

SAFETY DATA SHEET

FILE NO.: Incoming_SDS_Novec™ 1230_00
SDS DATE: January 2014

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Novec™ 1230
SYNONYMS: 3M™ Novec™ 1230 Fire Protection Fluid
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(Trifluoromethyl)-3-Pentanone
Perfluoro(2-Methyl-3-Pentanone)
Product Use: Heptafluoroisopropyl Pentafluoroethyl Ketone
Fire-extinguishing agent

SHIPPER NAME AND ADDRESS:

HEALTH EMERGENCY PHONE: 1-800-222-1222 (Poison Control Center)
TRANSPORTATION EMERGENCY PHONE: 1-800-424-8802 (National Response Center)
GENERAL INFORMATION: 1-800-467-4922 (U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration Hazardous Materials Information Center – M-F, 9am-5pm)

SDS PREPARED BY: A-Gas RemTec

SECTION 2: HAZARD IDENTIFICATION

HAZARD CLASSIFICATION: Acute Toxicity, Category 5

SIGNAL WORD: **WARNING**

HAZARD STATEMENT: Overheating and overpressurizing may cause gas release or violent container bursting.
Simple asphyxiant.
May be harmful if inhaled.



PRECAUTIONARY STATEMENTS: Keep container tightly closed in a cool/well-ventilated place.
Keep away from heat/sparks/open flame. – No smoking.
Wear protective gloves and eye/face protection.
Avoid breathing mist/vapors.
Use only in a well-ventilated area.
Avoid release to the environment.

OTHER HAZARDS: May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products.
In high concentrations, vapors may reduce oxygen available for breathing.
Liquid contact with eyes or skin may cause mild irritation.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>FORMULA</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(Trifluoromethyl)-3-Pentanone	C ₆ F ₁₂ O	756-13-8	>99

Trace impurities and additional material names not listed above may also appear in Section 15 toward the end of this SDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

SECTION 4: FIRST AID MEASURES

SKIN: No need for first aid is anticipated. If irritation develops, remove contaminated clothes. Rinse skin with plenty of water. Get medical attention if irritation persists.

EYES: No need for first aid is anticipated. If irritation develops, immediately flush with large amounts of water for at least 15 minutes. Get medical attention if irritation persists.

SAFETY DATA SHEET

FILE NO.: Incoming_SDS_Novec™ 1230_00

SDS DATE: January 2014

INHALATION: If signs/symptoms develop, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

INGESTION: DO NOT induce vomiting unless instructed to do so by a physician. Get medical attention immediately if symptoms develop.

SECTION 5: FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA: Product is a fire-extinguishing agent. Use extinguishing media appropriate to surrounding fire conditions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products. Container may explode if heated due to resulting pressure rise.

SPECIAL FIRE-FIGHTING PRECAUTIONS/INSTRUCTIONS: Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool.

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: If the release is caused by an open valve and it is safe for operator to close, do so. If possible to transfer the remaining material in the container in a safe manner to a separate tank, do so. Absorb liquid with commercial absorbent and shovel into a drum/waste container. Evacuate area in the event of a significant release in an enclosed area. Keep upwind. Ventilate area, especially low places. Remove open flames and heating elements. Disperse gas with floor level forced air. Liquid will evaporate.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

SECTION 7: HANDLING AND STORAGE

HANDLING AND STORAGE: Avoid breathing fumes. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Use properly rated containers only. In a cool, well-ventilated area of low fire risk and out of direct sunlight. Storage in subsurface locations should be avoided. Close container tightly after use and when empty.

OTHER PRECAUTIONS: Product boils at 120.6°F, so contents may be under pressure, depending on ambient temperatures. Exercise caution when opening container. If containers have been stored in direct sunlight or heated above the boiling point of the solvent, the container should be cooled to below the boiling point before opening. Avoid areas where salt or other corrosive materials are present. Avoid excessive inventory and storage time. Store away from strong bases, amines, and alcohols.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS:

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT(S)</u>
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(Trifluoromethyl)-3-Pentanone	756-13-8	None	None	*150 ppm TWA

* = Manufacturer's recommended exposure limit (3M)

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

Hydrogen Fluoride: ACGIH TLV – 3 ppm Ceiling
Carbon Monoxide: OSHA PEL – 50 ppm TWA
Carbon Dioxide: OSHA PEL – 5,000 ppm TWA

ENGINEERING CONTROLS: Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.

