

MATERIAL SAFETY DATA SHEET

FORMALDEHYDE, 37% SOL.
CAROLINA BIOLOGICAL

Revised: 09/05/00
Replaces: None
Printed: 06/06/06

PRODUCT IDENTIFICATION

PRODUCT NAME: FORMALDEHYDE, 37% SOLUTION
COMMON SYNONYMS: FORMALIN; METHYLENE OXIDE; METHYL ALDEHYDE; METHANAL
CHEMICAL FAMILY: AQUEOUS SOLUTIONS
FORMULA: HCHO
FORMULA WT.: 30.03
CAS NO.: 50-00-0
NIOSH/RTECS NO.: LP8925000
PRODUCT USE: LABORATORY REAGENT
PRODUCT CODES: 2105,2112,2106
CHEMTREC # (800) 424-9300 NATIONAL RESPONSE CENTER # (800) 424-8802
J.T.BAKER INC. 222 RED SCHOOL LANE PHILLIPSBURG, NJ 08865 24-HOUR
EMERGENCY TELEPHONE -- (201) 859-2151
EFFECTIVE: 12/15/93 ISSUED: 04/08/95
REVISION #06

PRECAUTIONARY LABELING

BAKER SAF-T-DATA* SYSTEM

HEALTH	-	3	SEVERE (CANCER CAUSING)
FLAMMABILITY	-	2	MODERATE
REACTIVITY	-	2	MODERATE
CONTACT	-	3	SEVERE (CORROSIVE)

LABORATORY PROTECTIVE EQUIPMENT

GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

U.S. PRECAUTIONARY LABELING

POISON DANGER

MAY BE FATAL IF SWALLOWED OR INHALED. NOTE: REPORTED AS CAUSING CANCER IN

LABORATORY ANIMALS. EXERCISE DUE CARE. COMBUSTIBLE LIQUID AND VAPOR CAUSES

SKIN AND EYE BURNS EXCEPTIONAL HEALTH AND CONTACT HAZARDS. BEFORE USING, READ

MATERIAL SAFETY DATA SHEET (MSDS) FOR THIS MATERIAL.

KEEP AWAY FROM HEAT, SPARKS, FLAME. DO NOT GET IN EYES, ON SKIN, ON CLOTHING.

AVOID BREATHING VAPOR. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEQUATE

VENTILATION. WASH THOROUGHLY AFTER HANDLING. IN CASE OF FIRE, USE WATER SPRAY, ALCOHOL FOAM, DRY CHEMICAL, OR CARBON DIOXIDE. FLUSH SPILL AREA WITH

WATER SPRAY.

INTERNATIONAL LABELING

TOXIC BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED. POSSIBLE RISKS OF

IRREVERSIBLE EFFECTS. MAY CAUSE SENSITIZATION BY SKIN CONTACT.

KEEP OUT OF REACH OF CHILDREN. AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH

PLENTY OF SOAP AND WATER. IN CASE OF CONTACT WITH EYES, RINSE

MATERIAL SAFETY DATA SHEET

FORMALDEHYDE, 37% SOL.
CAROLINA BIOLOGICAL

Revised: 09/05/00
Replaces: None
Printed: 06/06/06

IMMEDIATELY WITH
PLENTY OF WATER AND SEEK MEDICAL ADVICE. USE ONLY IN WELL VENTILATED
AREAS.

SAF-T-DATA* STORAGE COLOR CODE: RED (FLAMMABLE)

COMPONENTS

COMPONENT ACGIH/TLV	CAS NO.	WEIGHT %	OSHA/PEL
FORMALDEHYDE PPM	50-00-0	37-38	0.75 PPM 1
METHANOL PPM	67-56-1	10-15	200 PPM 200
WATER	7732-18-5	47-53	N/E N/E

PHYSICAL DATA

BOILING POINT: 96 C (204 F)
(AT 760 MM HG) VAPOR PRESSURE (MMHG): 1.3
(20 C)
MELTING POINT: N/A VAPOR DENSITY (AIR=1): 1.0
SPECIFIC GRAVITY: 1.08 EVAPORATION RATE: N/A
(H2O=1)
SOLUBILITY(H2O): COMPLETE (100%) % VOLATILES BY VOLUME: 100
(21 C)

PH: 2.8 (31% SOLUTION)

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

PHYSICAL STATE: LIQUID

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

APPEARANCE & ODOR: CLEAR, COLORLESS LIQUID. PUNGENT ODOR.

