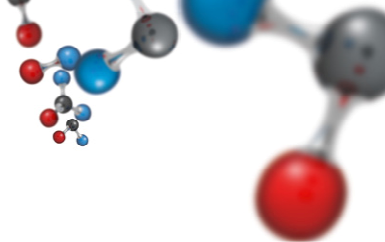


SAFETY DATA SHEET

N-ETHYLCYCLOHEXYLAMINE



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

1.1 Product identifier

Chemical name: **N-ethylcyclohexylamine**
Registration no.: **01-2119949285-29-0000**
Index number: **–**
EC (EINECS) number: **226-733-8**
CAS number: **5459-93-8**
Other names of the substance: **Cyclohexylamine, N-ethyl**

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

Application of the substance: **N-ethylcyclohexylamine is used for production of a herbicide and in rubber industry (overview of exposure scenarios in Annex no. 1).**

Uses advised against: **Other than industrial use.**

1.3 Details of the supplier of the safety data sheet

Name: **BorsodChem MCHZ, s.r.o.**
Name or business name: **BorsodChem MCHZ, s.r.o.**
Place of business or headquarters: **Chemická 2039/1, 709 00 Ostrava – Mariánské Hory, Czech Republic**
Identification number: **26019388**
Telephone: **+420 596 641 111**
Fax: **+420 596 642 040**
E-mail of the technically competent person responsible for the safety data sheet: **zsvobodova@bc-mchz.cz**

1.4. Emergency telephone number

Company telephone number: **+420 596 643 221 or 596 620 794 non-stop**
CHEMTREC, international call: 001-703-527-3887 company code CCN 206 072
Toxicological information centre, Na Bojišti 1, 120 00 Prague 2
Non-stop telephone: +420 224 919 293 or 224 915 402, fax +420 224 914 570

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

According to Regulation (EC) no. 1272/2008:

Flam. Liq. 3; H226 Flammable liquid and vapour.
Acute Tox. 4; H302 Harmful if swallowed.
Acute Tox. 3; H311 Toxic in contact with skin.
Skin Corr. 1B; H314 Causes severe skin burns and eye damage.
Acute Tox. 4; H332 Harmful if inhaled.
Aquatic Chronic 3; H412 Harmful to aquatic life with long lasting effects.

The most important human health adverse effects during use of the substance or preparation: **Caustic. Causes burns. Toxic in contact with skin. Harmful if swallowed or inhaled.**

The most important adverse effects to environment during use of the substance/preparation: **Category 3 flammable liquid. Harmful to aquatic life with long lasting effects.**

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2.2 Label elements

According to Regulation (EC) no. 1272/2008:

Symbols:



Signal word: DANGER

H phrases:

H226 Flammable liquid and vapour.

H302+H332 Harmful if swallowed or inhaled.

H311 Toxic in contact with skin.

H314 Causes severe skin burns and eye damage.

H412 Harmful to aquatic life with long lasting effects.

P phrases:

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

P273 Avoid release to the environment.

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].

2.3. Other hazards

The substance is not identified as persistent, bioaccumulative and toxic (PBT) or very persistent, very bioaccumulative (vPvB) under Annex XIII of Regulation 1907/2006/EC.

SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical name	N-ethylcyclohexylamine
Index number	–
EC no.	226-733-8
CAS No.	5459-93-8
Substance content (% w.)	99,00
Synonyms	Cyclohexylamine, N-ethyl

Impurities: < 1 % w., CMR impurities < 0.1 % w.

3.2. Mixtures

The product is a chemical substance.

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SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation: Quickly and considering proper safety transfer the victim to fresh air, do not let the victim walk! Depending on situation, it is recommended to rinse oral cavity and, if necessary, nose with water. If the victim's clothing is contaminated, change the victim and protect him/her against cold. Ensure assisted breathing. Call a physician!

