



# Material Safety Data Sheet

## Section 1. Product and Company Identification

<b>Product Name</b>	Hydrochloric Acid 50% (1+1)	<b>Product Code</b>	VW3418
<b>Manufacturer</b>	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.	<b>Effective Date</b>	4/15/2004
		<b>Print Date</b>	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	50
Water	7732-18-5	50

## Section 3. Hazards Identification

**Physical State and Appearance** Liquid.

**Emergency Overview** DANGER !  
HARMFUL IF INHALED OR SWALLOWED.  
CAUSES EYE AND SKIN BURNS.  
CAUSES RESPIRATORY TRACT IRRITATION.  
MAY CAUSE BIRTH DEFECTS BASED ON ANIMAL DATA. CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS: LUNGS, RESPIRATORY TRACT, SKIN, EYE, LENS OR CORNEA.

**Routes of Entry** Dermal contact. Eye contact. Inhalation. Ingestion.

### Potential Acute Health Effects

**Eyes** Hazardous in case of eye contact (corrosive). Causes eye burns.

**Skin** Hazardous in case of skin contact (corrosive). Skin contact produces burns.

**Inhalation** Hazardous in case of inhalation (lung irritant).

**Ingestion** Hazardous in case of ingestion. Do not ingest.

### Potential Chronic Health Effects

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

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Additional information See Toxicological Information (section 11)

**Medical Conditions  
Aggravated by  
Overexposure:**

Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

#### Section 4. First Aid Measures

<b>Eye Contact</b>	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.
<b>Skin Contact</b>	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
<b>Inhalation</b>	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
<b>Ingestion</b>	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

<b>Flammability of the Product</b>	Non-flammable.
<b>Auto-ignition Temperature</b>	Not applicable.
<b>Flash Points</b>	Not applicable.
<b>Flammable Limits</b>	Not applicable.
<b>Products of Combustion</b>	Not applicable.
<b>Fire Hazards in Presence of Various Substances</b>	Not applicable.
<b>Explosion Hazards in Presence of Various Substances</b>	Risks of explosion of the product in presence of static discharge: No. Risks of explosion of the product in presence of mechanical impact: No.
<b>Fire Fighting Media and Instructions</b>	Use extinguishing media suitable for surrounding materials.
<b>Protective Clothing (Fire)</b>	Wear suitable protective clothing.
<b>Special Remarks on Fire Hazards</b>	Thermal Decomposition produces TOXIC fumes.
<b>Special Remarks on Explosion Hazards</b>	Can react with certain metals to release explosive hydrogen gas. Incompatible with alkaline metals.

#### Section 6. Accidental Release Measures

<b>Small Spill and Leak</b>	Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: <b>Neutralize the residue with a dilute solution of sodium carbonate.</b>
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**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. Call for assistance on disposal. **Neutralize the residue with a dilute solution of sodium carbonate.** 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. 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/m<sup>3</sup> 8 times per shift, 5 minute(s).

Spitzenbegrenzung: 10 ppm 8 times per shift, 5 minute(s).

TWA: 8 mg/m<sup>3</sup> 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.<sup>1</sup> For all other substances with 'H' in Column 7 the documentation can be found in the 6th Edition of the ACGIH documentation of the threshold limit values and biological exposure indices.<sup>2</sup>**

AMP: 7.5 mg/m<sup>3</sup> 15 minute(s).

AMP: 5 ppm 15 minute(s).

#### Lijst Grenswaarden (Belgium, 2002).

VCD: 15 mg/m<sup>3</sup> 15 minute(s).

VCD: 10 ppm 15 minute(s).

VL: 8 mg/m<sup>3</sup> 8 hour(s).

VL: 5 ppm 8 hour(s).

#### SUVA (Switzerland, 2001).

Kurzzeitgrenzwerte: 7.5 mg/m<sup>3</sup> 15 minute(s).

Kurzzeitgrenzwerte: 5 ppm 15 minute(s).

MAK: 7.5 mg/m<sup>3</sup> 8 hour(s).

MAK: 5 ppm 8 hour(s).

**178/2001 (CZ, 2001).**

STEL: 15 mg/m<sup>3</sup> 10 minute(s).

STEL: 10.185 ppm 10 minute(s).

TWA: 8 mg/m<sup>3</sup> 8 hour(s).

TWA: 5.432 ppm 8 hour(s).

**BAUA (Germany, 1997).**

Spitzenbegrenzung: 8 mg/m<sup>3</sup>

TWA: 8 mg/m<sup>3</sup> 8 hour(s).

**MAK-Werte Liste (Germany, 2000).**

Spitzenbegrenzung: 7.6 mg/m<sup>3</sup> 15 minute(s).