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP): 59 C (140 F) NFPA 704M RATING: 2-2-0

AUTOIGNITION TEMPERATURE: 423 C (795 F)

FLAMMABLE LIMITS: UPPER - 73.0 % LOWER - 7.0 %

FIRE EXTINGUISHING MEDIA

USE WATER SPRAY, ALCOHOL FOAM, DRY CHEMICAL OR CARBON DIOXIDE.

SPECIAL FIRE-FIGHTING PROCEDURES

FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-
CONTAINED

BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE
PRESSURE

MODE. MOVE CONTAINERS FROM FIRE AREA IF IT CAN BE DONE WITHOUT RISK.
USE

WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL.

UNUSUAL FIRE & EXPLOSION HAZARDS

VAPORS MAY FLOW ALONG SURFACES TO DISTANT IGNITION SOURCES AND FLASH
BACK.

CLOSED CONTAINERS EXPOSED TO HEAT MAY EXPLODE. CONTACT WITH STRONG
OXIDIZERS MAY CAUSE FIRE.

TOXIC GASES PRODUCED

FORMALDEHYDE, CARBON MONOXIDE, CARBON DIOXIDE

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT

NONE IDENTIFIED.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE

NONE IDENTIFIED.

HEALTH HAZARD DATA

MATERIAL SAFETY DATA SHEET

FORMALDEHYDE, 37% SOL.
CAROLINA BIOLOGICAL

Revised: 09/05/00
Replaces: None
Printed: 06/06/06

THRESHOLD LIMIT VALUE (TLV/TWA): 1.5 MG/M (0.75 PPM)
TLV IS FOR FORMALDEHYDE.
SHORT-TERM EXPOSURE LIMIT (STEL): 3 MG/M (2 PPM)
STEL IS FOR FORMALDEHYDE.
PERMISSIBLE EXPOSURE LIMIT (PEL): 1.5 MG/M (0.75 PPM)
PEL IS FOR FORMALDEHYDE.

TOXICITY OF COMPONENTS

ORAL RAT LD50 FOR FORMALDEHYDE MG/KG	800
SKIN RABBIT LD50 FOR FORMALDEHYDE MG/KG	270
SUBCUTANEOUS RAT LD50 FOR FORMALDEHYDE MG/KG	420
INHALATION RAT LC50 FOR FORMALDEHYDE MG/KG	590
ORAL RAT LD50 FOR METHANOL MG/KG	5628
INTRAPERITONEAL RAT LD50 FOR METHANOL MG/KG	9540
SUBCUTANEOUS MOUSE LD50 FOR METHANOL MG/KG	9800
SKIN RABBIT LD50 FOR METHANOL G/KG	20
INTRAPERITONEAL MOUSE LD50 FOR WATER G/KG	190
INTRAVENOUS MOUSE LD50 FOR WATER G/KG	25

CARCINOGENICITY: NTP: YES IARC: NO Z LIST: NO OSHA REG: NO
CARCINOGENICITY

THIS SUBSTANCE IS LISTED AS AN ACGIH SUSPECTED HUMAN CARCINOGEN AND
A NTP

ANTICIPATED HUMAN CARCINOGEN.

REPRODUCTIVE EFFECTS

TESTS ON LABORATORY ANIMALS INDICATE THAT FORMALDEHYDE MAY BE
MUTAGENIC.

EFFECTS OF OVEREXPOSURE

INHALATION: HEADACHE, NAUSEA, VOMITING, DIZZINESS, DROWSINESS,
IRRITATION OF UPPER RESPIRATORY TRACT,
UNCONSCIOUSNESS,
AND MAY BE FATAL.

SKIN CONTACT: SEVERE IRRITATION OR BURNS, PROLONGED CONTACT MAY
CAUSE

SKIN SENSITIZATION

EYE CONTACT: SEVERE IRRITATION OR BURNS

SKIN ABSORPTION: RAPID ABSORPTION

INGESTION: BLINDNESS, NAUSEA, VOMITING, GASTROINTESTINAL
IRRITATION,

BURNS TO MOUTH AND THROAT, AND MAY BE FATAL.

