

J.T.BAKER INC. 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865
M A T E R I A L S A F E T Y D A T A S H E E T
24-HOUR EMERGENCY TELEPHONE -- (908) 859-2151
CHEMTREC # (800) 424-9300 -- NATIONAL RESPONSE CENTER # (800) 424-8802

S8234 -06
EFFECTIVE: 04/16/93

SULFURIC ACID

PAGE: 8
ISSUED: 07/03/93

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SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION (CONTINUED)
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172.3 AND EMPLOYEE TRAINING 49CFR 173.1.

U.S. CUSTOMS HARMONIZATION NUMBER: 28070000001

=====
N/A = NOT APPLICABLE OR NOT AVAILABLE
N/E = NOT ESTABLISHED

THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET MEETS THE REQUIREMENTS OF THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ACT AND REGULATIONS PROMULGATED THEREUNDER (29 CFR 1910.1200 ET. SEQ.) AND THE CANADIAN WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. THIS DOCUMENT IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING OF THE MATERIAL BY A PERSON TRAINED IN, OR SUPERVISED BY A PERSON TRAINED IN, CHEMICAL HANDLING. THE USER IS RESPONSIBLE FOR DETERMINING THE PRECAUTIONS AND DANGERS OF THIS CHEMICAL FOR HIS OR HER PARTICULAR APPLICATION. DEPENDING ON USAGE, PROTECTIVE CLOTHING INCLUDING EYE AND FACE GUARDS AND RESPIRATORS MUST BE USED TO AVOID CONTACT WITH MATERIAL OR BREATHING CHEMICAL VAPORS/FUMES.

EXPOSURE TO THIS PRODUCT MAY HAVE SERIOUS ADVERSE HEALTH EFFECTS. THIS CHEMICAL MAY INTERACT WITH OTHER SUBSTANCES. SINCE THE POTENTIAL USES ARE SO VARIED, BAKER CANNOT WARN OF ALL OF THE POTENTIAL DANGERS OF USE OR INTERACTION WITH OTHER CHEMICALS OR MATERIALS. BAKER WARRANTS THAT THE CHEMICAL MEETS THE SPECIFICATIONS SET FORTH ON THE LABEL.

BAKER DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.

THE USER SHOULD RECOGNIZE THAT THIS PRODUCT CAN CAUSE SEVERE INJURY AND EVEN DEATH, ESPECIALLY IF IMPROPERLY HANDLED OR THE KNOWN DANGERS OF USE ARE NOT HEEDED. READ ALL PRECAUTIONARY INFORMATION. AS NEW DOCUMENTED GENERAL SAFETY INFORMATION BECOMES AVAILABLE, BAKER WILL PERIODICALLY REVISE THIS MATERIAL SAFETY DATA SHEET.

NOTE: CHEMTREC, CANUTEC, AND NATIONAL RESPONSE CENTER EMERGENCY TELEPHONE NUMBERS ARE TO BE USED ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT INVOLVING CHEMICALS. ALL NON-EMERGENCY QUESTIONS SHOULD BE DIRECTED TO CUSTOMER SERVICE (1-800-JTBAKER) FOR ASSISTANCE.

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PROVED BY QUALITY ASSURANCE DEPARTMENT.

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"ISSUED BY VWR 10/02/93"

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SECTION IX - STORAGE AND HANDLING PRECAUTIONS

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SAF-T-DATA* STORAGE COLOR CODE: WHITE (CORROSIVE)

STORAGE REQUIREMENTS

KEEP CONTAINER TIGHTLY CLOSED. STORE IN CORROSION-PROOF AREA. KEEP
CONTAINERS OUT OF SUN AND AWAY FROM HEAT. ISOLATE FROM INCOMPATIBLE
MATERIALS.

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SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

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DOMESTIC (D.O.T.)

PROPER SHIPPING NAME: SULFURIC ACID
HAZARD CLASS: 8 (CORROSIVE MATERIAL)
UN/NA: UN1830 REPORTABLE QUANTITY: 1000 LBS. PACKAGING GROUP: II
LABELS: CORROSIVE
REGULATORY REFERENCES: 49CFR 172.101

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME: SULPHURIC ACID, WITH MORE THAN 51% ACID
HAZARD CLASS: 8 I.M.O. PAGE: 8230
UN: UN1830 MARINE POLLUTANTS: NO PACKAGING GROUP: II
LABELS: CORROSIVE
REGULATORY REFERENCES: 49CFR 172.102; PART 176; IMO

AIR (I.C.A.O.)

