UNION CARBIDE

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.
SPECIALTY CHEMICALS DIVISION

MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 04/13/92

UNION CARBIDE URGES EACH CUSTOMER OR RECIPIENT OF THIS MSDS TO STUDY IT CAREFULLY TO BECOME AWARE OF AND UNDERSTAND THE HAZARDS ASSOCIATED WITH THE PRODUCT. THE READER SHOULD CONSIDER CONSULTING REFERENCE WORKS OR INDIVIDUALS WHO ARE EXPERTS IN VENTILATION, TOXICOLOGY, AND FIRE PREVENTION, AS NECESSARY OR APPROPRIATE TO USE AND UNDERSTAND THE DATA CONTAINED IN THIS MSDS.

TO PROMOTE SAFE HANDLING, EACH CUSTOMER OR RECIPIENT SHOULD: (1) NOTIFY ITS EMPLOYEES, AGENTS, CONTRACTORS AND OTHERS WHOM IT KNOWS OR BELIEVES WILL USE THIS MATERIAL OF THE INFORMATION IN THIS MSDS AND ANY OTHER INFORMATION REGARDING HAZARDS OR SAFETY; (2) FURNISH THIS SAME INFORMATION TO EACH OF ITS CUSTOMERS FOR THE PRODUCT; AND (3) REQUEST ITS CUSTOMERS TO NOTIFY THEIR EMPLOYEES, CUSTOMERS, AND OTHER USERS OF THE PRODUCT OF THIS INFORMATION.

------I. IDENTIFICATION ------

PRODUCT NAME: NIAX CATALYST A-99

CHEMICAL NAME: BIS(2-DIMETHYLAMINOETHYL)ETHER

CHEMICAL FAMILY: TERTIARY AMINE

FORMULA: (CH3)2NCH2CH2OCH2CH2N(CH3)2

MOLECULAR WEIGHT: 160.26

SYNONYMS: 2,2'OXYBIS(N,N-DIMETHYLETHYLAMINE)

CAS # AND 3033-62-3
CAS NAME: ETHANAMINE,2,2'-OXYBIS(N,N-DIMETHYL-

------II. PHYSICAL DATA (DETERMINED ON TYPICAL MATERIAL) ------

BOILING POINT, 760 MM HG: 189 C (373 F)

SPECIFIC GRAVITY(H2O =1): 0.8525 @ 20 C

FREEZING POINT: <-80 C (-112 F)

VAPOR PRESSURE AT 20 C: < PSIA @ 38 C

VAPOR DENSITY (AIR = 1): 5.5

EVAPORATION RATE
(BUTYL ACETATE = 1): 0.04

SOLUBILITY IN WATER BY WT: COMPLETE

APPEARANCE: PALE YELLOW

ODOR: MILD AMINE

PHYSICAL STATE: LIQUID

------III. INGREDIENTS ------

%	MATERIAL	CAS#	EXPOSURE LIMIT
>99	*BIS(2-DIMETHYLAMINO-ETHYL)ETHER	3033-62-3	NONE ESTABLISHED
<1	DIMETHYLETHANOLAMINE	108-01-0	5 PPM-TWA 8, UCC 25 PPM-STEL, UCC

* BIS(2-DIMETHYLAMINOETHYL)ETHER IS NIAX CATALYST A-99
SEE SECTION X FOR CHEMICALS APPEARING ON FEDERAL OR STATE RIGHT-TO-KNOW LISTS

------IV. FIRE AND EXPLOSION HAZARD DATA ------

FLASH POINT(TEST METHOD(S)): 155 F (68 C)
PENSKY-MARTENS CLOSED CUP ASTM D 93

FLAMMABLE LIMITS IN AIR % BY VOLUME: LOWER: 1.0 UPPER: 5.1

SPECIAL FIRE FIGHTING PROCEDURES: USE SELF CONTAINED BREATHING APPARATUS AND BODY-COVERING PROTECTIVE CLOTHING. DURING A FIRE, OXIDES OF CARBON AND OXIDES OF NITROGEN MAY BE PRODUCED.

EXTINGUISHING MEDIA: APPLY ALCOHOL-TYPE OR ALL-PURPOSE-TYPE FOAM BY MANUFACTURER'S RECOMMENDED TECHNIQUES FOR LARGE FIRES. USE CARBON DIOXIDE OR DRY CHEMICAL MEDIA FOR SMALL FIRES.

