

GENERAL MOTORS CORPORATION

MATERIAL SAFETY DATA SHEET

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(P) REFRIGERANT 134A
12345922
12346139

SECTION 0 - EFFECTIVE DATE

- 1 ->Effective Date: 062091
- 2 ->MSDS signed by: Not Provided
- 3 ->Title: Not Provided

SECTION 1 - SHIPPING INFORMATION

- 1 ->Chemical Family: HALOGENATED HYDROCARBON
- 2 ->Formula: CH₂FCF₃
(*)MID: #533167
DUPONT
Emergency telephone #: 800/441-3637
(E1 DUPONT DE NEMOURS & CO INC)
WILMINGTON, DE 19888

Shipping Name:

Hazard Class:

U.N. Code:

Flash Point: *WNB (WNB=WILL NOT BURN) TOC

SECTION 2 - INGREDIENTS

CAS#	Formulation	Chemical Name
000811972	100%	Ethane, 1,1,1,2-tetrafluoro-

SECTION 3 - PHYSICAL DATA

- 1 ->Boiling Point: -26.2C/-15.2F @736 MMHG
- 2 ->Specific Gravity: -1.21 G/CC @25C/77F-LIQUID
- 3 ->Vapor Pressure: 66 PSIA @25C/77F
- 4 ->% Volatile by Volume: 100% WT
- 5 ->% Solid by Weight: Not Provided
- 6 ->Vapor Density: 3.60 @25C/77F
- 7 ->Evaporation Rate: Not Provided
- 8 ->Solubility in H₂O: 0.15 WT % @25C/77F: 14.7 PSIA
- 9 ->pH: Not Provided
- 10 ->Appearance & Odor: CLEAR; COLORLESS, LIQUEFIED GAS, SLIGHT ETHEREAL ODOR.
- 11 ->State: LIQUID

SECTION 4 - FIRE AND EXPLOSION DATA

- 1 ->Flammable Limits - LEL: NOT APPLICABLE
- 2 ->Flammable Limits - UEL: NOT APPLICABLE
- 3 ->Extinguishing Media: AS APPROPRIATE FOR COMBUSTIBLES IN AREA.
- 4 ->Special Fire Fighting Procedures: COOL CYLINDERS WITH WATER SPRAY. SELF CONTAINED BREATHING APPARATUS(SCBA) MAY BE REQUIRED IF CYLINDERS RUPTURE OR RELEASE UNDER FIRE CONDITIONS.
- 5 ->Unusual Fire & Explosion Hazards: SUVA TRANS A/C IS NOT FLAMMABLE AT AMBIENT TEMPERATURES AND ATMOSPHERIC PRESSURE. HOWEVER, SUVA TRANS A/C HAS BEEN SHOWN IN TESTS TO BE COMBUSTIBLE AT PRESSURES AS LOW AS 5.5 PSIG (@177C) WHEN MIXED WITH AIR AT CONCENTRATIONS OF GENERALLY MORE THAN 60 VOLUME % AIR. AT LOWER TEMPERATURES, HIGHER PRESSURES ARE REQUIRED FOR COMBUSTIBILITY. CYLINDERS MAY RUPTURE UNDER FIRE CONDITIONS. DECOMPOSITION MAY OCCUR AUTOIGNITION: >750C.