Skin: Remove contaminated clothing immediately; before washing or during washing, remove any rings, watches, bracelets that are in places of contact of the substance with skin. Rinse affected areas with stream of lukewarm water, if possible, for 10 to 30 minutes; do not use a brush, soap or neutralising agents! Cover burned areas of skin with a sterile dressing, do not use any ointments or other medical and pharmaceutical products. Cover the victim to protect him against cold. Depending on situation, call the rescue service or ensure medical attention.

Eyes: Rinse eyes immediately under running water, open eyelids (even by force); if the victim wears contact lenses, remove them immediately. Do never neutralise! Rinse for 10 to 30 minutes from the inner to the outer ocular angle to prevent running of water in the other eye. Ensure as soon as possible medical treatment by an expert, if possible; the victim must get medical attention even in case of small injury.

Ingestion: **DO NOT INDUCE VOMITING** - higher risk of harm to digestive tract!!! Risk of perforation of oesophagus and stomach!

RINSE MOUTH IMMEDIATELY WITH WATER AND GIVE TO DRINK 2-5 dl of cold water to attenuate thermal effect of the caustic (due to almost immediate effect to mucous membranes, it is suitable to offer immediately tap water than lose time by looking for chilled liquid - each minute of delay causes irreversible harm to mucous membranes! Soda water or mineral waters are not recommended, as they may release gaseous carbon dioxide. It is not recommended to consume a lot of liquid, as it could induce vomiting and possible aspiration of the caustic in lungs). Do not force the victim to drink, especially if he/she feels pain in mouth or throat. In this case, make the victim rinse his/her mouth. DO NOT ADMINISTER ACTIVATED CARBON! (blackening will make examination of the mucous membranes of more difficult and activated charcoal has not positive effect in case of acids and lyes). Do not give anything to eat. Do not administer anything by mouth if the victim is unconscious or has convulsions. Call a physician as quickly as possible!

4.2 Most important symptoms and effects, both acute and delayed

Vapours severely irritate eyes, airways, lungs and skin and cause burning. Possibility of pulmonary oedema, attention, it may occur up to 2 days later! Medical attention is necessary in case of inhalation of vapours. Contact with the liquid causes severe burns to eyes and skin. The liquid is absorbed by skin.

4.3 Indication of any immediate medical attention and special treatment needed

Symptomatic treatment. In case of contact with eyes, immediately rinse carefully with water. In case of irritating cough, administer Codeine. In case of contact with airways, administer 5 doses of a dexamethasone aerosol each 10 minutes (Auxison dos. aerosol). In case of risk of pulmonary oedema take into account a delay of up to 2 days! Prophylactic treatment, even in case of missing symptoms, 5 doses each 10 minutes, at least 3 times until symptoms disappear, at least 1 pack. Possibly Hydrocortisone or Prednisolone intravenously, 250 mg immediately, up to 1000 mg the first day, less the 2nd and the 3rd day. Strict rest in bed, infection prophylaxis. Oxygen as needed. Human albumin 20 %. In case of strong eyelid spasms, several drops of local anaesthetic (Xylocain).

SECTION 5: Firefighting measures

5.1 Fire extinguishing media

Suitable extinguishing media: **sprinkled water, powder, foam, CO₂**

Unsuitable extinguishing media: -

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- 5.2 Special hazards arising from the substance or mixture: **Flammable liquid. Do not approach with open fire - risk of ignition. Possibility of release of carbon monoxide and nitrogen oxides. Formation of toxic and explosive mixtures.**
- 5.3 Advice for firefighters: **Self-contained breathing apparatus, special protective clothing! (Hazchem. Code: 3W)**

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures: **Protection of air ways, protection of non-protected body parts, protection of eyes. Ensure ventilation.**
- 6.2 Environmental precautions: **Prevent contamination of soil and water in the vicinity of accident.**
- 6.3 Methods and material for containment and cleaning up: **Cover with an absorbent material (Vapex, Vermikulit) and sweep up into a waste container labelled with Hazardous waste identification sheet. For methods of disposal see Section 13.**
- 6.4 Reference to other sections: **Section 10, Section 13.**