UNUSUAL FIRE AND EXPLOSION HAZARDS: THIS MATERIAL MAY PRODUCE A FLOATING FIRE HAZARD IN EXTREME FIRE CONDITIONS.

------V. HEALTH HAZARD DATA ------

EXPOSURE LIMIT(S): SEE SECTION III, "INGREDIENTS"

EFFECTS OF SINGLE OVEREXPOSURE:

SWALLOWING: MODERATELY TOXIC.
CAUSES SEVERE IRRITATION OR CHEMICAL BURNS OF THE MOUTH, THROAT, ESOPHAGUS, AND STOMACH, WITH PAIN OR DISCOMFORT IN THE MOUTH, THROAT, CHEST, AND ABDOMEN, NAUSEA, VOMITING. DIARRHEA, DIZZINESS, DROWSINESS, THIRST, CIRCULATORY COLLAPSE, AND COMA.
ASPIRATION INTO THE LUNGS MAY OCCUR DURING INGESTION OR VOMITING, RESULTING IN LUNG INJURY.

SKIN ABSORPTION: TOXIC.
PROLONGED OR WIDESPREAD CONTACT MAY RESULT IN THE ABSORPTION OF POTENTIALLY HARMFUL AMOUNTS OF MATERIAL.

INHALATION: THE VAPOR CONCENTRATION OF A-99 DEVELOPED UNDER AMBIENT TEMPERATURE CONDITIONS IS CLOSELY RELATED TO THE RELATIVE HUMIDITY OF THE ATMOSPHERE, THE CONCENTRATION OF A-99 INCREASING AS THE RELATIVE HUMIDITY DECREASES. UNDER NORMAL WORKPLACE CONDITIONS, WITH RELATIVE HUMIDITY

GREATER THAN 50%, ONLY A FEW PPM VAPOR WILL ACCUMULATE. THIS MAY BE SUFFICIENT TO PRODUCE THE MINOR TRANSIENT DISTURBANCE OF VISION NOTED BELOW, AND POSSIBLY MILD DISCOMFORT IN THE EYE AND RESPIRATORY TRACT. WITH VERY LOW HUMIDITY (<50%), THE DRY ATMOSPHERE ALLOWS MORE A-99 VAPOR TO ACCUMULATE. UNDER THESE MORE UNUSUAL CIRCUMSTANCES SEVERAL TENS OF PPM OF A-99 VAPOR MAY ACCUMULATE, WHICH ARE LIKELY TO PRODUCE MORE SEVERE RESPIRATORY TRACT IRRITATION. THIS WILL BE EXPERIENCED AS DISCOMFORT IN THE NOSE, THROAT, AND CHEST, WITH NASAL DISCHARGE, COUGH, AND DIFFICULTY WITH BREATHING.

SKIN CONTACT: CAUSES LOCAL DISCOMFORT OR PAIN, SEVERE EXCESS REDNESS AND SWELLING, TISSUE DESTRUCTION, FISSURES, ULCERATION, AND POSSIBLY BLEEDING INTO THE INJURED AREA.

EYE CONTACT: VAPOR MAY CAUSE TEMPORARY DISTURBANCE OF VISION. (SEE "NOTES TO PHYSICIAN".) LIQUID CAUSES SEVERE IRRITATION, EXPERIENCED AS DISCOMFORT OR PAIN, EXCESS BLINKING AND TEAR PRODUCTION, MARKED EXCESS REDNESS AND SWELLING OF THE CONJUNCTIVA, AND CHEMICAL BURNS OF THE EYE.

EFFECTS OF REPEATED OVEREXPOSURE: REPEATED CONTACT WITH SKIN MAY CAUSE A SEVERE CUMULATIVE DERMATITIS. REPEATED OVEREXPOSURE TO VAPOR MAY CAUSE LUNG INJURY.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: SKIN CONTACT MAY AGGRAVATE AN EXISTING DERMATITIS.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION: SHORT-TERM REPEATED DERMAL APPLICATIONS (9 DAYS) OF AQUEOUS SOLUTIONS OF NIAX CATALYST A-99, IN THE CONCENTRATION RANGE 2.5% TO 10% (V/V), PRODUCED DOSE-RELATED DECREASES IN BODY WEIGHT AND EARLY NEPHROTOXIC CHANGES. HOWEVER, NO SUCH EFFECTS WERE SEEN BY SUBCHRONIC SUSTAINED DAILY OCCLUDED CONTACT WITH AQUEOUS SOLUTIONS CONTAINING 2% AND LESS OF THE A-99. SEVERAL IN VITRO STUDIES HAVE SHOWN A-99 TO BE DEVOID OF MUTAGENIC POTENTIAL. THE RECURRENT DAILY DERMAL APPLICATION OF A-99 TO PREGNANT RABBITS DURING THE PERIOD OF MAXIMUM ORGANOGENESIS PRODUCED EVIDENCE FOR MATERNAL TOXICITY, BUT THERE WAS NO INDICATION OF TERATOGENIC OR EMBRYOTOXIC EFFECTS. EXPOSURE OF RATS TO VAPOR OF A-99 CAUSED MORTALITIES AFTER 3 OR 4 EXPOSURES TO 90 PPM. AND AFTER 6 TO 9 EXPOSURES AT 47 PPM. THERE WERE NO FATALITIES WITH 9 EXPOSURES TO 22 PPM. CYTOPLASMIC VACUOLATION OF BRONCHIAL AND BRONCHIOLAR EPITHELIAL CELLS AND CORNEAL OPACITIES WERE SEEN AT ALL CONCENTRATIONS.