SECTION 5 - HEALTH HAZARD DATA

- 1 ->Effects of Overexposure: PRINCIPAL HEALTH HAZARDS: INHALATION OF HIGH CONCENTRATIONS OF VAPOR IS HARMFUL AND MAY CAUSE HEART IRREGULARITIES, UNCONSCIOUSNESS OR DEATH. INTENTIONAL MISUSE OR DELIBERATE INHALATION MAY CAUSE DEATH WITHOUT WARNING. VAPOR REDUCES OXYGEN AVAILABLE FOR BREATHING AND IS HEAVIER THAN AIR. LIQUID CONTACT CAN CAUSE FROSTBITE. HUMAN HEALTH EFFECTS: HUMAN HEALTH EFFECTS OF OVEREXPOSURE BY INHALATION TO VERY HIGH CONCENTRATIONS. MAY CAUSE TEMPORARY ALTERATION OF THE HEART'S ELECTRICAL ACTIVITY WITH IRREGULAR PULSE. PALPITATIONS, OR INADEQUATE CIRCULATION. SKIN CONTACT WITH THE LIQUID MAY CAUSE FROSTBITE. INDIVIDUALS WITH PRE-EXISTING DISEASES OF THE CENTRAL NERVOUS OR CARDIOVASCULAR SYSTEM MAY HAVE INCREASED SUSCEPTIBILITY TO THE TOXICITY OF EXCESSIVE EXPOSURES.
- 2 ->Threshold Limit Value: NONE ESTABLISHED
- 3 ->Permissible Exposure Limit: NONE ESTABLISHED
- 4 ->Other limit: AEL IS DUPONT'S ACCEPTABLE EXPOSURE LIMIT, WHERE GOVERNMENTALLY IMPOSED OCCUPATIONAL EXPOSURE LIMITS WHICH ARE LOWER THAN THE AEL ARE IN EFFECT, SUCH LIMITS SHALL TAKE PRECEDENCE.
- 5 ->Primary routes of entry: INHALATION
- 6 ->Emergency First Aid Procedures: INHALATION: IF HIGH CONCENTRATIONS ARE INHALED, IMMEDIATELY REMOVE TO FRESH AIR. KEEP PERSONS CALM. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CALL A PHYSICIAN. SKIN CONTACT: IN CASE OF CONTACT, IMMEDIATELY FLUSH SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES. CALL A PHYSICIAN. TREAT FOR FROSTBITE IF NECESSARY BY GENTLY WARMING AFFECTED AREA. WASH CONTAMINATED CLOTHING BEFORE REUSE. EYE CONTACT: IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. CALL A PHYSICIAN. IF SWALLOWED, INGESTION IS NOT CONSIDERED A POTENTIAL ROUTE OF EXPOSURE.

NOTES TO PHYSICIAN: BECAUSE OF POSSIBLE DISTURBANCES OF CARDIAC RHYTHM, CATECHOLAMINE DRUGS, SUCH AS EPINEPHRINE, SHOULD BE CONSIDERED ONLY AS A LAST RESORT IN LIFE THREATENING EMERGENCIES.

SECTION 6 - REACTIVITY DATA

- 1 ->Stable: MATERIAL IS STABLE. HOWEVER, AVOID OPEN FLAMES AND HIGH TEMPERATURES
- 2 ->Conditions to Avoid: AVOID OPEN FLAMES AND HIGH TEMPERATURES
- 3 ->Incompatible Materials: INCOMPATIBLE WITH ALKALI OR ALKALINE EARTH METALS- POWDERED AQ. ZN, BE, ETC.
- 4 ->Hazardous Decomposition Products: DECOMPOSITION PRODUCTS ARE HAZARDOUS. SUVA TRANS A/C CAN BE DECOMPOSED BY HIGH TEMPERATURES (OPEN FLAMES, GLOWING METAL SURFACES, ETC) FORMING HYDROFLUORIC ACID-POSSIBLY CARBONYL FLUORIDE.
- 5 ->Can Hazardous Polymerization Occur: NO
- 6 ->Conditions to Avoid: Not Provided

SECTION 7 - SPILL OR LEAK PROCEDURES

- 1 ->Steps to be taken in case material is released or spilled: NOTE: REVIEW FIRE AND EXPLOSION HAZARDS AND SAFETY PRECAUTIONS BEFORE PROCEEDING WITH CLEAN UP. USE APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT DURING CLEAN UP. VENTILATE AREA-ESPECIALLY LOW PLACES WHERE HEAVY VAPORS MIGHT COLLECT. REMOVE OPEN FLAMES. USE SELF CONTAINED BREATHING APPARATUS (SCBA) IF LARGE SPILL OR LEAK OCCURS.
- 2 ->Waste Disposal Method: CONTAMINATED SUVA TRANS A/C CAN BE RECOVERED BY DISTILLATION OR REMOVED TO A PERMITTED WASTE DISPOSAL FACILITY. COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS.
- 3 ->CERCLA (Superfund) Reportable quantity (lbs): Not Provided
- 4 ->RCRA Hazardous Waste No. (40 CFR 261.33): Not Provided
- 5 ->Volatile Organic Compound (VOC) Theoretical: Not Provided
- 6 ->Volatile Organic Compound (VOC) Analytical: Not Provided