PROPER SHIPPING NAME: SULPHURIC ACID
HAZARD CLASS: 8
UN: UN1830 PACKAGING GROUP: II
LABELS: CORROSIVE
REGULATORY REFERENCES: 49CFR 172.101; 173.6; PART 175; ICAO/IATA=== WE BELIEVE
THE TRANSPORTATION DATA AND REFERENCES CONTAINED HEREIN
TO BE FACTUAL AND THE OPINION OF QUALIFIED EXPERTS. THE
DATA IS MEANT AS A GUIDE TO THE OVERALL CLASSIFICATION
OF THE PRODUCT AND IS NOT PACKAGE SIZE SPECIFIC, NOR
SHOULD IT BE TAKEN AS A WARRANTY OR REPRESENTATION FOR
WHICH THE COMPANY ASSUMES LEGAL RESPONSIBILITY.=== THE
INFORMATION IS OFFERED SOLELY FOR YOUR CONSIDERATION,
INVESTIGATION, AND VERIFICATION. ANY USE OF THE
INFORMATION MUST BE DETERMINED BY THE USER TO BE IN
ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL
LAWS AND REGULATIONS. SEE SHIPPER REQUIREMENTS 49CFR

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SECTION VI - REACTIVITY DATA (CONTINUED)
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DECOMPOSITION PRODUCTS: OXIDES OF SULFUR, HYDROGEN

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SECTION VII - SPILL & DISPOSAL PROCEDURES
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STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE
WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLCTHING. STOP
LEAK IF YOU CAN DO SO WITHOUT RISK. DO NOT USE WATER.
NEUTRALIZE SPILL AND/OR WASHINGS WITH SODA ASH OR LIME.
WITH CLEAN SHOVEL, PLACE MATERIAL INTO CLEAN, DRY CONTAINER AND COVER.
MCVE CONTAINER(S) FROM SPILL AREA.

J. T. BAKER NEUTRASORB(R) OR TEAM(R) 'LOW NA+' ACID NEUTRALIZERS ARE
FOR SPILLS OF THIS PRODUCT.

DISPOSAL PROCEDURE
DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL
ENVIRONMENTAL REGULATIONS.

EPA HAZARDOUS WASTE NUMBER: D002, D003 (CORROSIVE, REACTIVE WASTE)

=====
SECTION VIII - INDUSTRIAL PROTECTIVE EQUIPMENT
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VENTILATION: USE GENERAL OR LOCAL EXHAUST VENTILATION TO MEET TLV
REQUIREMENTS.

RESPIRATORY PROTECTION: NONE REQUIRED WHERE ADEQUATE VENTILATION CCNDITIONS
EXIST. IF AIRBORNE CONCENTRATION EXCEEDS TLV, A
SELF-CONTAINED BREATHING APPARATUS IS ADVISED.

EYE/SKIN PROTECTION: SAFETY GOGGLES AND FACE SHIELD, UNIFORM, PROTECTIVE
SUIT, RUBBER GLOVES ARE RECOMMENDED.

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SECTION V - HEALTH HAZARD DATA (CONTINUED)

SKIN CONTACT: IN CASE OF CONTACT, IMMEDIATELY FLUSH SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. WASH CLOTHING BEFORE RE-USE.

EYE CONTACT: IN CASE OF EYE CONTACT, IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.

THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) CLASSIFIED "STRONG INORGANIC ACID MISTS CONTAINING SULFURIC ACID" AS A CATEGORY 1 CARCINOGEN, A SUBSTANCE THAT IS "CARCINOGENIC TO HUMANS." THIS CLASSIFICATION IS FOR INORGANIC ACID MISTS ONLY AND DOES NOT APPLY TO SULFURIC ACID OR SULFURIC ACID SOLUTIONS. THE BASIS FOR THE IARC CLASSIFICATION RESTS ON SEVERAL EPIDEMIOLOGY STUDIES WHICH HAVE SEVERAL DEFICIENCIES. THESE STUDIES DID NOT ACCOUNT FOR EXPOSURE TO OTHER SUBSTANCES, SOME KNOWN TO BE ANIMAL OR POTENTIAL HUMAN CARCINOGENS, SOCIAL INFLUENCES (SMOKING OR ALCOHOL CONSUMPTION) AND INCLUDED SMALL NUMBERS OF SUBJECTS. BASED ON THE OVERALL WEIGHT OF EVIDENCE FROM ALL HUMAN AND CHRONIC ANIMAL STUDIES, NO DEFINITIVE CAUSAL RELATIONSHIP BETWEEN SULFURIC ACID MIST EXPOSURE AND RESPIRATORY TRACT CANCER HAS BEEN SHOWN.

SARA/TITLE III HAZARD CATEGORIES AND LISTS

ACUTE: YES CHRONIC: YES FLAMMABILITY: NO PRESSURE: NO REACTIVITY: YES

EXTREMELY HAZARDOUS SUBSTANCE: YES CONTAINS SULFURIC ACID (RQ = 1,000 LBS, TPQ = 1,000 LBS)

CERCLA HAZARDOUS SUBSTANCE: YES CONTAINS SULFURIC ACID (RQ = 1000 LBS)

SARA 313 TOXIC CHEMICALS: YES CONTAINS SULFURIC ACID

GENERIC CLASS: GENERIC CLASS REMOVED FROM CFR: 7/1/91

TSCA INVENTORY: YES

SECTION VI - REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: MOISTURE, HEAT

INCOMPATIBLES: WATER, MOST COMMON METALS, ORGANIC MATERIALS, STRONG REDUCING AGENTS, COMBUSTIBLE MATERIALS, STRONG BASES, CARBONATES, SULFIDES, CYANIDES, STRONG OXIDIZING AGENTS, CARBIDES

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SECTION V - HEALTH HAZARD DATA (CONTINUED)
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INHALATION-2HR RAT LC50 FOR SULFURIC ACID 510 MG/M3
INTRAPERITONEAL MOUSE LD50 FOR WATER 190 G/KG
INTRAVENOUS MOUSE LD50 FOR WATER 25 G/KG
CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO

CARCINOGENICITY
NCNE IDENTIFIED.

REPRODUCTIVE EFFECTS
NCNE IDENTIFIED.

EFFECTS OF OVEREXPOSURE

INHALATION: SEVERE IRRITATION OR BURNS OF RESPIRATORY SYSTEM,
PULMONARY EDEMA, LUNG INFLAMMATION

SKIN CONTACT: SEVERE BURNS

EYE CONTACT: SEVERE BURNS

SKIN ABSORPTION: NONE IDENTIFIED

INGESTION: NAUSEA, VOMITING, SEVERE BURNS TO MOUTH, THROAT, AND
STOMACH, KIDNEY DYSFUNCTION

CHRONIC EFFECTS: LUNG DAMAGE

TARGET ORGANS

RESPIRATORY SYSTEM, LUNGS, EYES, SKIN, TEETH, KIDNEYS

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

RESPIRATORY SYSTEM DISEASE

PRIMARY ROUTES OF ENTRY

INHALATION, INGESTION, EYE CONTACT, SKIN CONTACT

EMERGENCY AND FIRST AID PROCEDURES

INGESTION: CALL A PHYSICIAN. IF SWALLOWED, DO NOT INDUCE VOMITING. IF
CONSCIOUS, GIVE LARGE AMOUNTS OF WATER.

INHALATION: IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE
ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE
OXYGEN.

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SECTION IV - FIRE AND EXPLOSION HAZARD DATA
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FLASH POINT (CLOSED CUP): N/A NFPA 704M RATING: 3-0-2 W

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS: UPPER - N/A LOWER - N/A

FIRE EXTINGUISHING MEDIA

USE DRY CHEMICAL OR CARBON DIOXIDE. DO NOT USE WATER.

SPECIAL FIRE-FIGHTING PROCEDURES

FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE. DO NOT GET WATER INSIDE CONTAINERS.

