Material Safety Data Sheet

Section 1. Product and Company Identification

Product Name Hydrochloric Acid 6N
Product Code VW3204
Manufacturer EMD Chemicals Inc.
P.O. Box 70
480 Democrat Road
Gibbstown, NJ 08027
Prior to January 1, 2003 EMD Chemicals Inc. was EM Industries, Inc. or EM Science, Division of EM Industries, Inc.

Effective Date 1/27/2004
Print Date 5/3/2004

For More Information Call
856-423-6300 Technical Service
Monday-Friday: 8:00 AM - 5:00 PM

In Case of Emergency Call
800-424-9300 CHEMTREC (USA)
613-996-6666 CANUTEC (Canada)
24 Hours/Day: 7 Days/Week

Synonym None.
Material Uses Laboratory Reagent

Chemical Family Inorganic acid.

Section 2. Composition and Information on Ingredients

Component CAS # % by Weight
Hydrochloric acid 7647-01-0 18.5
Water 7732-18-5 81.5

Section 3. Hazards Identification

Physical State and Appearance Liquid. (Fuming liquid.)

Emergency Overview DANGER !POISON !
MAY BE FATAL IF SWALLOWED.
HARMFUL IF INHALED.
CAUSES SEVERE EYE AND SKIN BURNS.
MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
MAY CAUSE ALLERGIC SKIN REACTION.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
LUNGS, RESPIRATORY TRACT,
CONTAINS MATERIAL WHICH MAY CAUSE DAMAGE TO THE FOLLOWING ORGANS:
SKIN, EYE, LENS OR CORNEA.

Routes of Entry Absorbed through skin. Dermal contact. Inhalation. Ingestion.

Potential Acute Health Effects

Eyes Extremely hazardous in case of eye contact (corrosive). Causes severe eye burns. Hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering, and itching.

Skin Hazardous in case of skin contact (corrosive, irritant). Skin contact produces burns. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. May be hazardous in case of skin contact (sensitizer).

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**Section 4. First Aid Measures**

**Eye Contact**
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

**Skin Contact**
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

**Inhalation**
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Ingestion**
If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

**Section 5. Fire Fighting Measures**

**Flammability of the Product**
May be combustible at high temperature.

**Auto-ignition Temperature**
Not available.

**Flash Points**
Not available.

**Flammable Limits**
Not available.

**Products of Combustion**
These products are carbon oxides (CO, CO₂), halogenated compounds, hydrogen chloride.

**Fire Hazards in Presence of Various Substances**
Not available.

**Explosion Hazards in Presence of Various Substances**
Risks of explosion of the product in presence of static discharge: No.
Risks of explosion of the product in presence of mechanical impact: No.

**Fire Fighting Media and Instructions**
SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Protective Clothing (Fire)**
Be sure to use an approved/certified respirator or equivalent.

**Special Remarks on Fire Hazards**
Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminum, tin, lead and zinc. (Hydrochloric acid)

**Special Remarks on Explosion Hazards**
Not available.
Section 6. Accidental Release Measures

Small Spill and Leak
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill and Leak
Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Spill Kit Information
The following EMD Chemicals Inc. SpillSolv (TM) absorbent is recommended for this product: SX1310 Acid Treatment Kit

Section 7. Handling and Storage

Handling
Do not ingest. Do not breathe vapor or mist. Avoid prolonged or repeated contact with skin. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Storage
Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection

Eyes
Face shield.

Body
Full suit.

Respiratory
Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Hands
Gloves.

Feet
Boots.

Protective Clothing (Pictograms)

Personal Protection in Case of a Large Spill
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Product Name
Hydrochloric acid

Exposure Limits

BMWA, MAK (Austria, 2001).
Spitzenbegrenzung: 16 mg/m³ 8 times per shift, 5 minute(s).
Spitzenbegrenzung: 10 ppm 8 times per shift, 5 minute(s).
TWA: 8 mg/m³ 8 hour(s).
TWA: 5 ppm 8 hour(s).

