no

#### Sea transport (IMDG)
- **14.1 UN number**: UN 3316
- **14.2 Proper shipping name**: CHEMICAL KIT
- **14.3 Class**: 9
- **14.4 Packing group**: II
- **14.5 Environmentally hazardous**: --
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

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Product name Bactident® E. coli rapid identification kit for E. coli
KOVACS' indole reagent for microbiology

14.6 Special precautions for user
yes
EmS F-A S-P

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not relevant

THIS TRANSPORT DATA APPLIES TO THE ENTIRE PACK!

SECTION 15. Regulatory information

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

EU regulations
Major Accident Hazard Legislation 96/82/EC
Flammable.
6
Quantity 1: 5.000 t
Quantity 2: 50.000 t

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work. Take note of Dir 92/85/EEC on the safety and health at work of pregnant workers.

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer not regulated


Regulation (EC) No 689/2008 concerning the export and import of dangerous chemicals not regulated

Substances of very high concern (SVHC) This product does not contain substances of very high concern above the respective regulatory limit (> 0.1 % (w/w) Regulation (EC) No 1907/2006 (REACH), Article 57).

National legislation
Storage class 3
The data applies to the entire pack.

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.
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Catalogue No. 113303
Product name Bactident® E. coli rapid identification kit for E. coli
KOVACS’ indole reagent for microbiology

SECTION 16. Other information

Full text of H-statements referred to under sections 2 and 3.
H226 Flammable liquid and vapour.
H290 May be corrosive to metals.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.

Full text of R-phrases referred to under sections 2 and 3
R10 Flammable.
R22 Harmful if swallowed.
R34 Causes burns.
R37 Irritating to respiratory system.
R37/38 Irritating to respiratory system and skin.
R41 Risk of serious damage to eyes.
R67 Vapours may cause drowsiness and dizziness.

Training advice
Provide adequate information, instruction and training for operators.

Labelling (67/548/EEC or 1999/45/EC)
Symbol(s) Xn Harmful
R-phrase(s) 10-22-37/38-41-67 Flammable. Harmful if swallowed. Irritating to respiratory system and skin. Risk of serious damage to eyes. Vapours may cause drowsiness and dizziness.
S-phrase(s) 26-39 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear eye/face protection.

Reduced labelling (≤125 ml)
Symbol(s) Xn Harmful
R-phrase(s) 10-22-41 Flammable. Harmful if swallowed. Risk of serious damage to eyes.
S-phrase(s) 26-39 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear eye/face protection.

Contains: n-butanol

Key or legend to abbreviations and acronyms used in the safety data sheet
Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Regional representation
This information is given on the authorised Safety Data Sheet for your country.

The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.