

DERIVATIZATION REAGENT, PH NBS AMINO ACIDS AND ACYLCARNITINES FROM DRIED BLOOD SPOTS SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

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

Product name	DERIVATIZATION REAGENT, PH NBS AMINO ACIDS AND ACYLCARNITINES FROM DRIED BLOOD SPOTS
<i>Order. No(s).</i>	-
Identified uses	Product for diagnostic use
company/undertaking Identification	Paya Hamsan Technologies, Chamran Building, Azad University, Daneshgah Blvd., Arak, Iran Tel-Fax: +98 86 33670011 Email: info@phtech.ir

2. Hazards identification

Classification of the substance or mixture	according to Regulation (EC) No 1272/2008 (CLP) flammable liquids (Category 3), H226 acute toxicity - oral (Category 4), H302 skin corrosion/irritation (Category 2), H315 serious eye damage/eye irritation (Category 1), H318 specific target organ toxicity - single exposure respiratory tract irritation (Category 3), H335 specific target organ toxicity - single exposure narcotic effects, drowsiness (Category 3), H336
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Label Elements	Labelling according to Regulation (EC) No 1272/2008 (CLP)
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Pictograms



Signal word

DANGER!

Hazard statements



H226 Flammable liquid and vapor.
H302 Harmful if swallowed.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.

Precautionary statements	P210 Keep away from heat. No smoking. P261 Avoid breathing mist/vapors. P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P370+P378 In case of fire: Use sand, carbon dioxide or powder extinguisher to extinguish. P403+P233 Store in a well-ventilated place. Keep container tightly closed. P403+P235 Store in a well-ventilated place. Keep cool. P501 Dispose of contents/container to industrial combustion plant.
Hazardous ingredients for labelling	butan-1-ol, hydrochloric acid
Other hazards	No data available.

3. Composition/information on ingredients

Substance's synonyms butan-1-ol, hydrochloric acid

Formula C₄H₉OH, HCl
CAS No. 71-36-3, 7647-01-0
EC No. 200-751-6, 231-595-7

Name of substance	Identifier	Wt%	Classification acc. to GHS	Pictograms
butan-1-ol	CAS No 71-36-3 EC No 200-751-6	75 – < 90	Flam. Liq. 3 / H226 Acute Tox. 4 / H302 Skin Irrit. 2 / H315 Eye Dam. 1 / H318 STOT SE 3 / H335 STOT SE 3 / H336	
hydrochloric acid	CAS No 7647-01-0 EC No 231-595-7	1 – < 5	Press. Gas C / H280 Skin Corr. 1B / H314 Eye Dam. 1 / H318 STOT SE 3 / H335	

Name of substance	Specific Conc. Limits	M-Factors	ATE	Exposure route
butan-1-ol	-	-	500 mg/kg	oral
hydrochloric acid	Skin Corr. 1B; H314: C ≥ 25 % Skin Irrit. 2; H315: 10 % ≤ C < 25 % Eye Dam. 1; H318: C ≥ 25 % Eye Irrit. 2; H319: 10 % ≤ C < 25 % STOT SE 3; H335: C ≥ 10 %			

4. First aid measures

Description of first aid measures

<i>General</i>	Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.
<i>Inhalation</i>	If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician. Provide fresh air.
<i>Skin contact</i>	Wash with plenty of soap and water.
<i>Eye contact</i>	Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.
<i>Ingestion</i>	Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting.
Most important symptoms and effects, both acute and delayed	Narcotic effects.
Indication of any immediate medical attention and special treatment needed	None

5. Firefighting measures

Extinguishing media	<i>Suitable extinguishing media:</i> Water spray, BC-powder, Carbon dioxide (CO ₂) <i>Unsuitable extinguishing media:</i> Water jet
Special hazards arising from the substance	In case of insufficient ventilation and/or in use, may form flammable/explosive vapor-air mixture. Solvent vapors are heavier than air and may spread along floors. Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures.
<i>Hazardous combustion products</i>	Carbon monoxide (CO), Carbon dioxide (CO ₂)
Advice for firefighters	In case of fire and/or explosion do not breathe fumes. Coordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses.

Collect contaminated firefighting water separately.
Fight fire with normal precautions from a reasonable distance.

