SAFETY DATA SHEET

Kovacs Reagent

According to Regulation (EC) No 1907/2006, Annex II, as amended. Commission Regulation (EU) No 2015/830 of 28 May 2015.

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

1.1. Product identifier

Product name Kovacs Reagent

Product number PL.375

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

Identified uses Laboratory reagent.

Uses advised againstNo specific uses advised against are identified.

1.3. Details of the supplier of the safety data sheet

Supplier Pro-Lab Diagnostics

3 Bassendale Road

Wirral Merseyside CH62 3QL

Tel: 0151 353 1613 Fax: 0151 353 1614 mowen@pro-lab.com

1.4. Emergency telephone number

Emergency telephone +44 (0)151 353 1613 Monday to Friday 9.00 to 17.00

+44 (0)7714 429 646 outside the above hours

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Flam. Liq. 3 - H226

Health hazards Acute Tox. 4 - H332 Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 STOT SE 3 - H335

Environmental hazards Not Classified

Human healthThe liquid is irritating to eyes and skin. Vapours may cause drowsiness and dizziness.

Physicochemical The product is highly flammable.

2.2. Label elements

Pictogram





Signal word Warning

Hazard statements H226 Flammable liquid and vapour.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

H335 May cause respiratory irritation.

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Precautionary statements P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No

smoking.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing.

Rinse skin with water or shower.

P312 Call a POISON CENTRE/doctor if you feel unwell.

P332+P313 If skin irritation occurs: Get medical advice/ attention.

P501 Dispose of contents/ container in accordance with national regulations.

Contains 1-pentanol, hydrochloric acid

Supplementary precautionary statements

P240 Ground and bond container and receiving equipment.

P241 Use explosion-proof electrical equipment.

P242 Use non-sparking tools.

P243 Take action to prevent static discharges.

P261 Avoid breathing vapour/ spray.

P264 Wash contaminated skin thoroughly after handling. P271 Use only outdoors or in a well-ventilated area.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove

contact lenses, if present and easy to do. Continue rinsing.

P337+P313 If eye irritation persists: Get medical advice/ attention. P362+P364 Take off contaminated clothing and wash it before reuse.

P370+P378 In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P403+P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

1-pentanol 50 - 100%

CAS number: 71-41-0 EC number: 200-752-1 REACH registration number: 01-

2119491284-34-XXXX

Classification

Flam. Liq. 3 - H226 Acute Tox. 4 - H332 Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 STOT SE 3 - H335

hydrochloric acid 5 - <10%

CAS number: 7647-01-0 EC number: 231-595-7

Classification

Skin Corr. 1B - H314 Eye Dam. 1 - H318 STOT SE 3 - H335

The full text for all hazard statements is displayed in Section 16.

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SECTION 4: First aid measures

4.1. Description of first aid measures

General information Keep affected person away from heat, sparks and flames.

Inhalation Immediate first aid is imperative. Loosen tight clothing such as collar, tie or belt. Maintain an

open airway. Move affected person to fresh air at once. Place unconscious person on their side in the recovery position and ensure breathing can take place. When breathing is difficult,

properly trained personnel may assist affected person by administering oxygen.

Ingestion Rinse mouth thoroughly with water. Do not induce vomiting unless under the direction of

medical personnel. If in doubt, get medical attention promptly.

Skin contact Rinse cautiously with water for several minutes. Remove contaminated clothing. Wash

contaminated clothing before reuse.

Eye contact Remove contact lenses, if present and easy to do. Continue rinsing. Rinse immediately with

plenty of water. Get medical attention if symptoms are severe or persist after washing.

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

Inhalation Symptoms following overexposure may include the following: Coughing, chest tightness,

feeling of chest pressure. Drowsiness, dizziness, disorientation, vertigo. May cause

discomfort.

Ingestion May cause discomfort if swallowed.

Skin contact Causes skin irritation. Dryness and/or cracking. Prolonged or repeated exposure may cause

severe irritation.

Eye contact Irritating to eyes. Overexposure may cause the following adverse effects: Irritation. Redness.

Profuse watering of the eyes.

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

length of exposure.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.

Unsuitable extinguishing

media

Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards Flammable liquid and vapour. Vapours may be ignited by a spark, a hot surface or an ember.