NOHSC (Australia, 2002). Notes: Documentation for the substances with this footnote can be found in the 5th Edition of the ACGIH documentation of the threshold limit values and biological exposure indices.1 For all other substances with 'H' in Column 7 the documentation can be found in the 8th Edition of the ACGIH documentation of the threshold limit values and biological exposure indices.2
AMP: 7.5 mg/m³ 15 minute(s).
AMP: 5 ppm 15 minute(s).

LIJST Grenswaarden (Belgium, 2002).
VCD: 15 mg/m³ 15 minute(s).

Continued on Next Page
VCD: 10 ppm 15 minute(s).
VL: 8 mg/m$^3$ 8 hour(s).
VL: 5 ppm 8 hour(s).

**SUVA (Switzerland, 2001).**
Kurzzeitgrenzwerte: 7.5 mg/m$^3$ 15 minute(s).
Kurzzeitgrenzwerte: 5 ppm 15 minute(s).
MAK: 7.5 mg/m$^3$ 8 hour(s).
MAK: 5 ppm 8 hour(s).

**178/2001 (CZ, 2001).**
STEL: 15 mg/m$^3$ 10 minute(s).
STEL: 10.185 ppm 10 minute(s).
TWA: 8 mg/m$^3$ 8 hour(s).
TWA: 5.432 ppm 8 hour(s).

**BAUA (Germany, 1997).**
Spitzenbegrenzung: 8 mg/m$^3$
TWA: 8 mg/m$^3$ 8 hour(s).

**MAK-Werte Liste (Germany, 2000).**
Spitzenbegrenzung: 7.6 mg/m$^3$ 15 minute(s).
Spitzenbegrenzung: 5 ML/M3 15 minute(s).
TWA: 7.6 mg/m$^3$ 8 hour(s).
TWA: 5 ML/M3 8 hour(s).

**TRGS900 MAK (Germany, 2002).**
Spitzenbegrenzung: 8 mg/m$^3$
TWA: 8 mg/m$^3$ 8 hour(s).

**Arbejdsmiljøsynet (Denmark, 2000).**
Loftværdi: 7 mg/m$^3$
Loftværdi: 5 ppm
GV: 7 mg/m$^3$ 8 hour(s).
GV: 5 ppm 8 hour(s).

**DK-Arbejdstyrlsinet (Denmark, 1996).**
Loftværdi: 7 mg/m$^3$
Loftværdi: 5 ppm
GV: 7 mg/m$^3$ 8 hour(s).
GV: 5 ppm 8 hour(s).

**INSHT (Spain, 2002).**
STEL: 15 mg/m$^3$ 15 minute(s).
STEL: 10 ppm 15 minute(s).
TWA: 7.6 mg/m$^3$ 8 hour(s).
TWA: 5 ppm 8 hour(s).

**80/1107/EEC (Europe, 1996).**
STEL: 10 mg/m$^3$ 15 minute(s).
STEL: 15 ppm 15 minute(s).
TWA: 5 mg/m$^3$ 8 hour(s).
TWA: 8 ppm 8 hour(s).

**EU OEL (Europe, 2000). Notes: Indicative**
STEL: 15 mg/m$^3$ 15 minute(s).
STEL: 10 ppm 15 minute(s).
TWA: 8 mg/m$^3$ 8 hour(s).
TWA: 5 ppm 8 hour(s).

**Työterveyslaitos (Finland, 2002).**
STEL: 7.6 mg/m$^3$ 15 minute(s).
STEL: 5 ppm 15 minute(s).

**INRS (France, 1999). Notes: Advisory**
VLE: 7.5 mg/m$^3$ 15 minute(s).
VLE: 5 ppm 15 minute(s).

**NAOSH (Ireland, 2002).**
STEL: 14 mg/m$^3$ 15 minute(s).
STEL: 10 ppm 15 minute(s).
OEL: 7 mg/m$^3$ 8 hour(s).
OEL: 5 ppm 8 hour(s).

