Material Safety Data Sheet
Normal-Butylamine, 99.5% (GC)

ACC# 96288

Section 1 - Chemical Product and Company Identification

MSDS Name: Normal-Butylamine, 99.5% (GC)
Catalog Numbers: AC107800000, AC107800010, AC107800025, AC107800050, AC107800500, AC107805000 AC107805000
Synonyms: 1-Aminobutane; 1-Butanamine; Butylamine; MNBA.
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
109-73-9	Butylamine (n-)	>98.0	203-699-2

Hazard Symbols: None listed.
Risk Phrases: 11 20/21/22 35

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: -12 deg C. **Danger!** Corrosive. Causes eye and skin burns. Highly flammable. Harmful if absorbed through the skin. Harmful if swallowed. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns. May cause central nervous system depression.
Target Organs: Central nervous system.

Potential Health Effects

Eye: Causes severe eye burns. May result in corneal injury. May cause chemical conjunctivitis and corneal damage.
Skin: Harmful if absorbed through the skin. Causes skin burns. May cause deep, penetrating ulcers of the skin. May cause contact dermatitis. May cause cyanosis of the extremities. May cause skin rash (in milder cases), and cold and clammy skin with cyanosis or pale color.
Ingestion: Harmful if swallowed. May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns. May cause perforation of the digestive tract. Causes severe pain, nausea, vomiting, diarrhea, and shock. May cause burns to the digestive tract. Ingestion of large amounts may cause CNS depression. May cause systemic effects.
Inhalation: May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. Causes chemical burns to the respiratory tract. Aspiration may lead to pulmonary edema. Vapors may cause dizziness or suffocation. May cause systemic effects. May cause burning sensation in the chest.
Chronic: No information found.

Section 4 - First Aid Measures

Eyes: Get medical aid immediately. Do NOT allow victim to rub or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).
Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.
Ingestion: Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Will burn if involved in a fire. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Flammable liquid and vapor. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. May polymerize explosively when involved in a fire. May accumulate static electrical charges, and may cause ignition of its own vapors. Containers may explode if exposed to fire.
Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT get water inside containers. For large fires, use water spray, fog or alcohol-resistant foam. Do NOT use straight streams of water. Cool containers with flooding quantities of water until well after fire is out.

Flash Point: -12 deg C (10.40 deg F)
Autoignition Temperature: 290 deg C (554.00 deg F)
Explosion Limits, Lower:1.7
Upper: 9.8
NFPA Rating: (estimated) Health: 3; Flammability: 3; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Use water spray to dilute spill to a non-flammable mixture. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Wear a self contained breathing apparatus and appropriate Personal protection. (See Exposure Controls, Personal Protection section). Scoop up with a nonsparking tool, then place into a suitable container for disposal. Use water spray to disperse the gas/vapor. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Take precautionary measures against static discharges. Keep container tightly closed. Avoid contact with heat, sparks and flame. Do not ingest or inhale. Use with adequate ventilation. Discard contaminated shoes. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Do not store in direct sunlight. Keep container closed when not in use. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from organic halogens. Flammables-area. Keep away from acids.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Butylamine (n-)	skin - potential for cutaneous absorption; 5 ppm Ceiling	300 ppm IDLH	5 ppm Ceiling; 15 mg/m3 Ceiling

OSHA Vacated PELs: Butylamine (n-): No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: clear, colorless
Odor: ammonia-like
pH: Not available.
Vapor Pressure: 72 mm Hg @ 20C
Vapor Density: 2.5 (air=1)
Evaporation Rate: Not available.
Viscosity: 0.5 mPa s 20 C
Boiling Point: 78 deg C
Freezing/Melting Point:-50 deg C
Decomposition Temperature: Not available.
Solubility: Soluble in water.
Specific Gravity/Density:0.8 (water=1)
Molecular Formula:C4H11N
Molecular Weight:73.0837

Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions. Forms explosive mixtures with air (10 F).
Conditions to Avoid: Incompatible materials, ignition sources, excess heat, oxidizers.
Incompatibilities with Other Materials: Perchloryl fluoride, nonoxidizing mineral acids, strong acids, organic acids, organic anhydrides, isocyanates, vinyl acetate, epichlorohydrin, ketones, aldehydes, alcohols, glycols, phenols, cresol, caprolactam solution, strong oxidizing

agents.
Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 109-73-9: EO2975000
LD50/LC50:
CAS# 109-73-9:
Dermal, guinea pig: LD50 = 500 uL/kg;
Draize test, rabbit, eye: 250 ug/24H Severe;
Inhalation, mouse: LC50 = 800 mg/m3/2H;
Oral, mouse: LD50 = 430 mg/kg;
Oral, rat: LD50 = 366 mg/kg;
Skin, rabbit: LD50 = 850 uL/kg;

Carcinogenicity:
CAS# 109-73-9: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Neurotoxicity: No information available.
Mutagenicity: No information available.
Other Studies: No data available.

