

PRODUCT SAFETY SUMMARY: AMINOETHYLETHANOLAMINE

This Product Safety Summary is intended to provide a general description of certain Huntsman chemical products and products containing the chemical substance(s). The information in this Summary is not intended to replace the information included on the Safety Data Sheet (SDS), Product Safety Label, and other safe use and handling literature for the chemical substance(s). Additional information can be found On the Safety Data Sheet (SDS) for each specific product.

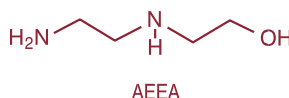
Chemical Identity

The Product Safety Summary covers the substance below:

CAS #	Chemical Name	Synonyms
111-41-1	N-(2-Hydroxyethyl)ethylenediamine	Aminoethylethanolamine, AEEA

Aminoethylethanolamine is a high purity product. It is part of the ethyleneamines group of chemicals. The product is water soluble, clear, colorless and slightly viscous. An ammonia- like odor is typical of the product.

Aminoethylethanolamine



General Product Overview

Aminoethylethanolamine (AEEA) is an organic compound mainly used as a reactive intermediate (i.e., building block) to produce chemical products for a wide range of applications. Examples of such applications are fuel and lubricants, and fabric softeners.

Manufacturing

Huntsman manufactures aminoethylethanolamine by exothermic reaction in a tubular reactor. This process consists of the reaction of ethylene oxide (EO) and an excess of ethylenediamine (EDA), followed by a refining system. The excess EDA is separated from the AEEA under vacuum in the first separation column, then the AEEA (light key) is separated from heavier byproducts (known collectively as organic amine 70, or OA-70) in the second column.

Applications and Uses

Aminoethylethanolamine is manufactured by Huntsman to be marketed as a chemical intermediate for the downstream manufacture of chemicals and products. Aminoethylethanolamine has a variety of applications and is used in the production of fabric softener, textile additive, surfactants, chelating agents, lube oil and fuel additives and urethane chemicals. Huntsman does not market aminoethylethanolamine directly for consumer use.

Physical Chemical Properties

A summary of physicochemical properties for aminoethylethanolamine is listed below. Additional physical and chemical property information is available on the product Safety Data Sheet (SDS), which can be requested by emailing SDS@huntsman.com.

Applications	AEEA
Molecular weight, typical product	104.2
Boiling point, 760 mm Hg, °C	243
Freezing point, °C	-38
Vapor pressure, mmHg, 20°C	< 0.01
Density, g/ml, 20°C	1.03
Water solubility (%)	>10

Human Health Information

The potential to experience health effects associated with overexposure to aminoethylethanolamine depends on the exposure level, route, duration, as well as other

factors, including individual susceptibility. The potential health effects from overexposure to aminoethylethanolamine are discussed below.

Different regulatory classification criteria apply in different geographic regions. These differing criteria can result in different human health regulatory classifications for the same products in different geographic regions. Specific regulatory classification information is contained in the Safety Data Sheet for each product in use in the specific geographic region. The acute and chronic health effects information below is based on Safety Data Sheets in use in the United States.

The primary hazard of concern when working with aminoethylethanolamine are those typically associated with similar organic amines; namely, corrosive action on skin and eyes. Below is the generally accepted health hazard classification based on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

	AEEA
Skin corrosion / irritation	Cat 1B
Serious eye damage / eye irritation	Cat 1
Skin sensitization	Cat 1
Reproductive toxicity	Cat 1B

Acute Health Effects:

Almost any ocular contact with any aminoethylethanolamine may cause irreparable damage, even blindness.

Acute dermal toxicity of aminoethylethanolamine is low. Acute accidental dermal exposure to aminoethylethanolamine may cause severe skin burns. Exposures may also cause allergic skin reactions in some individuals.

Acute oral toxicity of aminoethylethanolamine is low. The oral LD50 for rats is in the range of 2000 mg/kg for the aminoethylethanolamine. However, accidental ingestion will cause burns to the membranes of the mouth, throat, and stomach, and may cause gastrointestinal irritation or ulceration.

Acute inhalation exposure to aminoethylethanolamine vapors can causes painful irritations to the eyes.

