

**Genetron® 123****00000009885**

Version 2.6

Revision Date 06/02/2014

Print Date 06/22/2015

**SECTION 1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : Genetron® 123

MSDS Number : 00000009885

Product Use Description : Refrigerant

Manufacturer or supplier's details : Honeywell International Inc.  
101 Columbia Road  
Morristown, NJ 07962-1057

For more information call : 800-522-8001  
+1-973-455-6300  
(Monday-Friday, 9:00am-5:00pm)

**In case of emergency call : Medical: 1-800-498-5701 or +1-303-389-1414**  
: **Transportation (CHEMTREC): 1-800-424-9300 or +1-703-527-3887**  
:  
: (24 hours/day, 7 days/week)

**SECTION 2. HAZARDS IDENTIFICATION****Emergency Overview**

Form : liquid

Color : colourless

Odor : weak

**Classification of the substance or mixture**

Classification of the substance or mixture : Specific target organ toxicity - single exposure, Category 2, Liver  
Specific target organ toxicity - repeated exposure, Category 2, Central nervous system, Liver

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**GHS Label elements, including precautionary statements**

Symbol(s)

:



Signal word

: Warning

Hazard statements

: May cause damage to organs.  
May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

: **Prevention:**Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.  
Wash skin thoroughly after handling.  
Do not eat, drink or smoke when using this product.**Response:**IF exposed or if you feel unwell: Call a POISON CENTER or doctor/ physician.  
Get medical advice/ attention if you feel unwell.**Storage:**

Store locked up.

**Disposal:**

Dispose of contents/ container to an approved waste disposal plant.

**Carcinogenicity**

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP, IARC, or OSHA.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Formula

: C<sub>2</sub>HCl<sub>2</sub>F<sub>3</sub>

Chemical nature

: Substance

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| Chemical Name                      | CAS-No.  | Concentration |
|------------------------------------|----------|---------------|
| 2,2-Dichloro-1,1,1-trifluoroethane | 306-83-2 | 94.50 %       |
| 1,2-Dichloro-1,1,2-trifluoroethane | 354-23-4 | 5.00 %        |

**SECTION 4. FIRST AID MEASURES**

- Inhalation : Move to fresh air. If breathing is irregular or stopped, administer artificial respiration. Use oxygen as required, provided a qualified operator is present. Call a physician. Do not give drugs from adrenaline-ephedrine group.
- Skin contact : After contact with skin, wash immediately with plenty of water. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. If symptoms persist, call a physician.
- Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If symptoms persist, call a physician.
- Ingestion : Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Call a physician immediately.

**Notes to physician**

- Treatment : Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

**SECTION 5. FIREFIGHTING MEASURES**

- Suitable extinguishing media : The product is not flammable.  
ASTM D-1310-67  
ASTM D 56-82

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- Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during firefighting : This product is not flammable at ambient temperatures and atmospheric pressure.  
However, this material can ignite when mixed with air under pressure and exposed to strong ignition sources.  
Container may rupture on heating.  
Cool closed containers exposed to fire with water spray.  
Do not allow run-off from fire fighting to enter drains or water courses.  
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.  
Exposure to decomposition products may be a hazard to health.  
In case of fire hazardous decomposition products may be produced such as:  
Hydrogen fluoride  
Gaseous hydrogen chloride (HCl).  
Carbon monoxide  
Carbon dioxide (CO<sub>2</sub>)  
Carbonyl halides
- Special protective equipment for firefighters : In the event of fire and/or explosion do not breathe fumes.  
Wear self-contained breathing apparatus and protective suit.  
No unprotected exposed skin areas.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

- Personal precautions : Immediately evacuate personnel to safe areas.  
Wear personal protective equipment. Unprotected persons must be kept away.  
Remove all sources of ignition.  
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.  
Ensure adequate ventilation.
- Environmental precautions : Should not be released into the environment.  
Do not flush into surface water or sanitary sewer system.

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Prevent further leakage or spillage if safe to do so.  
Prevent spreading over a wide area (e.g. by containment or oil barriers).

Methods for cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

**SECTION 7. HANDLING AND STORAGE****Handling**

Handling : Handle with care.  
Do not get in eyes, on skin, or on clothing.  
Do not use in areas without adequate ventilation.  
Perform filling operations only at stations with exhaust ventilation facilities.  
Open drum carefully as content may be under pressure.  
Do not breathe vapours or spray mist.

Advice on protection against fire and explosion : Can form a combustible mixture with air at pressures above atmospheric pressure.  
Keep product and empty container away from heat and sources of ignition.