PERSONAL PROTECTIVE EQUIPMENT:

SKIN: Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type of glove material for given application. Wash contaminated clothing and clean protective equipment before reuse. Wash skin thoroughly after handling.

EYES: Where there is reasonable probability of liquid contact, wear chemical safety goggles, and have eye flushing equipment available.

SAFETY DATA SHEET

FILE NO.: Incoming_SDS_Novec™ 1230_00
SDS DATE: January 2014

RESPIRATORY: None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, use a self-contained, NIOSH-approved breathing apparatus or supplied air respirator.

ADDITIONAL RECOMMENDATIONS: Wash hands after use and before eating or drinking. Provide eyewash stations and quick-drench shower facilities at convenient locations.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Clear, colorless liquid
PHYSICAL STATE: Liquid
MOLECULAR WEIGHT: 316.04 g/mol
CHEMICAL FORMULA: C₆F₁₂O
ODOR: Low odor
ODOR THRESHOLD: Not available
RELATIVE DENSITY: 1.60 g/mL (liquid @ 25° C)
0.0136 g/mL (gas @ 25° C and 1 atm)
VISCOSITY: 0.56 centistokes (liquid @ 0° C)
0.39 centistokes (liquid @ 25° C)
SPECIFIC GRAVITY (water = 1.0): 1.6 @ 25° C
SOLUBILITY IN WATER: Nil
pH: Not available
BOILING POINT: 49.2° C
MELTING POINT: -108° C
VAPOR PRESSURE: 0.404 bar @ 25° C
VAPOR DENSITY (air = 1.0): 11.6
EVAPORATION RATE (BUOAC = 1.0): >1
% VOLATILES: 100%
FLASH POINT: Not applicable
FLASH POINT METHOD: Not available
AUTOIGNITION TEMPERATURE: Not available
DECOMPOSITION TEMPERATURE: Not available
UPPER FLAMMABLE LIMIT (volume % in air): None*
LOWER FLAMMABLE LIMIT (volume % in air): None*
FLAME PROPAGATION RATE (solids): Not applicable
OSHA FLAMMABILITY CLASS: Not applicable
PARTITION COEFFICIENT (n-octanol/water): Not available

SECTION 10: STABILITY AND REACTIVITY

REACTIVITY: Thermal decomposition due to exposure to high heat or fire. May react with strong bases, amines, and alcohols.

STABILITY: This material is chemically stable under specified conditions for storage, shipment and/or use. See Section 7 Handling and Storage for specified conditions.

CONDITIONS TO AVOID: Avoid contact with sources of heat.
Any source of high temperature, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.
Avoid direct sunlight and ultraviolet light.
Strong bases, amines, and alcohols should not be mixed with liquid Novec™ 1230 fluid.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Thermal decomposition products include carbon monoxide, carbon dioxide, and hydrogen fluoride.

SECTION 11: TOXICOLOGICAL INFORMATION

ROUTES OF EXPOSURE: Inhalation, Skin contact, Eye contact, Ingestion

ACUTE EFFECTS OF EXPOSURE: Contact with eyes and skin during product use is not expected to result in significant irritation. Exposure to high vapor concentrations for extended periods of time may be irritating to the eyes and respiratory tract and may result in central nervous system effects such as headache, dizziness, drowsiness and, in severe exposure, loss of consciousness and death. The dense vapor of this material may reduce the available oxygen for breathing, and prolonged exposure to an oxygen-deficient atmosphere may be fatal.