Chronic Health Effects:

Repeated or prolonged exposure to aminoethylethanolamine through the skin did not show negative effects in animal studies except local skin inflammation. Repeated exposure by ingestion showed changes in blood parameters and increased kidney weight in rats.

Several in vitro and animal studies did not show positive evidence for mutagenicity or genotoxicity.

It has been shown that aminoethylethanolamine (AEEA) produces reproductive effects after repeated or prolonged exposure in animal studies. AEEA can have a negative impact on the fertility and can cause congenital defects in the developing pups.

Environmental Information

Aminoethylethanolamine is an industrial raw material used in closed systems. During normal operating conditions, aminoethylethanolamine is not expected to be released to the air, soil or water. Procedural and/or control technologies are used to minimize emissions and potential exposure during cleaning and maintenance activities. Below is the generally accepted environmental hazard classification based on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Environmental Hazard	AEEA
Aquatic Hazard (short-term)	Cat 3

Aquatic Toxicity

Aminoethylethanolamine is acutely harmful for aquatic organisms.

Environmental Fate:

If there is an unintentional release, aminoethylethanolamine is readily biodegradable in freshwater and photodegradable. Aminoethylethanolamine will not bioaccumulate. AEEA has low vapor pressures and releases via air are unlikely.

Potential Occupational Exposure

Aminoethylethanolamine is used at Huntsman in closed systems. During normal operating conditions, occupational exposure to aminoethylethanolamine is not expected during the

manufacturing process. Procedural and/or control technologies are used to minimize exposure during sampling, cleaning, maintenance or upset conditions.

Potential Consumer Exposure

Huntsman does not market aminoethylethanolamine directly for consumer use. Because aminoethylethanolamine is fully reacted during the manufacture of various products, it is not expected to present an exposure risk to downstream users or consumers.

Safe Use Recommendations/Workplace Exposure Controls

Huntsman follows workplace exposure guidelines through a variety of industrial hygiene and ventilation measures. Due to aminoethylethanolamine corrosive properties, precautions should be taken to prevent contact by use of protective clothing and chemical goggles. If contact occurs, immediately flush the exposed area with plenty of water for at least 15 minutes. Eye exposures should be examined by a physician. Contaminated clothing should be laundered before reuse. If ingestion occurs, do not induce vomiting. Have the individual drink a large amount of water (or milk, if it is readily available) and transport them to a medical facility immediately.

Huntsman follows workplace exposure guidelines through a variety of industrial hygiene and ventilation measures. Workplace exposure guidelines include national/regional workplace limit values – e.g., the ACGIH Threshold Limit Value-Time Weighted Average (TLV-TWA), the concentration for a conventional 8-hour workday and a 40-hour workweek for a working lifetime without adverse effect; the Occupational Safety and Health Administration's permissible exposure limit (OSHA PEL) expressed as a timeweighted average – the concentration of a substance to which most workers can be exposed without adverse effect averaged over a normal 8-hour workday or a 40-hour workweek; and the U.S. National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit (REL) recommended by NIOSH to OSHA for adoption as a PEL.

See the Safety Data Sheets for aminoethylethanolamine for additional information about first aid measures, accidental releases (spills and leaks), waste disposal, toxicity, transportation, regulatory requirements and other important topics, which can be requested by emailing SDS@huntsman.com.

Labeling According to GHS

Under the Globally Harmonized System (GHS) for Hazard Communication, substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the Safety Data Sheets. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use.



Hazard Statements	
H314	Causes severe skin burns and eye damage
H317	May cause an allergic skin reaction
H360	May damage fertility or the unborn child
H402	Harmful to aquatic life

Note: The hazard statements and symbols presented here refer to the hazard properties of the concentrated substance and are meant to provide a brief overview of the substance's labeling. It is not intended to be comprehensive or to replace information found in the Safety Data Sheet.

References

- Huntsman regional SDSs for aminoethylethanolamine
- Huntsman Technical Bulletins for aminoethylethanolamine
- Huntsman Brochure: ETHYLENEAMINES – A Global Profile of Products and Services
- ECHA Website: echa.europa.eu



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THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

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