SECTION 7: Handling and storage

- 7.1 Precautions for safe handling: **Delivered in rail or truck tanks or in steel barrels or IBC containers designed EX. Recommended transport temperature is 50 °C. Ventilation provided during emptying.**
- 7.2 Conditions for safe storage, including any incompatibilities: **Store in easily ventilated rooms in original packages. The highest allowable storing temperature is 35 °C. Do not store together with strong oxidising agents and concentrated strong acids. Do not store together with foodstuffs.**
- 7.3 Specific end use(s): **Use only in industry under strictly controlled conditions.**

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Czech Republic: not established

EC countries (2000/39/EC): not established

8.1.1 DNEL (Derived No Effect Level) for occupational exposure

Not established.

8.2 Exposure controls

Use in a closed area, ensure exhaustion of vapours, use personal protective equipment.

Engineering measures: **Ensure ventilation.**

Respiratory protection: **if necessary, protective mask or half mask with filter (EN 140) against organic vapours - type A/P2**

Hand protection: **protective gloves (EN 374)**

Eye protection: **protective goggles or face shield (e.g. EN 166)**

Skin protection: **protective clothing**

Other data: **Do not eat, drink and smoke during work. Wash your hands with hot water and soap after work, apply suitable reparative preparations.**

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Environmental exposure controls:

Use in a closed circuit, waste gases burnt in a fire crack or cleaned by adsorption (activated carbon), wastewater treated biologically.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	colourless liquid
Odour (smell):	amonia-like
Odour threshold:	not established
pH:	not established
Melting point/freezing point (°C):	-45
Initial boiling point (°C)	161
Flash point (°C):	45.1
Evaporation rate:	not established
Flammability (solids, gas):	not established
Upper/lower explosive limits (% vol.):	7.6/1.2
Vapour pressure (Pa at 20 °C):	202
Vapour pressure (Pa at 50 °C):	1501
Vapour pressure (air = 1):	4.39
Relative density (at 20 °C):	0.8545
Solubility at 20 °C (% w.) – in water:	2.44
- in fats (including oil specification):	not established
Partition coefficient: n-octanol/water (at 25 °C and pH 7.75):	1.027
Auto-ignition temperature (°C):	243
Decomposition temperature:	not established
Viscosity (mPa.s at 20 °C):	1.39
Explosive properties:	none
Oxidising properties:	none

9.3 Other information

Not available.

SECTION 10: Stability and reactivity

10.1 Reactivity : **Possibility of reaction at temperatures higher than 100 °C.**

10.2 Chemical stability: **Stable under normal conditions.**

10.3 Possibility of hazardous reactions: **On warm days and in case of heating up, the substance forms corrosive and explosive mixtures heavier than air. When ignited, fire spreads quickly in long distances.**

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- 10.4 Conditions to avoid: **Thermal decomposition occurs at higher temperatures. Possibility of ignition in contact with hot surfaces, sparks or open fire.**
- 10.5 Incompatible materials: **Reacts vigorously with strong oxidising agents and strong acids. Dangerous reactions with acrolein, calcium hypochlorite and sodium hypochlorite, maleic anhydride, nitrosyl perchlorate and tri-isobutyl aluminium. Avoid contact with food.**
- 10.6 Hazardous decomposition products: **Combustion produces toxic carbon monoxide and nitrogen oxides.**

SECTION 11: Toxicological information

Information on toxicological effects

CLP evaluation

11.1. Acute toxicity:

- LD₅₀ (oral, rat) = **590 mg.kg⁻¹; category 4**
- LD₅₀ (derm., rabbit) = **750 µl.kg⁻¹ (641 mg.kg⁻¹); category 3**
- LD_{L0} (inh., rat) = **500 ppm/ 4 h; category 4**