5.3. Advice for firefighters

Protective actions during

firefighting

Fight fire from safe distance or protected location. Use water spray to reduce vapours. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. If a leak or spill has not ignited, use water spray to disperse vapours and

protect men stopping the leak.

Special protective equipment

for firefighters

Use air-supplied respirator, gloves and protective goggles. Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Use protective

equipment appropriate for surrounding materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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Personal precautions Follow precautions for safe handling described in this safety data sheet. No smoking, sparks,

flames or other sources of ignition near spillage. Provide adequate ventilation.

6.2. Environmental precautions

Environmental precautions Avoid the spillage or runoff entering drains, sewers or watercourses.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Take care as floors and other surfaces may become slippery. Contain spillage with sand,

earth or other suitable non-combustible material. Absorb in vermiculite, dry sand or earth and place into containers. Dispose of waste to licensed waste disposal site in accordance with the

requirements of the local Waste Disposal Authority.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. For waste disposal, see Section 13. See Section 11

for additional information on health hazards. See Section 12 for additional information on

ecological hazards.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid breathing vapours. Avoid contact with eyes and prolonged skin contact. Avoid the

formation of mists. Ground/bond container and receiving equipment.

Advice on general occupational hygiene

Do not eat, drink or smoke when using this product. Eye wash facilities and emergency shower must be available when handling this product. Good personal hygiene procedures should be implemented. Take off contaminated clothing and wash it before reuse. Wash

promptly with soap and water if skin becomes contaminated.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Keep at temperature not exceeding 25°C.

Storage class Flammable liquid storage.

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

Occupational exposure limits

hydrochloric acid

Long-term exposure limit (8-hour TWA): WEL 1 ppm 2 mg/m³ gas and aerosol mists Short-term exposure limit (15-minute): WEL 5 ppm 8 mg/m³ gas and aerosol mists

WEL = Workplace Exposure Limit

1-pentanol (CAS: 71-41-0)

DNEL Workers - Inhalation; Long term local effects: 73.16 mg/m³

Workers - Inhalation; Short term local effects: 292 mg/m³

General population - Inhalation; Long term local effects: 13 mg/m³ General population - Inhalation; Short term local effects: 218 mg/m³ General population - Oral; Long term systemic effects: 12.5 mg/kg/day

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PNEC Fresh water; 0.12 mg/l

Fresh water, Intermittent release; 1.2 mg/l

Marine water; 0.012 mg/l

STP; 37 mg/l

Sediment (Freshwater); 0.508 mg/kg Sediment (Marinewater); 0.051 mg/kg

Soil; 0.031 mg/kg

8.2. Exposure controls

Appropriate engineering controls

Avoid inhalation of vapours and spray/mists. Good general ventilation should be adequate to control worker exposure to airborne contaminants. In case of insufficient ventilation, wear

suitable respiratory equipment.

Eye/face protection Eyewear complying with an approved standard should be worn if a risk assessment indicates

eye contact is possible. The following protection should be worn: Chemical splash goggles.

Hand protection Chemical-resistant, impervious gloves complying with an approved standard should be worn if

a risk assessment indicates skin contact is possible. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. Frequent changes are recommended. The breakthrough time for any glove material may be different for different glove manufacturers.

Other skin and body

protection

Wear anti-static protective clothing if there is a risk of ignition from static electricity.

Hygiene measures Do not eat, drink or smoke when using this product. Eye wash facilities and emergency

shower must be available when handling this product. Good personal hygiene procedures

should be implemented.

Respiratory protection If ventilation is inadequate, suitable respiratory protection must be worn. Seek advice from

supervisor on the company's respiratory protection standards. Respiratory protection

complying with an approved standard should be worn if a risk assessment indicates inhalation

of contaminants is possible.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance Liquid.

Colour Light (or pale). Green.

Odour Characteristic.

pH Not relevant.

Melting point Not relevant.

Initial boiling point and range Not determined.

Flash point 23 - 60°C

Evaporation rate Not determined.

Flammability (solid, gas) Not determined.

Upper/lower flammability or

explosive limits

Not determined.

Vapour pressure Not determined.

Vapour density Not relevant.