UNUSUAL FIRE & EXPLOSION HAZARDS

REACTS WITH MOST METALS TO PRODUCE HYDROGEN GAS, WHICH CAN FORM AN EXPLOSIVE MIXTURE WITH AIR. A VIOLENT EXOTHERMIC REACTION OCCURS WITH WATER. SUFFICIENT HEAT MAY BE PRODUCED TO IGNITE COMBUSTIBLE MATERIALS.

TOXIC GASES PRODUCED

SULFUR DIOXIDE, HYDROGEN

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT

NONE IDENTIFIED.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE

NONE IDENTIFIED.

=====
SECTION V - HEALTH HAZARD DATA
=====

THRESHOLD LIMIT VALUE (TLV/TWA): 1 MG/M3

SHORT-TERM EXPOSURE LIMIT (STEL): NOT ESTABLISHED

PERMISSIBLE EXPOSURE LIMIT (PEL): 1 MG/M3

TOXICITY OF COMPONENTS

ORAL RAT LD50 FOR SULFURIC ACID

2140 MG/KG

INHALATION-2HR MOUSE LC50 FOR SULFURIC ACID

320 MG/M3

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PRECAUTIONARY LABELING (CONTINUED)

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INTERNATIONAL LABELING

AVOID CONTACT WITH EYES. AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH
PLENTY OF WATER. KEEP CONTAINER TIGHTLY CLOSED.

SAF-T-DATA* STORAGE COLOR CODE: WHITE (CORROSIVE)

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SECTION II - COMPONENTS

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COMPONENT	CAS NO.	WEIGHT %	OSHA/PEL	ACGIH/TLV
SULFURIC ACID	7664-93-9	80-98	1 MG/M3	1 MG/M3
WATER	7732-18-5	2-20	N/E	N/E

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SECTION III - PHYSICAL DATA

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BOILING POINT: 327 C (620 F)
(AT 760 MM HG)

VAPOR PRESSURE (MMHG): <0.3
(20 C)

MELTING POINT: -2 C (28 F)
(AT 760 MM HG)

VAPOR DENSITY (AIR=1): 3.4

SPECIFIC GRAVITY: 1.84
(H2O=1)

EVAPORATION RATE: <1
(BUTYL ACETATE = 1)

SOLUBILITY(H2O): COMPLETE (100%)

% VOLATILES BY VOLUME: N/A
(21 C)

PH: 1.0 (0.05M SOLUTION)

ODOR THRESHOLD (P.P.M.): N/A

PHYSICAL STATE: LIQUID

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

APPEARANCE & ODOR: CLEAR, COLORLESS TO YELLOW VISCOUS LIQUID. ODCRLESS.

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SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME: SULFURIC ACID
COMMON SYNONYMS: OIL OF VITRIOL; HYDROGEN SULFATE; SULPHURIC ACID
CHEMICAL FAMILY: INORGANIC ACIDS
FORMULA: H₂SO₄
FORMULA WT.: 98.08
CAS NO.: 7664-93-9
NIOSH/RTECS NO.: WS5600000
PRODUCT USE: LABORATORY REAGENT
PRODUCT CODES: 4802,5340,5137,9673,5432,9679,9680,9686,9687,5802,9694,9683
9693,9685,9681,6902,5643,9688,9675,9682,5374,9674,5815,5030
9684,9691,5837,9676

PRECAUTIONARY LABELING

BAKER SAF-T-DATA* SYSTEM

HEALTH	-	3	SEVERE (POISON)
FLAMMABILITY	-	0	NONE
REACTIVITY	-	3	SEVERE (WATER REACTIVE)
CONTACT	-	4	EXTREME (CORROSIVE)

LABORATORY PROTECTIVE EQUIPMENT

GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

U.S. PRECAUTIONARY LABELING

POISON DANGER

CAUSES SEVERE BURNS. REACTS VIOLENTLY WITH WATER. HARMFUL IF SWALLOWED OR INHALED. CONTACT WITH OTHER MATERIALS MAY CAUSE FIRE.
DO NOT GET IN EYES, ON SKIN, ON CLOTHING. DO NOT BREATHE VAPOR. KEEP IN TIGHTLY CLOSED CONTAINER. LOOSEN CLOSURE CAUTIOUSLY. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING. IN CASE OF SPILL NEUTRALIZE WITH SODA ASH OR LIME AND PLACE IN DRY CONTAINER.

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