CHRONIC EFFECTS: KIDNEY DAMAGE, LIVER DAMAGE
TARGET ORGANS

RESPIRATORY SYSTEM, EYES, SKIN, LIVER, KIDNEYS

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

MATERIAL SAFETY DATA SHEET

FORMALDEHYDE, 37% SOL.
CAROLINA BIOLOGICAL

Revised: 09/05/00
Replaces: None
Printed: 06/06/06

NONE IDENTIFIED
PRIMARY ROUTES OF ENTRY
INHALATION, INGESTION, EYE CONTACT, SKIN CONTACT, ABSORPTION
EMERGENCY AND FIRST AID PROCEDURES
INGESTION: CALL A PHYSICIAN. IF SWALLOWED, IF CONSCIOUS, GIVE
LARGE AMOUNTS OF WATER. INDUCE VOMITING.
INHALATION: IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING,
GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT,
GIVE OXYGEN. PROMPT ACTION IS ESSENTIAL.
SKIN CONTACT: IN CASE OF CONTACT, IMMEDIATELY FLUSH SKIN WITH PLENTY
OF WATER FOR AT LEAST 15 MINUTES.
EYE CONTACT: IN CASE OF EYE CONTACT, IMMEDIATELY FLUSH WITH PLENTY
OF WATER FOR AT LEAST 15 MINUTES.

SARA/TITLE III HAZARD CATEGORIES AND LISTS
ACUTE: YES CHRONIC: YES FLAMMABILITY: YES PRESSURE: NO REACTIVITY: NO
EXTREMELY HAZARDOUS SUBSTANCE: YES CONTAINS FORMALDEHYDE (RQ = 1,000
LBS, TPQ

= 500 LBS)
CERCLA HAZARDOUS SUBSTANCE: YES CONTAINS FORMALDEHYDE (RQ = 1000
LBS)
SARA 313 TOXIC CHEMICALS: YES CONTAINS FORMALDEHYDE AND METHANOL
GENERIC CLASS: GENERIC CLASS REMOVED FROM CFR:

7/1/91

TSCA INVENTORY: YES
STATE LISTS: FOR PRODUCTS SOLD IN THE STATE OF CALIFORNIA, THE STATE
REQUIRES THAT WE PROVIDE TO USERS AND THEIR EMPLOYEES THE FOLLOWING MESSAGE:
WARNING:
THIS PRODUCT CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO
CAUSE CANCER.

REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: MAY OCCUR
CONDITIONS TO AVOID: HEAT, FLAME, OTHER SOURCES OF IGNITION
INCOMPATIBLES: STRONG OXIDIZING AGENTS, STRONG ACIDS, STRONG
BASES,
ALKALIES, ALKALI METALS, AMINES AND AMMONIA,
PHENOL,
STRONG REDUCING AGENTS
DECOMPOSITION PRODUCTS: FORMALDEHYDE, CARBON MONOXIDE, CARBON DIOXIDE

SPILL & DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE
WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE
CLOTHING. SHUT OFF IGNITION SOURCES; NO FLARES, SMOKING OR FLAMES IN AREA. STOP
LEAK IF

MATERIAL SAFETY DATA SHEET

FORMALDEHYDE, 37% SOL.
CAROLINA BIOLOGICAL

Revised: 09/05/00
Replaces: None
Printed: 06/06/06

YOU CAN DO SO WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. TAKE UP WITH SAND OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIAL AND PLACE INTO CONTAINER FOR LATER DISPOSAL. FLUSH AREA WITH WATER. FOR LARGE SPILLS NEUTRALIZE WITH A 2% SOLUTION OF AMMONIA, SODIUM SULFITE, OR SODIUM BISULFITE AND REMOVE. FLUSH AREA WITH WATER. ALL CLEAN-UP EFFORTS SHOULD BE DONE IN ACCORDANCE TO ALL LOCAL, STATE AND FEDERAL LAWS.

DISPOSAL PROCEDURE

THIS PRODUCT WHEN SPILLED OR DISPOSED OF IS A RCRA HAZARDOUS WASTE (U122).

INCINERATION OR BIOLOGICAL TREATMENT IS THE PREFERRED METHOD OF DISPOSAL.

EITHER OF THESE METHODS SHOULD BE DONE AT FEDERAL OR STATE FACILITY.

COMPLY WITH ALL LOCAL, STATE AND FEDERAL LAWS. THIS MATERIAL IS SUBJECT

TO SARA TITLE III REPORTING REQUIREMENTS.

EPA HAZARDOUS WASTE NUMBER: U122 (TOXIC WASTE)

INDUSTRIAL PROTECTIVE EQUIPMENT

VENTILATION: VENTILATION (LOCAL) IS RECOMMENDED WHERE APPROPRIATE TO CONTROL EMPLOYEE EXPOSURE. IF THE LIMITS EXCEED THE OSHA, TWA OR STEL THEN USE A FULL FACE AIR PURIFYING RESPIRATOR (NIOSH APPROVED).