Relative density Not determined.

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Solubility(ies)

Partition coefficient

Not determined.

Auto-ignition temperature

Not determined.

Decomposition Temperature

Not determined.

Viscosity Not determined.

Explosive properties Not considered to be explosive.

Oxidising properties Does not meet the criteria for classification as oxidising.

9.2. Other information

Other information None.

SECTION 10: Stability and reactivity

10.1. Reactivity

ReactivityNo test data specifically related to reactivity available for this product or its ingredients.

10.2. Chemical stability

Stability Stable at normal ambient temperatures and when used as recommended.

10.3. Possibility of hazardous reactions

Possibility of hazardous

reactions

Acids. Alkalis. Oxidising agents.

10.4. Conditions to avoid

Conditions to avoid Avoid heat, flames and other sources of ignition.

10.5. Incompatible materials

Materials to avoid Acids. Alkalis. Oxidising agents.

10.6. Hazardous decomposition products

Hazardous decomposition

products

Thermal decomposition or combustion products may include the following substances:

Carbon dioxide (CO2). Carbon monoxide (CO). Nitrous gases (NOx). Hydrocarbons. Does not

decompose when used and stored as recommended.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Notes (oral LD₅₀) Based on available data the classification criteria are not met.

Acute toxicity - dermal

Notes (dermal LD₅₀) Based on available data the classification criteria are not met.

Acute toxicity - inhalation

Notes (inhalation LC₅₀) Harmful if inhaled.

ATE inhalation (vapours mg/l) 15.71

Skin corrosion/irritation

Animal data Causes skin irritation.

Serious eye damage/irritation

Serious eye damage/irritation Eye Irrit. 2 - H319 Causes serious eye irritation.

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Respiratory sensitisation

Respiratory sensitisation Based on available data the classification criteria are not met.

Skin sensitisation

Skin sensitisation Based on available data the classification criteria are not met.

Germ cell mutagenicity

Genotoxicity - in vitroBased on available data the classification criteria are not met.

Carcinogenicity

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

Reproductive toxicity

Reproductive toxicity - fertility Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure

STOT - single exposure STOT SE 3 - H335 May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

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

Aspiration hazard

Aspiration hazard Not anticipated to present an aspiration hazard, based on chemical structure.

Inhalation Symptoms following overexposure may include the following: Pain or irritation. Irritation of

nose, throat and airway. Coughing. Wheezing/breathing difficulties.

Ingestion May cause discomfort if swallowed.

Skin contactCauses skin irritation. Symptoms following overexposure may include the following: Irritation.

Itchiness. Redness.

Eye contact Causes eye irritation. Symptoms following overexposure may include the following: Irritation.

Redness. Profuse watering of the eyes.

Acute and chronic health

hazards

No specific long-term effects known.

Route of exposure Inhalation Ingestion Dermal

Toxicological information on ingredients.

1-pentanol

Acute toxicity - oral

Acute toxicity oral (LD₅₀ 3,645.0

mg/kg)

Species Rat

Notes (oral LD₅₀) REACH dossier information. Based on available data the classification criteria are

not met.

ATE oral (mg/kg) 3,645.0

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ 2,292.0

mg/kg)

Species Rabbit

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Notes (dermal LD50) REACH dossier information. Based on available data the classification criteria are

not met.

Acute toxicity - inhalation

Notes (inhalation LC₅₀) Converted acute toxicity point estimate (cATpE) Harmful if inhaled.

ATE inhalation (vapours

mg/l)

11.0

Skin corrosion/irritation

Animal data Dose: 0.5 mL, 15 minutes, Rabbit Erythema/eschar score: Well defined erythema

(2). Oedema score: No oedema (0). REACH dossier information. Irritating.

Serious eye damage/irritation

Serious eye

Causes eye irritation.

damage/irritation

Skin sensitisation

Skin sensitisation Guinea pig maximization test (GPMT) - Guinea pig: Not sensitising. REACH dossier

information. Based on available data the classification criteria are not met.

Germ cell mutagenicity

Genotoxicity - in vitro Gene mutation: Negative. REACH dossier information. Based on available data the

classification criteria are not met.

Genotoxicity - in vivo Chromosome aberration: Negative. REACH dossier information. Read across data.

Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure

STOT - single exposure STOT SE 3 - H335 May cause respiratory irritation.

hydrochloric acid

Skin corrosion/irritation

Animal data Dose: 0.5 ml (37%), 1 / 4 hours, Rabbit REACH dossier information. Skin Corr. 1B -

H314 Causes severe skin burns and eye damage.

Serious eye damage/irritation

Serious eye Dose: 0.1 ml (10%), 1 second, Rabbit REACH dossier information. Eye Dam. 1 -

damage/irritation H318 Causes serious eye damage.

Skin sensitisation

Skin sensitisation Guinea pig maximization test (GPMT) - Guinea pig: Not sensitising. REACH dossier

information.

Carcinogenicity

Carcinogenicity NOAEL < 10 ppm, Inhalation, Rat REACH dossier information. No evidence of

carcinogenicity in animal studies.

IARC Group 3 Not classifiable as to its carcinogenicity to humans.

Specific target organ toxicity - single exposure

STOT - single exposure STOT SE 3 - H335 May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure NOAEL 20 ppm, Inhalation, Rat REACH dossier information.

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SECTION 12: Ecological Information

12.1. Toxicity

Toxicity Based on available data the classification criteria are not met. However, large or frequent

spills may have hazardous effects on the environment.

Ecological information on ingredients.

1-pentanol

Acute aquatic toxicity

Acute toxicity - fish LC₀, 96 hours: 400 mg/l, Brachydanio rerio (Zebra Fish)

 LC_{50} , 96 hours: 530 mg/l, Brachydanio rerio (Zebra Fish) LC_{100} , 96 hours: 600 mg/l, Brachydanio rerio (Zebra Fish)

REACH dossier information.

Acute toxicity - aquatic

invertebrates

EC₀, 48 hours: 250 mg/l, Daphnia magna EC₅₀, 48 hours: 341.21 mg/l, Daphnia magna EC₁₀₀, 48 hours: 500 mg/l, Daphnia magna

REACH dossier information.

Acute toxicity - aquatic

plants

EC₅, 8 days: 260 mg/l, Scenedesmus quadricauda

REACH dossier information.

Acute toxicity -EC10, 180 minutes: 370 mg/l, Activated sludgemicroorganismsEC20, 180 minutes: 810 mg/l, Activated sludge

EC₅₀, 180 minutes: > 1000 mg/l, Activated sludge

REACH dossier information.

Read across data.

hydrochloric acid

Acute aquatic toxicity

Acute toxicity - fish LC₅₀, 96 hours: pH 3.25 - 3.5 , Lepomis macrochirus (Bluegill)

REACH dossier information.

Acute toxicity - aquatic

invertebrates

NOEC, 48 hours: pH 5.5, Daphnia magna EC₅₀, 48 hours: pH 4.92, Daphnia magna

REACH dossier information.

Acute toxicity - aquatic

 $EC_{50},\,72$ hours: pH 4.7 , Chlorella vulgaris

plants

REACH dossier information.

Acute toxicity -

EC₅₀, 3 hours: pH 5 - 5.5, Activated sludge

microorganisms REACH dossier information.

12.2. Persistence and degradability

Persistence and degradability There are no data on the degradability of this product. Volatile substances are degraded in the

atmosphere within a few days.

Ecological information on ingredients.

1-pentanol

Biodegradation Water - Degradation (100%): 18 days

Read across data.

REACH dossier information.

The substance is readily biodegradable.

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12.3. Bioaccumulative potential

Bioaccumulative potential Not determined.

Partition coefficient Not determined.

12.4. Mobility in soil

Mobility The product contains organic solvents which will evaporate easily from all surfaces. The

product contains substances which are water-soluble and may spread in water systems.

Ecological information on ingredients.

1-pentanol

Adsorption/desorption - Koc: 6.33 @ 25°C - log Koc: 0.8 @ 25°C QSAR model REACH dossier

coefficient information.

Henry's law constant 1.34 Pa m³/mol @ 25°C QSAR model REACH dossier information.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB

assessment

This product does not contain any substances classified as PBT or vPvB.