**Storage**

Requirements for storage areas and containers : Store away from incompatible substances.  
Keep away from direct sunlight.  
Keep containers tightly closed in a dry, cool and well-ventilated place.  
Ensure adequate ventilation, especially in confined areas.  
Keep in original packaging, tightly closed.

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Protective measures : Ensure that eyewash stations and safety showers are close to the workstation location.  
Do not breathe vapours or spray mist.  
Avoid contact with skin, eyes and clothing.

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- Engineering measures : Use with local exhaust ventilation.  
Perform filling operations only at stations with exhaust ventilation facilities.
- Eye protection : Do not wear contact lenses.  
Wear as appropriate:  
Safety glasses with side-shields  
If splashes are likely to occur, wear:  
Goggles or face shield, giving complete protection to eyes
- Hand protection : Impervious butyl rubber gloves  
Neoprene gloves  
Gloves must be inspected prior to use.  
Replace when worn.
- Skin and body protection : Wear as appropriate:  
Solvent-resistant gloves  
Solvent-resistant apron and boots  
If splashes are likely to occur, wear:  
Protective suit
- Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.  
Wear a positive-pressure supplied-air respirator.  
For rescue and maintenance work in storage tanks use self-contained breathing apparatus.
- Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.  
Avoid contact with skin, eyes and clothing.  
Ensure adequate ventilation, especially in confined areas.  
Remove and wash contaminated clothing before re-use.  
Contaminated work clothing should not be allowed out of the workplace.  
Keep working clothes separately.  
Wash hands before breaks and immediately after handling the product.

**Exposure Guidelines**

| Components | CAS-No. | Value | Control parameters | Update | Basis |
|------------|---------|-------|--------------------|--------|-------|
|            |         |       |                    |        |       |

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|                                    |          |                                |          |          |                                                              |
|------------------------------------|----------|--------------------------------|----------|----------|--------------------------------------------------------------|
| 2,2-Dichloro-1,1,1-trifluoroethane | 306-83-2 | TWA :<br>time weighted average | (10 ppm) | 5/7/1998 | Honeywell: Limit established by Honeywell International Inc. |
|------------------------------------|----------|--------------------------------|----------|----------|--------------------------------------------------------------|

|                                    |          |                                |                       |      |                                                                     |
|------------------------------------|----------|--------------------------------|-----------------------|------|---------------------------------------------------------------------|
| 2,2-Dichloro-1,1,1-trifluoroethane | 306-83-2 | TWA :<br>time weighted average | 310 mg/m3<br>(50 ppm) | 2007 | WEEL: US. AIHA Workplace Environmental Exposure Level (WEEL) Guides |
|------------------------------------|----------|--------------------------------|-----------------------|------|---------------------------------------------------------------------|

|                                    |          |                                |                       |      |                                                                     |
|------------------------------------|----------|--------------------------------|-----------------------|------|---------------------------------------------------------------------|
| 2,2-Dichloro-1,1,1-trifluoroethane | 306-83-2 | TWA :<br>time weighted average | 310 mg/m3<br>(50 ppm) | 2007 | WEEL: US. AIHA Workplace Environmental Exposure Level (WEEL) Guides |
|------------------------------------|----------|--------------------------------|-----------------------|------|---------------------------------------------------------------------|

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

|                              |                 |
|------------------------------|-----------------|
| Physical state               | : liquid        |
| Color                        | : colourless    |
| Odor                         | : weak          |
| pH                           | : Note: neutral |
| Melting point/freezing point | : -107 °C       |
| Boiling point/boiling range  | : 28 °C         |
| Flash point                  | : Note: None    |
| Lower explosion limit        | : Note: None    |

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Upper explosion limit : Note: None

Vapor pressure : 0.747813 kPa  
at 20 °C(68 °F)

Vapor density : 5.3 Note: (Air = 1.0)

Density : 1.47 g/cm<sup>3</sup> at 21.1 °C

Water solubility : 2.1 g/l

Solubility in other solvents : Medium: Methanol  
Note: partly soluble  
  
Medium: Diethylether  
Note: partly soluble

Partition coefficient: n-  
octanol/water : log Pow: 2.17  
Note: The product is more soluble in octanol.