Spitzenbegrenzung: 5 ML/M3 15 minute(s).

TWA: 7.6 mg/m<sup>3</sup> 8 hour(s).

TWA: 5 ML/M3 8 hour(s).

**TRGS900 MAK (Germany, 2002).**

Spitzenbegrenzung: 8 mg/m<sup>3</sup>

TWA: 8 mg/m<sup>3</sup> 8 hour(s).

**Arbejdstilsynet (Denmark, 2000).**

Loftværdi: 7 mg/m<sup>3</sup>

Loftværdi: 5 ppm

GV: 7 mg/m<sup>3</sup> 8 hour(s).

GV: 5 ppm 8 hour(s).

**DK-Arbejdstilsynet (Denmark, 1996).**

Loftværdi: 7 mg/m<sup>3</sup>

Loftværdi: 5 ppm

GV: 7 mg/m<sup>3</sup> 8 hour(s).

GV: 5 ppm 8 hour(s).

**INSHT (Spain, 2002).**

STEL: 15 mg/m<sup>3</sup> 15 minute(s).

STEL: 10 ppm 15 minute(s).

TWA: 7.6 mg/m<sup>3</sup> 8 hour(s).

TWA: 5 ppm 8 hour(s).

**80/1107/EEC (Europe, 1996).**

STEL: 10 mg/m<sup>3</sup> 15 minute(s).

STEL: 15 ppm 15 minute(s).

TWA: 5 mg/m<sup>3</sup> 8 hour(s).

TWA: 8 ppm 8 hour(s).

**EU OEL (Europe, 2000). Notes: Indicative**

STEL: 15 mg/m<sup>3</sup> 15 minute(s).

STEL: 10 ppm 15 minute(s).

TWA: 8 mg/m<sup>3</sup> 8 hour(s).

TWA: 5 ppm 8 hour(s).

**Työterveyslaitos (Finland, 2002).**

STEL: 7.6 mg/m<sup>3</sup> 15 minute(s).

STEL: 5 ppm 15 minute(s).

**INRS (France, 1999). Notes: Advisory**

VLE: 7.5 mg/m<sup>3</sup> 15 minute(s).

VLE: 5 ppm 15 minute(s).

**NAOSH (Ireland, 2002).**

STEL: 14 mg/m<sup>3</sup> 15 minute(s).

STEL: 10 ppm 15 minute(s).

OEL: 7 mg/m<sup>3</sup> 8 hour(s).

OEL: 5 ppm 8 hour(s).

**JSOH (Japan, 1996).**

CEIL: 7.5 mg/m<sup>3</sup>

CEIL: 5 ppm

**Ministry of Labor (KR, 1997).**

CEIL: 7 mg/m<sup>3</sup>

CEIL: 5 ppm

**Nationale MAC-lijst (Netherlands, 2003). Notes: Administrative**

TGG 15 min: 15 mg/m<sup>3</sup> 15 minute(s).

TGG 15 min: 10 ppm 15 minute(s).

TGG 8 uur: 8 mg/m<sup>3</sup> 8 hour(s).

TGG 8 uur: 5 ppm 8 hour(s).

**Arbeidstilsynet (Norway, 2001).**

Takverdi: 7 mg/m<sup>3</sup>

Takverdi: 5 ppm

AN: 7 mg/m<sup>3</sup> 8 hour(s).

AN: 5 ppm 8 hour(s).

**NZ OSH (NZ, 1994).**

CEIL: 7.5 mg/m<sup>3</sup>

CEIL: 5 ppm

**AFS (Sweden, 2000).**

TGV: 8 mg/m<sup>3</sup>

TGV: 5 ppm

KTV: 8 mg/m<sup>3</sup> 15 minute(s).

KTV: 5 ppm 15 minute(s).

**EH40-OES (United Kingdom (UK), 2002).**

STEL: 8 mg/m<sup>3</sup> 15 minute(s).

STEL: 5 ppm 15 minute(s).

TWA: 2 mg/m<sup>3</sup> 8 hour(s).

TWA: 1 ppm 8 hour(s).

**ACGIH (United States, 2003).**

CEIL: 2 ppm

**NIOSH REL (United States, 2001).**

CEIL: 7 mg/m<sup>3</sup>

CEIL: 5 ppm

**OSHA Final Rule (United States, 1989).**

CEIL: 7 mg/m<sup>3</sup>

CEIL: 5 ppm

**OSHA PEL (United States, 1974).**

CEIL: 7 mg/m<sup>3</sup>

CEIL: 5 ppm

**OSHA PEL 1989 (United States, 1989).**

CEIL: 7 mg/m<sup>3</sup>

CEIL: 5 ppm

Water

Not available.