OTHER EFFECTS OF OVEREXPOSURE: NONE CURRENTLY KNOWN.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING: IF PATIENT IS FULLY CONSCIOUS, GIVE TWO GLASSES OF MILK OR WATER AT ONCE. DO NOT INDUCE VOMITING. OBTAIN MEDICAL ATTENTION WITHOUT DELAY.

SKIN: IMMEDIATELY REMOVE CONTAMINATED CLOTHING AND SHOES. WASH SKIN WITH SOAP AND WATER. OBTAIN MEDICAL ATTENTION. WASH CLOTHING BEFORE REUSE. DISCARD SHOES.

INHALATION: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. IF BREATHING IS DIFFICULT, OXYGEN MAY BE GIVEN BY QUALIFIED PERSONNEL. OBTAIN MEDICAL ATTENTION.

EYES: IMMEDIATELY FLUSH EYES WITH WATER AND CONTINUE WASHING FOR AT LEAST 15 MINUTES. OBTAIN MEDICAL ATTENTION WITHOUT DELAY, PREFERABLY FROM AN OPHTHALMOLOGIST.

NOTES TO PHYSICIAN: THERE IS NO SPECIFIC ANTIDOTE. TREATMENT OF OVEREXPOSURE SHOULD BE DIRECTED AT THE CONTROL OF SYMPTOMS AND THE CLINICAL CONDITION OF THE PATIENT.
SEVERE IRRITANT TO THE SKIN AND EYE.
MODERATELY TOXIC BY SWALLOWING.
MODERATELY TOXIC BY ABSORPTION ACROSS THE SKIN.
DUE TO THE IRRITANT NATURE OF THE MATERIAL, THE STOMACH SHOULD BE EVACUATED CAREFULLY IN CASES OF POISONING BY SWALLOWING.
EXPOSURE TO THE VAPOR MAY CAUSE MINOR TRANSIENT EDEMA OF THE CORNEAL EPITHELIUM. THIS CONDITION, REFERRED TO AS "GLAUCOPSIA", "BLUE HAZE" OR "BLUE-GRAY HAZE". PRODUCES A BLURRING OF VISION AGAINST A GENERAL BLUISH HAZE AND THE APPEARANCE OF HALOS AROUND BRIGHT OBJECTS. THE EFFECT DISAPPEARS SPONTANEOUSLY WITHIN A FEW HOURS OF THE END OF AN EXPOSURE AND LEAVES NO SEQUELAE. ALTHOUGH NOT DETRIMENTAL TO THE EYE PER SE, GLAUCOPSIA PREDISPOSES AN AFFECTED INDIVIDUAL TO PHYSICAL ACCIDENTS AND REDUCES THE ABILITY TO UNDERTAKE SKILLED TASKS, SUCH AS DRIVING A MOTORIZED VEHICLE.

------VI. REACTIVITY DATA ------

STABILITY: STABLE

CONDITIONS TO AVOID: NONE.

INCOMPATIBILITY (MATERIALS TO AVOID):
STRONG OXIDIZING AGENTS.
ACIDS.
HALOGENS.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS: BURNING CAN PRODUCE THE FOLLOWING COMBUSTION PRODUCTS:
OXIDES OF CARBON AND NITROGEN.
CARBON MONOXIDE IS HIGHLY TOXIC IF INHALED; CARBON DIOXIDE IN SUFFICIENT CONCENTRATIONS CAN ACT AS AN ASPHYXIANT.
ACUTE OVEREXPOSURE TO THE PRODUCTS OF COMBUSTION MAY RESULT IN IRRITATION OF THE RESPIRATORY TRACT.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: NONE.