**JSCO (Japan, 1996).**
CEIL: 7.5 mg/m$^3$
CEIL: 5 ppm

Continued on Next Page
CEIL: 7 mg/m³
CEIL: 5 ppm

Nationale MAC-liest (Netherlands, 2003). Notes: Administrative
TGG 15 min: 15 mg/m³ 15 minute(s).
TGG 15 min: 10 ppm 15 minute(s).
TGG 8 uur: 8 mg/m³ 8 hour(s).
TGG 8 uur: 5 ppm 8 hour(s).

Arbeidstilsynet (Norway, 2001).
Takverdi: 7 mg/m³
Takverdi: 5 ppm
AN: 7 mg/m³ 8 hour(s).
AN: 5 ppm 8 hour(s).

NZ OSH (NZ, 1994).
CEIL: 7.5 mg/m³
CEIL: 5 ppm

AFS (Sweden, 2000).
TGV: 8 mg/m³
TGV: 5 ppm
KTV: 8 mg/m³ 15 minute(s).
KTV: 5 ppm 15 minute(s).

EH40-OES (United Kingdom (UK), 2002).
STEL: 8 mg/m³ 15 minute(s).
STEL: 5 ppm 15 minute(s).
TWA: 2 mg/m³ 8 hour(s).
TWA: 1 ppm 8 hour(s).

ACGIH (United States, 2003).
CEIL: 2 ppm

NIOSH REL (United States, 2001).
CEIL: 7 mg/m³
CEIL: 5 ppm

OSHA Final Rule (United States, 1989).
CEIL: 7 mg/m³
CEIL: 5 ppm

OSHA PEL (United States, 1974).
CEIL: 7 mg/m³
CEIL: 5 ppm

CEIL: 7 mg/m³
CEIL: 5 ppm
Not available.

Section 9. Physical and Chemical Properties

Odor
Pungent.

Color
Clear. Colorless to slight yellow

Physical State and Appearance
Liquid. (Fuming liquid.)

Molecular Weight
Not applicable.

Molecular Formula
HCL in Aqueous solution

pH
Not available.

Boiling/Condensation Point
The lowest known value is 99.9°C (211.8°F) (Water). Weighted average: 101.77°C (212.7°F)

Melting/Freezing Point
May start to solidify at -0.1°C (31.8°F) based on data for: Water. Weighted average: -13.77°C (7.2°F)

Critical Temperature
The lowest known value is 51.5°C (124.7°F) (Hydrochloric acid).

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Specific Gravity
The only known value is 1.2 (Water = 1) (Hydrochloric acid).

Vapor Pressure
The highest known value is 21.3 kPa (160 mmHg) (@ 20°C) (Hydrochloric acid).

Vapor Density
The highest known value is >1 (Air = 1) (Hydrochloric acid).

Odor Threshold
Not available.

Evaporation Rate
0.36 (Water) compared to (n-Butyl Acetate =1)

LogK_water
Not available.

Solubility
Soluble in water.

Section 10. Stability and Reactivity

Stability and Reactivity
The product is stable.

Conditions of Instability
Not available.

Incompatibility with Various Substances
Reactive with oxidizing agents, combustible materials, organic materials, metals, acids, alkalis.

Rem/Incompatibility
Not available.

Hazardous Decomposition Products
These products are halogenated compounds. Hydrogen Chloride (HCl)

Hazardous Polymerization
Will not occur.

Section 11. Toxicological Information

RTECS Number:
Hydrochloric Acid MW4025000
Water ZC0110000

Toxicity
Acute oral toxicity (LD₅₀): 4865 mg/kg (Rabbit) (Calculated value for the mixture).
Acute toxicity of the vapor (LC₅₀): 2995 ppm 4 hours (Mouse) (Calculated value for the mixture).

Chronic Effects on Humans
Contains material which may cause damage to the following organs: lungs, upper respiratory tract, skin, eye, lens or cornea.

Acute Effects on Humans
Extremely hazardous in case of eye contact (corrosive). Causes severe eye burns. Hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering, and itching. Hazardous in case of skin contact (corrosive, irritant). Skin contact produces burns. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. May be hazardous in case of skin contact (sensitizer). Extremely hazardous in case of inhalation. May be fatal if inhaled. May be hazardous in case of inhalation (lung irritant). Extremely hazardous in case of ingestion. May be fatal if swallowed.