6. Accidental release measures

Personal precautions	<p><i>For non-emergency personnel:</i> Remove persons to safety.</p> <p><i>For emergency responders:</i> Wear breathing apparatus if exposed to vapors/dust/spray/gases.</p>
Environmental precautions	Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.
Methods for containment and cleaning up	<p><i>Advice on how to contain a spill:</i> Covering of drains</p> <p><i>Advice on how to clean up a spill:</i> Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage: sawdust, kieselguhr (diatomite), sand, universal binder</p> <p><i>Appropriate containment techniques:</i> Use of adsorbent materials.</p> <p><i>Other information relating to spills and releases:</i> Place in appropriate containers for disposal. Ventilate affected area.</p>
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.

7. Handling and storage

Handling	<p><i>Recommendations</i></p> <ul style="list-style-type: none"> - Measures to prevent fire as well as aerosol and dust generation: Use local and general ventilation. Avoidance of ignition sources. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharge. Use only in well-ventilated areas. Due to danger of explosion, prevent leakage of vapors into cellars, flues and ditches. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. - Specific notes/details: Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures. Vapors are heavier than air, spread along floors and form explosive mixtures with air. Vapors may form explosive mixtures with air. <p><i>Advice on general occupational hygiene</i></p> <p>Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or</p>
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drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feeding stuffs.

Storage

Managing of associated risks

- Explosive atmospheres: Keep container tightly closed and in a well-ventilated place. Use local and general ventilation. Keep cool. Protect from sunlight.
- Flammability hazards: Keep away from sources of ignition - No smoking. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Protect from sunlight.

Control of effects

- Protect from sunlight. Protect from moisture. Protect against external exposure, such as Frost
- Ventilation requirements: Use local and general ventilation. Ground/bond container and receiving equipment.
 - Packaging compatibilities: Only packaging which are approved (e.g. acc. to ADR) may be used.

Specific end use(s)

See section 16 for a general overview.

8. Exposure controls/personal protection

Control parameters

Occupational exposure limit values (Workplace Exposure Limits)											
Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m ³]	STEL [ppm]	STEL [mg/m ³]	Ceiling-C [ppm]	Ceiling-C [mg/m ³]	Notation	Source
EU	hydrogen chloride	7647-01-0	IOELV	5	8	10	15				2000/39/EC
GB	butan-1-ol	71-36-3	WEL			50	154				EH40/2005
GB	hydrogen chloride	7647-01-0	WEL	1	2	5	8			ga	EH40/2005

Relevant DNELs of components of the mixture							
Name of substance	CAS No	Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time	
butan-1-ol	71-36-3	DNEL	310 mg/m ³	human, inhalatory	worker (industry)	chronic - local effects	
hydrochloric acid	7647-01-0	DNEL	15 mg/m ³	human, inhalatory	worker (industry)	acute - local effects	
hydrochloric acid	7647-01-0	DNEL	8 mg/m ³	human, inhalatory	worker (industry)	chronic - local effects	

Relevant PNECs of components of the mixture						
Name of substance	CAS No	End-point	Threshold level	Protection goal, route of exposure	Used in	Exposure time
butan-1-ol	71-36-3	PNEC	2,476 mg/l	microorganisms	sewage treatment plant (STP)	short-term (single instance)
butan-1-ol	71-36-3	PNEC	0.178 mg/ kg	benthic organ- isms	sediments	short-term (single instance)
butan-1-ol	71-36-3	PNEC	0.0178 mg/ kg	pelagic organ- isms	sediments	short-term (single instance)
butan-1-ol	71-36-3	PNEC	0.082 mg/l	aquatic organ- isms	freshwater	short-term (single instance)
butan-1-ol	71-36-3	PNEC	0.0082 mg/l	aquatic organ- isms	marine water	short-term (single instance)
butan-1-ol	71-36-3	PNEC	2,476 mg/l	aquatic organ- isms	sewage treatment plant (STP)	short-term (single instance)
butan-1-ol	71-36-3	PNEC	0.178 mg/ kg	aquatic organ- isms	freshwater sediment	short-term (single instance)
butan-1-ol	71-36-3	PNEC	0.0178 mg/ kg	aquatic organ- isms	marine sediment	short-term (single instance)
butan-1-ol	71-36-3	PNEC	2.25 mg/l	aquatic organ- isms	water	intermittent re-lease
butan-1-ol	71-36-3	PNEC	0.015 mg/ kg	terrestrial organ- isms	soil	short-term (single instance)
hydrochloric acid	7647-01-0	PNEC	36 µg/l	aquatic organ- isms	freshwater	short-term (single instance)
hydrochloric acid	7647-01-0	PNEC	36 µg/l	aquatic organ- isms	marine water	short-term (single instance)
hydrochloric acid	7647-01-0	PNEC	36 µg/l	aquatic organ- isms	sewage treatment plant (STP)	short-term (single instance)
hydrochloric acid	7647-01-0	PNEC	45 µg/l	aquatic organ- isms	water	intermittent re-lease

Exposure controls

Appropriate engineering controls: General ventilation.