------VII. SPILL OR LEAK PROCEDURES ------

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: COLLECT FOR DISPOSAL. WEAR SUITABLE PROTECTIVE EQUIPMENT.

WASTE DISPOSAL METHOD: INCINERATE IN A FURNACE WHERE PERMITTED UNDER FEDERAL, STATE, AND LOCAL REGULATIONS.

------VIII. SPECIAL PROTECTION INFORMATION ------

RESPIRATORY PROTECTION (SPECIFY TYPE): USE SELF-CONTAINED BREATHING APPARATUS IN HIGH VAPOR CONCENTRATIONS.

VENTILATION: GENERAL (MECHANICAL) ROOM VENTILATION IS EXPECTED TO BE SATISFACTORY WHERE THIS PRODUCT IS STORED AND HANDLED IN CLOSED EQUIPMENT. SPECIAL, LOCAL VENTILATION IS NEEDED AT POINTS WHERE VAPORS CAN BE EXPECTED TO ESCAPE TO THE WORKPLACE AIR.

PROTECTIVE GLOVES: NITRILE (NBR)

EYE PROTECTION: MONOGOGGLES

OTHER PROTECTIVE EQUIPMENT: EYE BATH, SAFETY SHOWER, CHEMICAL APRON

------IX. SPECIAL PRECAUTIONS ------

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: FOR INDUSTRY USE ONLY
DANGER! CAUSES EYE AND SKIN BURNS
HARMFUL IF INHALED
HARMFUL IF ABSORBED THROUGH SKIN
CORROSIVE AND HARMFUL IF SWALLOWED
ASPIRATION MAY CAUSE LUNG DAMAGE
COMBUSTIBLE
DO NOT INDUCE VOMITING
MAY CAUSE RESPIRATORY SYSTEM DAMAGE
VAPOR MAY CAUSE TEMPORARY BLURRING OF VISION

DO NOT GET IN EYES, ON SKIN, OR CLOTHING.
AVOID BREATHING VAPOR.
KEEP CONTAINER CLOSED.
USE WITH ADEQUATE VENTILATION.
WASH THOROUGHLY AFTER HANDLING.
DO NOT SWALLOW.
KEEP AWAY FROM HEAT AND FLAME.

OTHER PRECAUTIONS: WARNING: HOT ORGANIC CHEMICAL VAPORS OR MISTS ARE SUSCEPTIBLE TO SUDDEN SPONTANEOUS COMBUSTION WHEN MIXED WITH AIR. IGNITION MAY OCCUR AT TEMPERATURES BELOW THOSE PUBLISHED IN THE LITERATURE AS "AUTOIGNITION" OR "IGNITION" TEMPERATURES. IGNITION TEMPERATURES DECREASE WITH INCREASING VAPOR VOLUME AND VAPOR/AIR CONTACT TIME, AND ARE INFLUENCED BY PRESSURE CHANGES.

IGNITION MAY OCCUR AT TYPICAL ELEVATED-TEMPERATURE PROCESS CONDITIONS, ESPECIALLY IN PROCESSES OPERATING UNDER VACUUM IF SUBJECTED TO SUDDEN INGRESS OF AIR, OR OUTSIDE PROCESS EQUIPMENT OPERATING UNDER ELEVATED PRESSURE IF SUDDEN ESCAPE OF VAPORS OR MISTS TO THE ATMOSPHERE OCCURS.

ANY PROPOSED USE OF THIS PRODUCT IN ELEVATED-TEMPERATURE PROCESSES SHOULD BE THOROUGHLY EVALUATED TO ASSURE THAT SAFE OPERATING CONDITIONS ARE ESTABLISHED AND MAINTAINED.

------X. REGULATORY INFORMATION ------

STATUS ON SUBSTANCE LISTS:
THE CONCENTRATIONS SHOWN ARE MAXIMUM OR CEILING LEVELS (WEIGHT %) TO BE USED FOR CALCULATIONS FOR REGULATIONS. TRADE SECRETS ARE INDICATED BY "TS".