## Section 9. Physical and Chemical Properties

<b>Odor</b>	Pungent. (Strong.)
<b>Color</b>	Clear. Colorless to light yellow.
<b>Physical State and Appearance</b>	Liquid.
<b>Molecular Weight</b>	Not applicable.
<b>Molecular Formula</b>	Not applicable.
<b>pH</b>	<1 [Acidic.]
<b>Boiling/Condensation Point</b>	The lowest known value is 99.9°C (211.8°F) (Water). Weighted average: 104.95°C (220.9°F)
<b>Melting/Freezing Point</b>	May start to solidify at -0.1°C (31.8°F) based on data for: Water. Weighted average: -37.05°C (-34.7°F)
<b>Critical Temperature</b>	The lowest known value is 51.5°C (124.7°F) (Hydrochloric acid).
<b>Specific Gravity</b>	1.05-1.15 (Water = 1)
<b>Vapor Pressure</b>	The highest known value is 21.3 kPa (160 mmHg) (@ 20°C) (Hydrochloric acid).
<b>Vapor Density</b>	The highest known value is >1 (Air = 1) (Hydrochloric acid).

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<b>Odor Threshold</b>	7 ppm
<b>Evaporation Rate</b>	0.36 (Water) compared to(n-Butyl Acetate =1)
<b>LogK<sub>ow</sub></b>	Not available.
<b>Solubility</b>	Soluble in water.

### Section 10. Stability and Reactivity

<b>Stability and Reactivity</b>	The product is stable.
<b>Conditions of Instability</b>	Not available.
<b>Incompatibility with Various Substances</b>	Highly reactive with organic materials, metals. Reactive with alkalis.
<b>Rem/Incompatibility</b>	Incompatible with phosphides, acetylides, borides, carbides, silicates, vinyl acetate, formaldehyde, cyanides, sulphides, metal oxides, hydroxides, amines, and carbonates. Incompatible with Strong Bases May initiate the polymerization of organic oxides and other monomers.
<b>Hazardous Decomposition Products</b>	These products are halogenated compounds, hydrogen chloride.
<b>Hazardous Polymerization</b>	Will not occur.

### Section 11. Toxicological Information

<b>RTECS Number:</b>	Hydrochloric Acid Water	MW4025000 ZC0110000
<b>Toxicity</b>	Acute oral toxicity (LD <sub>50</sub> ): 1.1-3.15 g/kg [Rat]. Acute toxicity of the vapor (LC <sub>50</sub> ): 1108 ppm 4 hours (Mouse) (Calculated value for the mixture).	
<b>Chronic Effects on Humans</b>	Not available.	
<b>Acute Effects on Humans</b>	Hazardous in case of eye contact (corrosive). Causes eye burns. Hazardous in case of skin contact (corrosive). Skin contact produces burns. Hazardous in case of inhalation (lung irritant). Hazardous in case of ingestion.	
<b>Synergetic Products (Toxicologically)</b>	Not available.	
<b>Irritancy</b>	<u>Draize Test</u> : Not available.	
<b>Sensitization</b>	Slightly hazardous in case of inhalation (lung sensitizer).	
<b>Carcinogenic Effects</b>	This material is not known to cause cancer in animals or humans.	
<b>Toxicity to Reproductive System</b>	Not available.	
<b>Teratogenic Effects</b>	Not available.	
<b>Mutagenic Effects</b>	Not available.	

### Section 12. Ecological Information

<b>Ecotoxicity</b>	Not available.
<b>BOD5 and COD</b>	Not available.
<b>Toxicity of the Products of Biodegradation</b>	The products of degradation are as toxic as the product itself.

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**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. (2268 kg)

**TDG Classification**

Not available.

**IMO/IMDG Classification**

Not available.

**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 50%  
 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 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****EINECS**

Hydrochloric acid 231-595-7  
 Water 231-791-2

**DSDL (EEC)**

R35- Causes severe burns.

**International Lists**

Australia (NICNAS): Hydrochloric acid; Water

Japan (MITI): Hydrochloric acid; Water

Korea (TCCL): Hydrochloric acid; Water

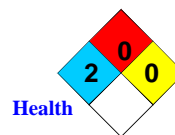
Philippines (RA6969): Hydrochloric acid; Water  
 China: No products were found.

**State Regulations****Continued on Next Page**

Pennsylvania RTK: Hydrochloric acid: (environmental hazard, generic environmental hazard)  
Massachusetts RTK: Hydrochloric acid  
New Jersey: Hydrochloric Acid 50% (1+1)  
California prop. 65: No products were found.

**Section 16. Other Information**

**National Fire  
Protection  
Association  
(U.S.A.)**



Fire Hazard

Reactivity

Specific Hazard

**Changed Since Last  
Revision**

**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.*