SECTION 8 - SPECIAL PROTECTION INFORMATION

- 1 ->Respiratory Protection: UNDER NORMAL MANUFACTURING CONDITIONS, NO RESPIRATORY PROTECTION IS REQUIRED WHEN USING THIS PRODUCT. SELF CONTAINED BREATHING APPARATUS (SCBA) IS REQUIRED IF LARGE RELEASE OCCURS.
- 2 ->Local Exhaust: LOCAL EXHAUST SHOULD BE USED WHEN LARGE AMOUNTS ARE RELEASED.
- 3 ->Special: Not Provided
- 4 ->Mechanical: MECHANICAL VENTILATIONS SHOULD BE USED IN LOW PLACES.
- 5 ->Other: Not Provided
- 6 ->Protective Gloves (Specify type): IMPERVIOUS GLOVES AND CHEMICAL SPLASH GOGGLES SHOULD BE USED WHEN HANDLING LIQUID.
- 7 ->Eye Protection (Specify type): CHEMICAL SPLASH GOGGLES SHOULD BE USED WHEN HANDLING LIQUID.
- 8 ->Other Protective Equipment: Not Provided

SECTION 9 - SPECIAL PRECAUTIONS

- 1 ->Precautions to be taken in Handling & Storage: CLEAN, DRY AREA. DO NOT HEAT ABOVE 120F.
- 2 ->Other Precautions: Not Provided

SECTION 10 - ADDITIONAL DATA

- 1 ->Additional Health Hazard Data: TSCA INVENTORY: REPORTED/INCLUDED. ANIMAL DATA: INHALATION 4-HOUR ALC: 567,000 PPM IN RATS. THE COMPOUND IS UNTESTED FOR SKIN AND EYE IRRITANCY, AND IS UNTESTED FOR ANIMAL SENSITIZATION. NO TOXIC EFFECTS WERE SEEN IN ANIMALS FROM EXPOSURES BY INHALATION TO CONCENTRATIONS UP TO 81,000 PPM. LETHARGY AND RAPID RESPIRATION WERE OBSERVED AT A VAPOR CONCENTRATION OF 305,000 PPM AND PULMONARY CONGESTION, EDEMA, AND CENTRAL NERVOUS SYSTEM EFFECTS OCCURRED AT A VAPOR CONCENTRATION OF 750,000 PPM. CARDIAC SENSITIZATION OCCURRED IN DOGS AT 75,000 PPM FROM THE ACTION OF EXOGENOUS EPINEPHRINE. NO EFFECTS IN ANIMALS OCCURRED FROM REPEATED INHALATION EXPOSURES TO 99,000 PPM FOR TWO WEEKS OR TO 50,000 PPM FOR THREE MONTHS. NO ADVERSE EFFECTS WERE OBSERVED IN MALE AND FEMALE RATS FED 300 MG/KG/DAY OF HFC-134A FOR 52 WEEKS. ANIMAL TESTING INDICATES THAT THIS COMPOUND DOES NOT HAVE CARCINOGENIC OR MUTAGENIC EFFECTS. EMBRYOTOXIC ACTIVITY HAS BEEN OBSERVED IN SOME ANIMAL TESTS BUT ONLY AT MATERNALLY TOXIC DOSE LEVELS. CARCINOGENICITY: NONE OF THE COMPONENTS IN THIS MATERIAL IS LISTED BY IARC, NTP, OSHA OR ACGIH AS A CARCINOGEN. HAZARD CLASSIFICATIONS: ACUTE=+; CHRONIC=+; FIRE=NO; REACTIVITY=NO; PRESSURE=+; EXTREMELY HAZARDOUS SUBSTANCE: NO; TOXIC CHEMICALS: NO; CERCLA HAZARDOUS SUBSTANCES: NO.