FEDERAL EPA

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION, AND LIABILITY ACT OF 1980 (CERCLA) REQUIRES NOTIFICATION OF THE NATIONAL RESPONSE CENTER OF RELEASE OF QUANTITIES OF HAZARDOUS SUBSTANCES EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITIES (RQs) IN 40 CFR 302.4.
     COMPONENTS PRESENT IN THIS PRODUCT AT A LEVEL WHICH COULD REQUIRE REPORTING UNDER THE STATUTE ARE:

*** NONE ***

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) TITLE III REQUIRES EMERGENCY PLANNING BASED ON THRESHOLD PLANNING QUANTITIES (TPQs) AND RELEASE REPORTING BASED ON REPORTABLE QUANTITIES (RQs) IN 40 CFR 355 (USED FOR SARA 302, 304, 311 AND 312).
COMPONENTS PRESENT IN THIS PRODUCT AT A LEVEL WHICH COULD REQUIRE REPORTING UNDER THE STATUTE ARE:
*** NONE ***

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) TITLE III REQUIRES SUBMISSION OF ANNUAL REPORTS OF RELEASE OF TOXIC CHEMICALS THAT APPEAR IN 40 CFR 372 (FOR SARA 313). THIS INFORMATION MUST BE INCLUDED IN ALL MSDSs THAT ARE COPIED AND DISTRIBUTED FOR THIS MATERIAL.
COMPONENTS PRESENT IN THIS PRODUCT AT A LEVEL WHICH COULD REQUIRE REPORTING UNDER THE STATUTE ARE:
*** NONE ***

TOXIC SUBSTANCES CONTROL ACT (TSCA) STATUS: THE INGREDIENTS OF THIS PRODUCT ARE ON THE TSCA INVENTORY.

STATE RIGHT-TO-KNOW

CALIFORNIA PROPOSITION 65
THIS PRODUCT CONTAINS NO LEVELS OF LISTED SUBSTANCES WHICH THE STATE OF CALIFORNIA HAS FOUND TO CAUSE CANCER, BIRTH DEFECTS, OR OTHER REPRODUCTIVE HARM, WHICH WOULD REQUIRE A WARNING UNDER THE STATUTE.

MASSACHUSETTS RIGHT-TO-KNOW, SUBSTANCE LIST (MSL) HAZARDOUS SUBSTANCES AND EXTRAORDINARILY HAZARDOUS SUBSTANCES ON THE MSL MUST BE IDENTIFIED WHEN PRESENT IN PRODUCTS.
COMPONENTS PRESENT IN THIS PRODUCT AT A LEVEL WHICH COULD REQUIRE REPORTING UNDER THE STATUE ARE:
HAZARDOUS SUBSTANCES (--> 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
DIMETHYLETHANOLAMINE	108-01-0	1.00

PENNSYLVANIA RIGHT-TO-KNOW, HAZARDOUS SUBSTANCE LIST HAZARDOUS SUBSTANCES AND SPECIAL HAZARDOUS SUBSTANCES ON THE LIST MUST BE IDENTIFIED WHEN PRESENT IN PRODUCTS.
COMPONENTS PRESENT IN THIS PRODUCT AT A LEVEL WHICH COULD REQUIRE REPORTING UNDER THE STATUE ARE:
HAZARDOUS SUBSTANCES (--> 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
DIMETHYLETHANOLAMINE	108-01-0	1.00

CALIFORNIA SCAQMD RULE 443.1 VOC'S: ** NOT APPLICABLE **

OTHER REGULATORY INFORMATION: EPA/SARA HAZARD CATEGORIES: IMMEDIATE HEALTH; DELAYED HEALTH; FIRE

NOTE
THE OPINIONS EXPRESSED HEREIN ARE THOSE OF QUALIFIED EXPERTS WITHIN UNION CARBIDE CHEMICALS AND PLASTICS COMPANY. WE BELIEVE THAT THE INFORMATION CONTAINED HEREIN IS CURRENT AS OF THE DATE OF THIS MATERIAL SAFETY DATA SHEET. SINCE THE USE OF THIS INFORMATION AND OF THESE OPINIONS AND THE CONDITIONS OF THE USE OF THE PRODUCT ARE NOT WITHIN THE CONTROL OF UNION CARBIDE CHEMICALS AND PLASTICS COMPANY, IT IS THE USER'S OBLIGATION TO

DETERMINE THE CONDITIONS OF SAFE USE OF THE PRODUCT.

REVISED SECTIONS: VI

PC: 61600
F NUMBER: U0097F

EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (NUMBER AVAILABLE AT ALL TIMES) OR (304) 744-3487

UNION CARBIDE CORPORATION
SPECIALTY CHEMICALS DIVISION
39 OLD RIDGEBURY ROAD, DANBURY, CT. 06817-0001