11.2 Irritation: **skin causticity 1B**

Dermal irritation (rabbit): **5 mg/24 h SEV**

Eye irritation (rabbit): **250 µg/24h SEV**

Experience in humans: **Causes burns, vapours irritate eyes and airways.**

11.3 Sensitization

Skin sensitisation (guinea pig): **Not being established, causes skin burns**

11.4. Mutagenicity (Ames test): **negative**

11.5. Carcinogenicity (rat, mouse): **not established**

11.6. Reproductive toxicity (rat): **not established**

11.7. Specific target organs toxicity – single exposure: **not established**

11.8. Specific target organs toxicity – repeated exposure: **not established**

11.9. Aspiration hazard: **not established**

SECTION 12: Ecological information

12.1 Toxicity

12.1.1. Aquatic toxicity

Acute: highly toxic for the invertebrated

Daphnia magna: **EC₅₀ (48 h) = 66 mg/l**

Effective concentration for algae

Desmodesmus subspicatus: **E_rC₅₀ (72 h) = 53.5 mg/l**

12.1.2. Sediment toxicity: **not established**

12.1.3 PNEC (Predicated No Effect Concentration): **not established**

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12.2. Persistence and degradability

Degradability test: according to OECD 301D

Evaluation: **degradability only 0.6 % in 28 days; not easily degradable in aquatic environment**

Resulting classification: **Harmful to aquatic life with long lasting effects.**

12.3. Bioaccumulative potential: **The product is not a high bioaccumulation potential substance (log K_{ow} < 3).**

12.4. Mobility in soil: **May enter the environment from waste water.**

Stability: **poorly soluble in water**

Adsorption: **not established**

12.5. Results of PBT and vPvB assessment: **not included**

12.6. Other adverse effects: **not specified**

SECTION 13: Disposal considerations

13.1 Waste treatment methods: **Incineration in a hazardous waste incineration plant in accordance with Act on Wastes under the catalogue numbers 160305, 160508 or 150202.**

Disposal of contaminated packaging: **Rinse with water, dispose the trapped waste water and packaging in accordance with valid regulations.**

SECTION 14: TRANSPORT INFORMATION

Land transport: (ADR/RID)

Marine transport (IMDG)

Air transport (ICAO/IATA)

14.1. UN number:	2734
14.2. UN proper shipping name:	Amines, liquid, corrosive, flammable, n.o.s. (N-ethylcyclohexylamine)
14.3 Transport hazard class(es):	8 (3) / CF1
Hazard identification number (Kemler code):	83
14.4. Packing group:	II
14.5. Environmental hazards:	none
Marine pollutant:	none
14.6. Special precautions for user:	included in „Segregation Groups -18 Alkalis“
EMS:	F-E, S-C
14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code	irrelevant

SECTION 15: Regulatory information

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

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15.1.1. EU regulations concerning safety, health and environment/specific legislation concerning substances or mixtures, as amended:

- 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 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006;
- 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 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC;
- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives;
- Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances.

15.1.2. Regulations valid in CR and concerning safety, health and environment/specific legislation concerning substances or mixtures, as amended:

- Act no. 350/2011 Coll., on chemical substances and chemical mixtures and on amendment of certain acts;
- [Decree of Ministry of Environment no. 93/2016 Coll. laying down Waste Catalogue;](#)
- Governmental decree no. 361/2007 Coll., laying down occupational health and safety conditions.

15.2. Chemical safety assessment

Independent chemical safety assessment is not carried out. The substance is used as intermediate product under strictly controlled conditions. Used as substance in rubber industry only in quantity up to 10 t/year.