Synergetic Products (Toxicologically)
Not available.

Irritancy
Draize Test: Not available.

Sensitization
Hazardous in case of skin contact (sensitizer).
Slightly hazardous in case of inhalation (lung sensitizer).

Carcinogenic Effects
This material is not known to cause cancer in animals or humans.

Toxicity to Reproductive System
Not available.

Teratogenic Effects
Not available.

Mutagenic Effects
Not available.

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Section 12. Ecological Information

Ecotoxicity Not available.
BOD5 and COD Not available.

Toxicity of the Products of Biodegradation
The products of degradation are as toxic as the product itself.

Section 13. Disposal Considerations

EPA Waste Number D002
Treatment Specified technology- Neutralize to pH 6-9. Contact your local permitted waste disposal site (TSD) for permissible treatments sites. ALWAYS CONTACT PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

Section 14. Transport Information

DOT Classification Proper Shipping Name: HYDROCHLORIC ACID SOLUTION
Hazard Class: 8
UN number: UN1789
Packing Group: II
RQ: 5000 lbs. (2258 kg)

TDG Classification Not available.

IMO/IMDG Classification Proper Shipping Name: HYDROCHLORIC ACID SOLUTION
Hazard Class: 8
UN number: UN1789
Packing Group: II
RQ: 5000

ICAO/IATA Classification Not available.

Section 15. Regulatory Information

U.S. Federal Regulations TSCA 8(b) inventory: Hydrochloric acid; Water
SARA 302/304/311/312 extremely hazardous substances: Hydrochloric acid
SARA 302/304 emergency planning and notification: Hydrochloric acid
SARA 302/304/311/312 hazardous chemicals: Hydrochloric acid
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Hydrochloric acid:
Sudden Release of Pressure, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard
SARA 313 toxic chemical notification and release reporting: Hydrochloric acid 18.5%
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: Hydrochloric acid
Clean air act (CAA) 112 accidental release prevention: Hydrochloric acid
Clean air act (CAA) 112 regulated flammable substances: No products were found.
Clean air act (CAA) 112 regulated toxic substances: Hydrochloric acid

WHMIS (Canada) Class D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
Class D-2A: Material causing other toxic effects (VERY TOXIC).
CLASS E: Corrosive liquid.
CEPA DSL: Hydrochloric acid; Water

This product has been classified in accordance with the hazard criteria of the Controlled Product Regulations and the MSDS contains all required information.

International Regulations

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| **EINECS** | Hydrochloric acid 231-595-7 |
| Water      | 231-791-2 |

| **DSCL (EEC)** | R35- Causes severe burns. |

| **International Lists** | Australia (NICNAS): Hydrochloric acid; Water |
| Japan (MITI): Hydrochloric acid; Water |
| Korea (TCCL): Hydrochloric acid; Water |
| Philippines (RA6969): Hydrochloric acid; Water |
| China: No products were found. |

| **State Regulations** | Pennsylvania RTK: Hydrochloric acid: (environmental hazard, generic environmental hazard) |
| Massachusetts RTK: Hydrochloric acid |
| New Jersey: Hydrochloric Acid 6N |
| California prop. 65: No products were found. |

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**Section 16. Other Information**

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<th>National Fire Protection Association (U.S.A.)</th>
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- **Fire Hazard**: 2
- **Health**: 0
- **Reactivity**: 0
- **Specific Hazard**: 0

**Notice to Reader**

The statements contained herein are based upon technical data that EMD Chemicals Inc. believes to be reliable, are offered for information purposes only and as a guide to the appropriate precautionary and emergency handling of the material by a properly trained person having the necessary technical skills. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use, storage and disposal of these materials and the safety and health of employees and customers and the protection of the environment. EMD CHEMICALS INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE, WITH RESPECT TO THE INFORMATION HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS.