

*Polar R134A Freon*

ALLIED-SIGNAL -- GENETRON (HFC)-134A - 1,1,1,2-TETRAFLUOROETHANE  
MATERIAL SAFETY DATA SHEET  
NSN: 683000N040955  
Manufacturer's CAGE: 40991  
Part No. Indicator: A  
Part Number/Trade Name: GENETRON (HFC)-134A

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General Information

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Item Name: 1,1,1,2-TETRAFLUOROETHANE  
Company's Name: ALLIED-SIGNAL INC  
Company's P. O. Box: 1139  
Company's City: MORRISTOWN  
Company's State: NJ  
Company's Country: US  
Company's Zip Code: 07962-1139  
Company's Emerg Ph #: 201-455-2000  
Company's Info Ph #: 201-455-4157  
Record No. For Safety Entry: 001  
Tot Safety Entries This Stk#: 001  
Status: SMJ  
Date MSDS Prepared: 01NOV91  
Safety Data Review Date: 07APR93  
MSDS Serial Number: BSFYW  
Hazard Characteristic Code: NK

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Ingredients/Identity Information

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Proprietary: NO  
Ingredient: 1,1,1,2-TETRAFLUOROETHANE  
Ingredient Sequence Number: 01  
NIOSH (RTECS) Number: 1008365TE  
CAS Number: 811-97-2  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE

Proprietary: NO  
Ingredient: SUPP DATA:THE CAT & MONKEY. INGEST:NOT APPLIC, SINCE MATL IS A GAS AT NORM TEMPS & PRESS. SKIN:IRRIT WOULD RSLT (ING 3).  
Ingredient Sequence Number: 02  
NIOSH (RTECS) Number: 9999999ZZ  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE

Proprietary: NO  
Ingredient: ING 2:FROM A DEFATTING ACTION ON TISSUE. EYES:LIQUID CONTACT CAN CAUSE IRRITATION DUE TO FROSTBITE. MIST MAY IRRITATE.  
Ingredient Sequence Number: 03  
NIOSH (RTECS) Number: 9999999ZZ  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE

Proprietary: NO  
Ingredient: FIRST AID PROC:FLUSH W/WATER UNTIL ALL CHEM IS REMOVED. IF THERE IS EVID OF FROSTBITE, BATHE (DO NOT RUB) (ING 5)  
Ingredient Sequence Number: 04  
NIOSH (RTECS) Number: 9999999ZZ  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE

Proprietary: NO  
Ingredient: ING 4:W/LUKEWARM (NOT HOT) WATER. IN ABSENCE OF WATER, COVER W/CLEAN SOFT WOOL OR SIMILAR COVERING. CALL MD. (ING 6)

Ingredient Sequence Number: 05  
NIOSH (RTECS) Number: 9999999ZZ  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE  
Other Recommended Limit: NN/K

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Proprietary: NO  
Ingredient: ING 5:INGEST:INGEST IS UNLIKELY DUE TO PHYSICAL PROPERTIES &  
IS NOT EXPECTED TO BE HAZ. DO NOT INDUCE VOM UNLESS (ING 7)  
Ingredient Sequence Number: 06  
NIOSH (RTECS) Number: 9999999ZZ  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE

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Proprietary: NO  
Ingredient: ING 6:INSTRUCTED TO DO SO BY A MD.  
Ingredient Sequence Number: 07  
NIOSH (RTECS) Number: 9999999ZZ  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE

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Proprietary: NO  
Ingredient: WASTE DISP METH:LICENSED WASTE DISPOSAL COMPANY MAY BE  
NECESSARY.  
Ingredient Sequence Number: 08  
NIOSH (RTECS) Number: 9999999ZZ  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE

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Proprietary: NO  
Ingredient: OTHER PREC:OF COMPRESSED GASES. OBSERVE ALL LABELED PRECS.  
PROD COULD CAUSE DEATH BY INHAL OR OTHER PERSONAL (ING 10)  
Ingredient Sequence Number: 09  
NIOSH (RTECS) Number: 9999999ZZ  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE

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Proprietary: NO  
Ingredient: ING 9:INJURY IF NOT HANDLED PROPERLY. TANK CLEANING PERS  
SHOULD USE ONLY A FORMAL ENTRY PROCEDURE, BASED ON (ING 11)  
Ingredient Sequence Number: 10  
NIOSH (RTECS) Number: 9999999ZZ  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE

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Proprietary: NO  
Ingredient: ING 10:RECOGNIZED SFTY PRINCIPLES. TANKS CANNOT BE EFTIVELY  
FLUSHED OF VAP IF SUMPS CONTAIN LIQ PROD. CONTACT (ING 12)  
Ingredient Sequence Number: 11  
NIOSH (RTECS) Number: 9999999ZZ  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE

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Proprietary: NO  
Ingredient: ING 11:LENSES SHOULD NOT BE WORN IF PROBABILITY OF LIQUID  
CONTACT.  
Ingredient Sequence Number: 12  
NIOSH (RTECS) Number: 9999999ZZ  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE

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Proprietary: NO  
Ingredient: VENT:OPERATING & STORAGE AREAS.  
Ingredient Sequence Number: 13

NIOSH (RTECS) Number: 9999999ZZ  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE

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Proprietary: NO  
Ingredient: OTHER PROT EQUIP:& QUICK-DRENCH SHOWER FACILITIES AT  
CONVENIENT LOCATIONS. HIGH DOSE LEVEL WARNING SIGNS ARE (ING 15)  
Ingredient Sequence Number: 14  
NIOSH (RTECS) Number: 9999999ZZ  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE

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Proprietary: NO  
Ingredient: ING 14:RECOMMENDED FOR AREAS OF PRINCIPAL EXPOSURE.  
Ingredient Sequence Number: 15  
NIOSH (RTECS) Number: 9999999ZZ  
OSHA PEL: NOT APPLICABLE  
ACGIH TLV: NOT APPLICABLE

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#### Physical/Chemical Characteristics

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Appearance And Odor: CLEAR, COLORLESS GAS W/A FAINT ETHEREAL ODOR.  
Boiling Point: -15F,-26C  
Vapor Pressure (MM Hg/70 F): 71.1 PSIG  
Vapor Density (Air=1): 3.5  
Specific Gravity: (SUPP DATA)  
Solubility In Water: 0.077 WT % @ 1 ATM  
Percent Volatiles By Volume: 100

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#### Fire and Explosion Hazard Data

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Flash Point: NO FLASH POINT  
Lower Explosive Limit: N/A  
Upper Explosive Limit: N/A  
Extinguishing Media: USE ANY STANDARD AGENT. CHOOSE THE ONE MOST  
APPROPRIATE FOR TYPE OF SURROUNDING FIRE (MATERIAL ITSELF IS NOT FLAMM).  
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA & FULL  
PROTECTIVE EQUIPMENT (FP N). USE WATER SPRAY TO KEEP FIRE-EXPOSED  
CONTAINERS COOL & TO SUPPRESS VAPORS.  
Unusual Fire And Expl Hazrds: CONTACT W/CERTAIN REACTIVE METLS MAY RESULT  
IN FORMATION OF EXPLOSIVE/EXOTHERMIC RXNS UNDER SPECIFIED CNDTNS (E.G. VERY  
HIGH TEMPS &/OR APPROP PRESS). (SUP DAT)

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#### Reactivity Data

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Stability: YES  
Cond To Avoid (Stability): SOURCES OF IGNIT, SUCH AS LIGHTED CIGARETTES,  
FLAMES, HOT SPOTS, WELDING. NON-EXPLOS CNDTNS MAY YIELD TOX &/ OR (SUP DAT)  
Materials To Avoid: FRESHLY ABRADED ALUMINUM SURF (MAY CAUSE STRONG  
EXOTHERMIC RXNS). CHEMICALLY ACTIVE METALS:SODIUM, POTASSIUM, (SUP DAT)  
Hazardous Decomp Products: HALOGENS, HALOGEN ACIDS & POSSIBLY CARBONYL  
HALIDES, SUCH AS PHOSGENE. THESE ARE TOXIC & CORROSIVE.  
Hazardous Poly Occur: NO  
Conditions To Avoid (Poly): NOT RELEVANT.

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#### Health Hazard Data

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LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.  
Route Of Entry - Inhalation: YES  
Route Of Entry - Skin: YES  
Route Of Entry - Ingestion: NO  
Health Haz Acute And Chronic: INHAL:MATL IS LOW IN TOX. LC50 RAT >50% (4  
HR). EFTS ARE PRIMARILY NARCOTIC (DROW/LOSS OF CONSCIOUSNESS). WHEN OXYGEN  
LEVELS IN AIR ARE REDUCED TO 12-14%, SYMPS OF ASPHY WILL OCCUR; LOSS OF

COORD, INCRD PULSE RATE, CARD SENSIT & DEEPER RESPIRATION ARE ALSO POSS.  
CMPD IS NOT TERATOGENIC IN A RABBIT (EFTS OF OVEREXP)

Carcinogenicity - NTP: NO  
Carcinogenicity - IARC: NO  
Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NOT RELEVANT.

Signs/Symptoms Of Overexp: HLTH HAZ:TEST AT CONC UP TO 40,000 PPM & IN A  
RAT STUDY AT CONC UP TO 100,000. MANY REFRIGERANT GASES HAVE BEEN  
DEMONSTRATED TO INDUCE CARD SENSIT TO EPINEPHRINE & TO INDUCE CARD ARRHY.  
PROD PRDCE THESE EFTS AT VERY HIGH EXPOS OR IN PRESENCE OF INJECTED  
EPINEPHRINE. PROD HAS BEEN DEMONSTRATED TO PRDCE ARRHY (SUP DAT)

Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.

Emergency/First Aid Proc: INHAL:IMMED REMOVE TO FRESH AIR. IF BRTHG HAS  
STOPPED, GIVE ARTF RESP. USE OXYGEN AS REQD, PROVIDED QUALIFIED OPERATOR IS  
AVAIL. CALL MD. DO NOT GIVE EPINEPHRINE (ADRENALINE). EYES: IMMED FLUSH  
W/LGE AMTS OF WATER FOR AT LEAST 15 MINS (IN CASE OF FROSTBITE, WATER  
SHOULD BE LUKEWARM (NOT HOT), LIFTING EYELIDS OCCASNLY TO FACILITATE  
IRRIGATION. GET MED ATTN IF SYMPS PERSIST. SKIN:PROMPTLY (ING 4)

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#### Precautions for Safe Handling and Use

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Steps If Matl Released/Spill: EVACUATE UNPROTECTED PERS. PROTECTED PERS  
SHOULD REMOVE ANY FLAMES & SHUT OFF LEAK, IF W/OUT RISK, & PROVIDE  
VENTILATION. UNPROTECTED PERS SHOULD NOT RETURN UNTIL AIR HAS BEEN TESTED &  
DETERMINED SAFE, INCLUDING LOW-LYING AREAS.

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Method: DISPOSER MUST COMPLY W/FED, STATE & LOC DISP/  
DISCHARGE LAWS. DISP OF PROD WASTE MAY BE SUBJECT TO FED REGS. USERS SHOULD  
REVIEW THEIR OPERATIONS, THEN CONSULT W/APPROP REGULATORY AGENCIES BEFORE  
DISCHARGING/DISPOSING OF WASTE MATL. DISP BY (ING 8)

Precautions-Handling/Storing: STORE IN A COOL, WELL-VENTD AREA OF LOW FIRE  
RISK. PROT CYL & ITS FITTINGS FROM PHYSICAL DAM. STOR IN SUBSURFACE  
LOCATIONS SHOULD BE AVOIDED.

Other Precautions: CLOSE VALVE TIGHTLY AFTER USE/WHEN EMPTY. AVOID BRTHG  
VAPS & LIQ CONT W/EYES/SKIN/CLTHG. DO NOT PUNCTURE/DROP CYL OR EXPOSE THEM  
TO OPEN FLAME/EXCESSIVE HEAT. USE AUTHORIZED CYL ONLY. FOLLOW STD SFTY  
PRECS FOR HNDLNG/USE OF CYL (ING 9)

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#### Control Measures

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Respiratory Protection: NONE GENERALLY REQD FOR ADEQ VENTD WORK  
SITUATIONS. FOR ACCIDENTAL/NON-VENTD SITUATIONS, FROM ESTIMATED TLV TO 5000  
PPM, USE A NIOSH/MSHA APPRVD SCBA OR SUPPLIED AIR RESP. FOR ESCAPE USE  
NIOSH/MSHA APPRVD GAS MASK W/ORG VAP CANISTER.

Ventilation: PROVIDE LOC EXHST AT FILLING ZONES & AREAS WHERE LEAKAGE IS  
PROBABLE. MECH (GEN) VENT MAY BE ADEQ FOR OTHER (ING 13)

Protective Gloves: IMPERVIOUS (PVA OUTER LAYER OR NEOPRENE)

Eye Protection: CHEMICAL SAFETY GOGGLES.

Other Protective Equipment: IMPERVIOUS SHOES & CLTHG. GLOVES/CLTHG/SHOES  
SHOULD BE THERMALLY INSULATED TO PVNT FREEZING. EYEWASH STATIONS (ING 14)

Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.

AVOID MIXING PROD W/AIR. TESTS SHOW THAT AN AIR-RICH MIX W/PROD, AT  
SLIGHTLY OVER ATM PRESS, IS COMBUST WHEN EXPOSED TO EXPLODING COPPER WIRE.  
CNDTNS (STAB):CORR DECOM PRODS. MATLS TO AVOID:CALCIUM, POWDERED ALUMINUM,  
MAGNESIUM & ZINC. EFTS OF OVEREXP:AT CONC OF 60% IN (ING 2)

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#### Transportation Data

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#### Disposal Data

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#### Label Data

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Label Required: YES  
Technical Review Date: 29MAR93  
Label Status: G  
Common Name: GENETRON (HFC)-134A  
Chronic Hazard: NO  
Signal Word: WARNING!  
Acute Health Hazard-Slight: X  
Contact Hazard-Moderate: X  
Fire Hazard-None: X  
Reactivity Hazard-None: X  
Special Hazard Precautions: ACUTE: CAN CAUSE EYE AND SKIN IRRITATION ON CONTACT. INHALATION MAY CAUSE IRRITATION. CHRONIC: NONE LISTED BY MANUFACTURER.  
Protect Eye: Y  
Protect Skin: Y  
Protect Respiratory: Y  
Label Name: ALLIED-SIGNAL INC  
Label P.O. Box: 1139  
Label City: MORRISTOWN  
Label State: NJ  
Label Zip Code: 07962-1139  
Label Country: US  
Label Emergency Number: 201-455-2000