12.6. Other adverse effects

Other adverse effects Not relevant.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information Reuse or recycle products wherever possible. Dispose of surplus products and those that

cannot be recycled via a licensed waste disposal contractor. Residues and empty containers should be taken care of as hazardous waste according to local and national provisions.

Disposal methods Absorb in vermiculite, dry sand or earth and place into containers. Place waste in labelled,

sealed containers. Dispose of contents/container in accordance with national regulations.

SECTION 14: Transport information

14.1. UN number

UN No. (ADR/RID) 1993

UN No. (IMDG) 1993

UN No. (ICAO) 1993

UN No. (ADN) 1993

14.2. UN proper shipping name

Proper shipping name

FLAMMABLE LIQUID, N.O.S. (1-pentanol)

(ADR/RID)

Proper shipping name (IMDG) FLAMMABLE LIQUID, N.O.S. (1-pentanol)

Proper shipping name (ICAO) FLAMMABLE LIQUID, N.O.S. (1-pentanol)

Proper shipping name (ADN) FLAMMABLE LIQUID, N.O.S. (1-pentanol)

14.3. Transport hazard class(es)

ADR/RID class 3

ADR/RID classification code F1

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ADR/RID label 3
IMDG class 3
ICAO class/division 3
ADN class 3

Transport labels



14.4. Packing group

ADR/RID packing group III

IMDG packing group III

ADN packing group III

ICAO packing group III

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant

No.

14.6. Special precautions for user

EmS F-E, S-E

ADR transport category 3

Emergency Action Code •3Y

Hazard Identification Number

(ADR/RID)

Tunnel restriction code (D/E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

30

Transport in bulk according to Not relevant.

Annex II of MARPOL 73/78

and the IBC Code

SECTION 15: Regulatory information

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

National regulations EH40/2005 Workplace exposure limits.

EU legislation Council Directive of 20 May 1975 on the approximation of the laws of the Member States

relating to aerosol dispensers (75/324/EEC).

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 (as

amended).

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) (as amended).

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

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SECTION 16: Other information

Abbreviations and acronyms used in the safety data sheet

ADR: European Agreement concerning the International Carriage of Dangerous Goods by

Road.

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

Inland Waterways.

ATE: Acute Toxicity Estimate.
BCF: Bioconcentration Factor.
DNEL: Derived No Effect Level.

EC₅₀: 50% of maximal Effective Concentration. IATA: International Air Transport Association.

ICAO-TI: Technical Instructions for the Safe Transport of Dangerous Goods by Air.

IMDG: International Maritime Dangerous Goods. LC₅o: Lethal Concentration to 50 % of a test population.

LD₅o: Lethal Dose to 50% of a test population (Median Lethal Dose).

NOAEL: No Observed Adverse Effect Level. NOEC: No Observed Effect Concentration. PNEC: Predicted No Effect Concentration.

RID: European Agreement concerning the International Carriage of Dangerous Goods by

Rail.

Classification abbreviations

and acronyms

Flam. Liq. = Flammable liquid Eye Irrit. = Eye irritation

STOT SE = Specific target organ toxicity-single exposure

Acute Tox. = Acute toxicity Skin Irrit. = Skin irritation

Classification procedures according to Regulation (EC)

1272/2008

Flam. Liq. 3 - H226: Expert judgement. Acute Tox. 4 - H332, Skin Irrit. 2 - H315, Eye Irrit. 2 -

H319, STOT SE 3 - H335: Calculation method.

Revision comments Classification according to EC 1272/2008 (CLP).

Revision date 01/10/2017

Revision 6

Supersedes date 27/09/2016

SDS number 802

Hazard statements in full H226 Flammable liquid and vapour.

H314 Causes severe skin burns and eye damage.

H315 Causes skin irritation.

H318 Causes serious eye damage. H319 Causes serious eye irritation.

H332 Harmful if inhaled.

H335 May cause respiratory irritation.

The information in this safety data sheet was obtained from current and reliable sources. However, the data is provided without warranty, expressed or implied, regarding its correctness or accuracy. Since the conditions for use, handling, storage and disposal of this product are beyond Pro-Lab Diagnostics control, it is the users responsibility to perform thorough testing of this product when used in combination with any other product. It is suggested that users familiarise themselves with this safety data sheet before handling the product.