Individual protection measures (personal protective equipment) Eye/face protection: Wear eye/face protection.

Skin protection

- Hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. In the case of wanting to use the gloves again, clean them before taking off and air them well. 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.

- Other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Environmental exposure controls

Use appropriate container to avoid environmental

contamination. Keep away from drains, surface and ground water.

9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	information on this property is not available
Melting/freezing point	not determined
Boiling point, boiling range	99.97 °C at 1 atm (calculated value, referring to a component of the mixture)
Flammability	flammable liquid in accordance with GHS criteria
Lower, upper explosion limit	1.4 vol% - 11.3 vol%
Flash point	35 °C at 1,013 hPa (calculated value, referring to a component of the mixture)
Auto-ignition temperature	355 °C
Decomposition temperature	not relevant
pH (value)	not determined
Kinematic viscosity	not determined
Water solubility	not determined
Partition coefficient n-octanol/water (log value)	this information is not available
Vapor pressure	33,900 Torr at 25 °C (calculated value, referring to a component of the mixture)
Density	0.8413 g/ml (calculated value)
Particle characteristics	no data available
Information with regard to physical hazard classes	there is no additional information
Solvent content	95.99 %
Solid content	0 %
Temperature class (EU, acc. to ATEX)	T2 (maximum permissible surface temperature on the equipment: 300°C)

10. Stability and reactivity

Reactivity	Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials". The mixture contains re- active substance(s). Risk of ignition. If heated: Risk of ignition
Chemical stability	See below "Conditions to avoid".
Possibility of hazardous reactions	No known hazardous reactions.
Conditions to avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. <i>Hints to prevent fire or explosion</i> Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge.
Incompatible materials	Oxidizers.
Hazardous decomposition products	Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

11. Toxicological information

Information on hazard classes	Test data are not available for the complete mixture. <i>Classification procedure</i> The method for classification of the mixture is based on ingredients of the mixture (additivity formula).
<i>Classification according to GHS (1272/2008/EC, CLP)</i>	<i>Acute toxicity:</i> Harmful if swallowed. GHS of the United Nations, annex 4. <i>Acute toxicity estimate (ATE):</i> Oral: 571.6 mg/kg

Acute toxicity estimate (ATE) of components of the mixture			
Name of substance	CAS No	Exposure route	ATE
butan-1-ol	71-36-3	oral	500 mg/kg

<i>Skin corrosion/irritation</i>	Causes skin irritation.
<i>Serious eye damage/eye irritation</i>	Causes serious eye damage.
<i>Respiratory or skin sensitization</i>	Shall not be classified as a respiratory or skin sensitizer.
<i>Germ cell mutagenicity</i>	Shall not be classified as germ cell mutagenic.

<i>Carcinogenicity</i>	Shall not be classified as carcinogenic.
<i>Reproductive toxicity</i>	Shall not be classified as a reproductive toxicant.
<i>Specific target organ toxicity (single exposure)</i>	May cause respiratory irritation. May cause drowsiness or dizziness.
<i>Specific target organ toxicity (repeated exposure)</i>	Shall not be classified as a specific target organ toxicant (repeated exposure).
<i>Aspiration hazard</i>	Shall not be classified as presenting an aspiration hazard.
Information on other hazards	There is no additional information.

12. Ecological information

Toxicity	Shall not be classified as hazardous to the aquatic environment.
Persistence and degradability	Data are not available.
Bio accumulative potential	Data are not available.
Mobility in soil	No data available.
Results of PBT and vPvB assessment	No data available.
Endocrine disrupting properties	No data available.
Other adverse effects	No data available.