Section 12 - Ecological Information

Ecotoxicity: Fish: Fathead Minnow: LC50 = 268 mg/L; 96 Hr.; Unspecified Bluegill/Sunfish: LC50 = 24-32 mg/L; 96 Hr.; Static Condition flea Daphnia: LC50 = 75 mg/L; 24 Hr.; Static Condition ria: Phytobacterium phosphoreum: EC50 = 18.3-41.1 mg/L; 5,15,25,30 Minutes; Microtox test, 15 degrees C No data available.
Environmental: If n-butylamine is released to the soil, it will not adsorb to the soil; It will be expected to leach rapidly to the groundwater due to its lack of adsorption and high water solubility. Hydrolysis will not be a significant removal process. No information on biodegradation of n-butylamine in soils or groundwater were found, but screening studies suggest that biodegration may be important.
Physical: Reaction with hydroxyl radicals will be the fastest chemical removal process for n-butylamine in the atmosphere (estimated half-life of 5.26 days).
Other: Using a reported log octanol water partition coefficient of 0.97, an estimated BCF of 3.2 was calculated. Based on this estimated BCF, n-butylamine will not bioconcentrate in aquatic organisms.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	N-BUTYLAMINE				No information available.
Hazard Class:	3				
UN Number:	UN1125				
Packing Group:	II				

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 109-73-9 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA

CERCLA Hazardous Substances and corresponding RQs

CAS# 109-73-9: 1000 lb final RQ; 454 kg final RQ
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 109-73-9: acute, chronic, flammable.
Section 313
No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 109-73-9 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 109-73-9 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts. California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols:
Not available.
Risk Phrases:
R 11 Highly flammable.
R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
R 35 Causes severe burns.

Safety Phrases:
S 16 Keep away from sources of ignition - No smoking.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 29 Do not empty into drains.
S 3 Keep in a cool place.
S 33 Take precautionary measures against static discharges.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 9 Keep container in a well-ventilated place.

WGK (Water Danger/Protection)
CAS# 109-73-9: 1
Canada - DSL/NDSL
CAS# 109-73-9 is listed on Canada's DSL List.
Canada - WHMIS
This product has a WHMIS classification of B2, D1B, E.
Canadian Ingredient Disclosure List
CAS# 109-73-9 is listed on the Canadian Ingredient Disclosure List.
Exposure Limits
CAS# 109-73-9: OEL-AUSTRALIA:TWA 5 ppm (15 mg/m3);Skin OEL-AUSTRIA: TWA 5 ppm (15 mg/m3);Skin OEL-BELGIUM:STEL 5 ppm (15 mg/m3);Skin OEL -DENMARK:STEL 5 ppm (15 mg/m3);Skin OEL-FINLAND:STEL 5 ppm (15 mg/m3) ;Skin OEL-FRANCE:STEL 5 ppm (15 mg/m3) OEL-GERMANY:TWA 5 ppm (15 mg/ m3);Skin OEL-JAPAN:STEL 5 ppm (15 mg/m3) OEL-THE NETHERLANDS:TWA 5 p pm (15 mg/m3);Skin OEL-THE PHILIPPINES:TWA 5 ppm (15 mg/m3);Skin OEL -RUSSIA:STEL 5 ppm (10 mg/m3);Skin OEL-SWEDEN:STEL 5 ppm (15 mg/m3);S kin OEL-SWITZERLAND:TWA 5 ppm (15 mg/m3);STEL 25 ppm (75 mg/m3);Skin OEL-THAILAND:TWA 5 ppm (15 mg/m3) OEL-TURKEY:TWA 5 ppm (15 mg/m3);Sk in OEL-UNITED KINGDOM:TWA 5 ppm (15 mg/m3);STEL 5 ppm;Skin OEL IN BU LGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, S INGAPORE, VIETNAM check ACGI TLV

Section 16 - Additional Information

MSDS Creation Date: 6/01/1999
Revision #3 Date: 3/18/2003