CHRONIC EFFECTS OF EXPOSURE: Prolonged or repeated exposure may cause liver effects. Signs or symptoms may include loss of appetite, weight loss, fatigue, weakness, abdominal tenderness, and jaundice.

ACUTE TOXICITY: LC₅₀ (rat – 4 hr.) > 10% by volume
NOAEL for cardiac sensitization > 10% by volume

SAFETY DATA SHEET

FILE NO.: Incoming_SDS_Novec™ 1230_00
SDS DATE: January 2014

CHRONIC TOXICITY: No data available.

DESCRIPTION OF SYMPTOMS: Inhalation of high concentration may lead to unconsciousness and possible death. Effects of overexposure by inhalation or ingestion may include non specific discomfort, such as nausea, headache, or weakness, or temporary central nervous system depression with effects such as dizziness, headache, confusion, loss of coordination, and loss of consciousness.

CARCINOGENICITY: Not listed as a carcinogen by NTP, IARC, or OSHA

SECTION 12: ECOLOGICAL INFORMATION

AQUATIC TOXICITY: No data available.

DEGRADABILITY: Atmospheric lifetime is about 0.014 years (about 5 days).

BIOACCUMULATION: No data available.

ADSORPTION/LEACHING: Product is highly insoluble in water and volatile. Normal use would not typically result in releases to aquatic environments.

OTHER ADVERSE EFFECTS:

Ozone Depletion Potential (CFC 11 = 1.0):	0
Global Warming Potential (CO₂ = 1.0):	1

SECTION 13: DISPOSAL CONSIDERATIONS

RCRA: Novec™ 1230 is not considered to be a RCRA hazardous waste. However, all unused products should be reclaimed or disposed of properly.

RCRA ID number is: None

DISPOSAL CONSIDERATIONS: Recover, reclaim or recycle when practical. Dispose of in accordance with federal, state and local regulations. Product is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations. Contact a certified reclaimer for recovery/reclamation of this product.

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION

Novec™ 1230 by itself is not regulated by DOT

OR – If charged with Nitrogen, Carbon Dioxide, or Air.....

U.S. DEPARTMENT OF TRANSPORTATION

UN NUMBER: UN1956
UN PROPER SHIPPING NAME: Compressed Gases, n.o.s. (C-6 Perfluoroketone)
US DOT HAZARD CLASS: 2.2 Non-Flammable Gas
PACKING GROUP: Not Applicable



ENVIRONMENTAL CONCERNS: Material should not be released into the environment.

BULK TRANSPORTATION: Avoid transportation in vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the containers and what action to take in the event of an accident or an emergency. Prior to transporting cylinders, ensure that they are firmly secured, valves are closed and not leaking, and the valve outlet cap nuts or plugs (if provided) are correctly connected.

SPECIAL TRANSPORTATION: None determined.

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA (TOXIC SUBSTANCE CONTROL ACT): All components of this product are listed on the TSCA Inventory list.

SAFETY DATA SHEET

FILE NO.: Incoming_SDS_Novec™ 1230_00

SDS DATE: January 2014

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT) and SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients:

<u>INGREDIENT NAME</u>	<u>SARA/CERCLA RQ (LB)</u>	<u>SARA EHS TPQ (LB)</u>
None	None	None

Any spill or release resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center (800-424-8802) and to your local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: None

SECTION 313 TOXIC CHEMICALS: This product does not contain any substance which is defined as a toxic chemical under, and subject to the reporting requirements of, Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 (SARA 313) and 40 CFR part 372. See Section 3 Composition/Information on Ingredients for information on this product.

ADDITIONAL REGULATORY INFORMATION:

U.S. EPA – Significant New Alternative Policy Program (SNAP) approved for uses in streaming and flooding fire protection application.

FOREIGN INVENTORY STATUS:

EU-EINECS: # 436-710-6

SECTION 16: OTHER INFORMATION

PREPARED BY: A-GasRemTec
DATE PREPARED: January 2014
CURRENT REVISION LEVEL: 00
CURRENT REVISION DATE: 1/29/2014

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