SECTION 16: Other information

16.1. This safety data sheet supersedes all previous versions.

16.2. List of abbreviations

Carc.:	Carcinogenicity
CAS:	Chemical Abstracts Service
CLP:	Classification, labelling, packaging regulation
CSR:	Chemical safety report
DNEL:	Derived no-effect level
ES:	Exposure scenario
EC:	European Commission
EC ₅₀ :	Median effective concentration EC ₅₀ – used in toxicity tests. Median effective concentration EC ₅₀ is the concentration of substance that causes 50 % mortality or 50 % decrease of growth or growth rate with reference to the control sample.
EINECS:	European Inventory of Existing Commercial Chemical Substances
ELINCS:	European List of Notified Chemical Substances
Irrit.:	Irritant
LC ₅₀ :	Lethal concentration, 50 % (lethal concentration) is used for toxicity tests
LD ₅₀ :	Absolute lethal dose that kills 50 % of members of population
LOAEC:	Lowest observed adverse effect concentration
NOAEC:	No observed adverse effect concentration
NOEC:	No observed effect concentration
OECD:	Organisation for Economic Cooperation and Development
PBT:	Persistent, bioaccumulative and toxic

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PNEC: Predicted no-effect concentration
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals
Sens.: Sensitivity
STOT: Specific target organs toxicity
STOT SE: Specific target organs toxicity - single exposure
STOT RE: Specific target organs toxicity - repeated exposure
STP: Sewage treatment plant
SU: Sector of use
Tox.: Toxicity
vPvB: Very persistent and very bioaccumulative

16.3 List of mentioned phrases

H phrases:

H226 Flammable liquid and vapour.
H302+H332 Harmful if swallowed or inhaled.
H311 Toxic in contact with skin.
H314 Causes severe skin burns and eye damage.
H412 Harmful to aquatic life with long lasting effects.

P phrases:

**P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
No smoking.**
P273 Avoid release to the environment.
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].**

16.4. Sources used

**Material safety data sheet – N-ethylcyclohexylamine, BC MCHZ, Version 4.0 issued in 06/2015.
Registration dossier according to REACH.**

SAFETY DATA SHEET

N-ETHYLCYCLOHEXYLAMINE

16.5. Versions history

Edition	Date	Modifications
1.0	30.11.2010	Elaboration of the material safety data sheet according to Regulation (EC) no. 1907/2006 of the European Parliament and of the Council
2.0	31.08.2011	Global review of all material safety data sheet sections according to Regulation (EC) no. 453/2010 of the European Parliament and of the Council
3.0	01.12.2012	Incorporation of the registration dossier data, amendment of the exposure scenario list, classification update, update of valid Czech legislation, review according to Regulation (EC) no. 286/2011 of the European Parliament and of the Council
4.0	01.06.2015	Modification of Section 2 (deletion of classification under DSD) and other sections according to regulations 2015/830/EU
5.0	01.02.2018	Revision according to Commission Regulation (EU) no. 918/2016

Prepared by: IT & Quality, ecology and safety – Eng. Zuzana Svobodová

Approved by: IT& Quality, ecology and safety manager – Eng. Stanislav Pekara, MBA

Version: English
Date: 01.02.2018
Safety Data Sheet
N-ethylcyclohexylamine

www.borsodchem-cz.com

The mentioned data reflect the present state of knowledge and experience and they are in compliance with valid legislation of the Czech Republic. The client is responsible for observing valid national legislation in the place of use.

Manufactured by:

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SAFETY DATA SHEET

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Annex No.1

OVERVIEW OF EXPOSURE SCENARIOS

Exposure scenario number	Volume (t/r)	Identified uses:			Life-cycle stage		Sectors of use (SU)	Chemical products (PC)	Processes (PROC)	Environmental release (ERC)	Articles (AC)
		Formulation	End use	Consumers	Period of use (for articles)	Waste stage					
ES 1 Use as intermediate product under SCC, industry	N/A		X				SU3 SU8	PC19	PROC3, PROC8b	ERC1, ERC6a	N/A
ES 2 Use in manufacture of rubber products, industry	< 10	X	X				SU3, SU11	PC32	PROC5, PROC8a, PROC9, PROC13, PROC14, PROC21	ERC6d, ERC10a, ERC11a	AC10

N/A – not available (confidential information)

SCC – strictly controlled conditions according to Art. 18(4) of REACH Regulation