MECHANICAL VENTILATION IS NOT RECOMMENDED FOR CONTROLLING EMPLOYEE'S EXPOSURE.

RESPIRATORY PROTECTION: RESPIRATORY PROTECTION REQUIRED IF AIRBORNE CONCENTRATION EXCEEDS TLV. AT CONCENTRATIONS UP TO 50 PPM, A CHEMICAL CARTRIDGE RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE IS RECOMMENDED. ABOVE THIS LEVEL, A SELF-CONTAINED BREATHING APPARATUS IS RECOMMENDED.

EYE/SKIN PROTECTION: GOGGLES WITH A FACE SHIELD RECOMMENDED. NEOPRENE, NITRILE, BUTYL OR PVC GLOVES AND APRONS RECOMMENDED.

STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA* STORAGE COLOR CODE: RED (FLAMMABLE)

STORAGE REQUIREMENTS

KEEP CONTAINER TIGHTLY CLOSED. STORE IN A COOL, DRY, WELL-VENTILATED,

FLAMMABLE LIQUID STORAGE AREA OR CABINET. ISOLATE FROM INCOMPATIBLE MATERIALS. STORE ABOVE 15 C. POLYMERIZES AND SEPARATES BELOW 0-67 C (32-153 F)

SPECIAL PRECAUTIONS

MATERIAL SAFETY DATA SHEET

FORMALDEHYDE, 37% SOL.
CAROLINA BIOLOGICAL

Revised: 09/05/00
Replaces: None
Printed: 06/06/06

FORMALDEHYDE SOLUTIONS WITH A FLASH POINT BELOW 141 F IN CONTAINERS EXCEEDING 110 GALLONS ARE CLASSIFIED AS A COMBUSTIBLE WITH UN1198.
SEE
49CFR 172.101.

TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME: FORMALDEHYDE, SOLUTIONS
HAZARD CLASS: 3
UN/NA: UN1198 REPORTABLE QUANTITY: 100 LBS. PACKAGING GROUP: III
LABELS: 3 FLAMMABLE LIQUID
REGULATORY REFERENCES: 49CFR 172.101

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME: FORMALDEHYDE, SOLUTIONS
HAZARD CLASS: 3.3 I.M.O. PAGE: 3347
UN: UN1198 MARINE POLLUTANTS: NO PACKAGING GROUP: III
LABELS: 3 FLAMMABLE LIQUID
REGULATORY REFERENCES: 49CFR PART 176; IMDG CODE

AIR (I.C.A.O.)

PROPER SHIPPING NAME: FORMALDEHYDE, SOLUTIONS
HAZARD CLASS: 3 PACKAGING GROUP: III
UN: UN1198
LABELS: 3 FLAMMABLE LIQUID
REGULATORY REFERENCES: 49CFR PART 175; ICAO=== WE BELIEVE THE
TRANSPORTATION

FACTUAL AND DATA AND REFERENCES CONTAINED HEREIN TO BE
MEANT AS THE OPINION OF QUALIFIED EXPERTS. THE DATA IS
PRODUCT A GUIDE TO THE OVERALL CLASSIFICATION OF THE
BE AND IS NOT PACKAGE SIZE SPECIFIC, NOR SHOULD IT
THE TAKEN AS A WARRANTY OR REPRESENTATION FOR WHICH
CONSIDERATION, COMPANY ASSUMES LEGAL RESPONSIBILITY.=== THE
IN INFORMATION IS OFFERED SOLELY FOR YOUR
LOCAL INVESTIGATION, AND VERIFICATION. ANY USE OF THE
49CFR INFORMATION MUST BE DETERMINED BY THE USER TO BE
TRAINING 49 ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND
CFR 173.1(B). LAWS AND REGULATIONS. SEE SHIPPER REQUIREMENTS
171.2, CERTIFICATION 172.204, AND EMPLOYEE

U.S. CUSTOMS HARMONIZATION NUMBER: 29121100000

NOTE: WHEN HANDLING LIQUID PRODUCTS, SECONDARY PROTECTIVE CONTAINERS

MATERIAL SAFETY DATA SHEET

FORMALDEHYDE, 37% SOL.
CAROLINA BIOLOGICAL

Revised: 09/05/00
Replaces: None
Printed: 06/06/06

MUST BE USED FOR CARRYING. 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 ASSISTANCE. COPYRIGHT 1995 J.T.BAKER INC. * TRADEMARKS OF J.T.BAKER INC. APPROVED BY QUALITY ASSURANCE DEPARTMENT.