13. Disposal considerations

Waste treatment methods	<p><i>Waste treatment-relevant information</i> Solvent reclamation/regeneration.</p> <p><i>Sewage disposal-relevant information</i> Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.</p> <p><i>Waste treatment of containers/packaging</i> It is a dangerous waste; only packaging which are approved (e.g. acc. to ADR) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.</p>
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Relevant provisions relating to waste


List of wastes: 16 05 06*: Laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals



Remarks

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

14. Transport information

UN number	ADR/RID/ADN	UN 1993
	IMDG-Code	UN 1993
	ICAO-TI	UN 1993
UN proper shipping name	ADR/RID/AND	FLAMMABLE LIQUID, N.O.S.
	IMDG-Code	FLAMMABLE LIQUID, N.O.S.
	ICAO-TI	Flammable liquid, n.o.s.
	Tech. name	butan-1-ol, hydrochloric acid
Transport hazard class(s)	ADR/RID/ADN	3
	IMDG-Code	3
	ICAO-TI	3
Packaging group	ADR/RID/AND	III
	IMDG-Code	III
	ICAO-TI	III
Environmental hazards	none non-environmentally hazardous acc. to the dangerous goods regulations	
Special precautions for users	Provisions for dangerous goods (ADR) should be complied within the premises.	
Maritime transport in bulk according to IMO instruments	The cargo is not intended to be carried in bulk.	

Acute toxicity estimate (ATE) of components of the mixture - Additional information	
Particulars in the transport document	UN1993, FLAMMABLE LIQUID, N.O.S., (contains: butan-1-ol, hydrochloric acid), 3, III, (D/E)
Classification code	F1
Danger label(s)	 3
Special provisions (SP)	274, 601
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
Transport category (TC)	3
Tunnel restriction code (TRC)	D/E
Hazard identification No	30
Emergency Action Code	3Y
International Maritime Dangerous Goods Code (IMDG) - Additional information	
Particulars in the shipper's declaration	UN1993, FLAMMABLE LIQUID, N.O.S., (contains: butan-1-ol, hydrochloric acid), 3, III, 35°C c.c.

Marine pollutant	-
Danger label(s)	 3
Special provisions (SP)	223, 274, 955
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
EmS	F-E, S-E
Stowage category	A
International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information	
Particulars in the shipper's declaration	UN1993, Flammable liquid, n.o.s., (contains: butan-1-ol, hydrochloric acid), 3, III
Danger label(s)	 3
Special provisions (SP)	A3
Excepted quantities (EQ)	E1
Limited quantities (LQ)	10 L
ERG Code	3 L

15. Regulatory information

Safety, health and environmental regulations/legislation

Deco-Paint Directive (2004/42/EC)
 VOC content: 87.47 %
Directive on industrial emissions (VOCs, 2010/75/EU)
 VOC content: 87.47 %

Chemical Safety Assessment

Chemical safety assessments for substances in this mixture were not carried out.

16. Other information

Abbreviations and acronyms	
Abbr.	Descriptions of used abbreviations
2006/15/EC	Commission Directive establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC
Acute Tox.	Acute toxicity
AND	European Agreement concerning the International Carriage of Dangerous Goods by In-land Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ADR/RID/ADN	European Agreements concerning the International Carriage of Dangerous Goods by Road/Rail/Inland Waterways (ADR/RID/ADN)
ATE	Acute Toxicity Estimate
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
Ceiling-C	Ceiling value
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EH40/2005	EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances

EmS	Emergency Schedule
ERG Code	Emergency Response Guidance - Code
Flam. Liq.	Flammable liquid
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code
IMDG-Code	International Maritime Dangerous Goods Code
index No	The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
IOELV	Indicative occupational exposure limit value
NLP	No-Longer Polymer
PBT	Persistent, Bio accumulative and Toxic
PNEC	Predicted No-Effect Concentration
Ppm	Parts per million
REACH	Registration, Evaluation, Authorization and Restriction of Chemicals
RID	Regulations concerning the international carriage of Dangerous goods by Rail
STEL	Short-term exposure limit
STOT SE	Specific target organ toxicity - single exposure
TWA	Time-weighted average
VOC	Volatile Organic Compounds
VPvB	Very Persistent and very Bio accumulative
WEL	Workplace exposure limit

Abbreviations and acronyms	
Code	Text
H225	Highly flammable liquid and vapour.
H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H331	Toxic if inhaled.
H370	Causes damage to organs.

Disclaimer

The information in this document is based on the best of our knowledge and shall be used only as a guide. The information given is designed for safe use, handling, storage, transportation and disposal. It does not represent any guarantee of the quality of the product.