Auto-ignition temperature : 770 °C

Decomposition temperature : > 250 °C

Molecular weight : 152.92 g/mol

Global warming potential : 90  
(GWP)  
Ozone depletion potential : 0.02  
(ODP)



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**SECTION 10. STABILITY AND REACTIVITY**

|                                    |                                                                                                                                                                                                                                |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chemical stability                 | : Stable under normal conditions.                                                                                                                                                                                              |
| Possibility of hazardous reactions | : Hazardous polymerisation does not occur.                                                                                                                                                                                     |
| Conditions to avoid                | : Protect from heat/overheating.<br>Keep away from direct sunlight.<br>Heat, flames and sparks.                                                                                                                                |
| Incompatible materials to avoid    | : Calcium<br>Finely divided aluminium<br>Magnesium<br>Zinc                                                                                                                                                                     |
| Hazardous decomposition products   | : In case of fire hazardous decomposition products may be produced such as:<br>Carbon monoxide<br>Carbon dioxide (CO <sub>2</sub> )<br>Carbonyl halides<br>Gaseous hydrogen chloride (HCl).<br>Gaseous hydrogen fluoride (HF). |

**SECTION 11. TOXICOLOGICAL INFORMATION**

|                           |                                                                                                             |
|---------------------------|-------------------------------------------------------------------------------------------------------------|
| Acute inhalation toxicity | : LC50: 32000 ppm<br>Exposure time: 4 h<br>Species: rat                                                     |
|                           | : LC50: 28000 ppm<br>Exposure time: 4 h<br>Species: hamster                                                 |
| Genotoxicity in vitro     | : Test Method: Ames test<br>Metabolic activation: with and without metabolic activation<br>Result: negative |
|                           | : Cell type: Human lymphocytes<br>Result: positive                                                          |

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Genotoxicity in vivo : Species: rat  
Application Route: Inhalation  
Result: negative  
Note: In vivo tests did not show mutagenic effects

Further information : Acute toxicity Acute Health Hazard Irritating to respiratory system. Cardiac sensitisation threshold (dog): 20900 ppm. May cause cardiac arrhythmia. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

: Chronic toxicity Chronic Health Hazard Testicular and liver tumors were found in test animals at 300 ppm. None of the effects were life threatening or life shortening, also at 1000 ppm. Pancreatic tumors were found. No reproductive effects were seen in a two-generation, inhalation, reproduction study. A related rate of weight gain and lower pup weights were seen. These effects were seen at inhalation concentrations above 30 ppm. A follow-up study confirmed that these effects were the direct result of exposure of the pups to the product and its derivatives through the maternal milk.

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity effects**

Toxicity to fish : LC50: 55.5 mg/l  
Exposure time: 96 h  
Species: Oncorhynchus mykiss (rainbow trout)

Toxicity to daphnia and other aquatic invertebrates : EC50: 17.3 mg/l  
Exposure time: 48 h  
Species: Daphnia magna (Water flea)

Toxicity to algae : Growth rate  
ErC50: 96.6 mg/l  
Exposure time: 96 h

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Species: Pseudokirchneriella subcapitata (green algae)

: Biomass  
EC50: 67.8 mg/l  
Exposure time: 96 h  
Species: Pseudokirchneriella subcapitata (green algae)

**Elimination information (persistence and degradability)**

Biodegradability : Result: Not readily biodegradable.  
Value: 24 %  
Method: Closed Bottle test

**Further information on ecology**

Additional ecological information : This product is subject to U.S. Environmental Protection Agency Clean Air Act Regulations at 40 CFR Part 82. Section 611 requires the following label text on all shipments of this product:  
Warning: Contains Dichlorotrifluoroethane (HCFC-123), a substance which harms public health and environment by destroying ozone in the upper atmosphere.  
Refer to sections 610 and 612 for list of acceptable and unacceptable uses for this product.

**SECTION 13. DISPOSAL CONSIDERATIONS**

Disposal methods : Observe all Federal, State, and Local Environmental regulations.

Note : This product is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

**SECTION 14. TRANSPORT INFORMATION**

**DOT** Not dangerous goods

**TDG** Not dangerous goods

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**IATA** Not dangerous goods**IMDG** Not dangerous goods**SECTION 15. REGULATORY INFORMATION****Inventories**

US. Toxic Substances Control Act : On TSCA Inventory

Australia. Industrial Chemical (Notification and Assessment) Act : On the inventory, or in compliance with the inventory

Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL) : All components of this product are on the Canadian DSL.

Japan. Kashin-Hou Law List : On the inventory, or in compliance with the inventory

Korea. Toxic Chemical Control Law (TCCL) List : On the inventory, or in compliance with the inventory

Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act : On the inventory, or in compliance with the inventory

China. Inventory of Existing Chemical Substances : On the inventory, or in compliance with the inventory

NZIOC - New Zealand : On the inventory, or in compliance with the inventory

**National regulatory information****SARA 302 Components** : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.**SARA 313 Components** : The following components are subject to reporting levels

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established by SARA Title III, Section 313:  
 : 2,2-Dichloro-1,1,1-trifluoroethane 306-83-2  
 : 1,2-Dichloro-1,1,2-trifluoroethane 354-23-4

**SARA 311/312 Hazards** : Acute Health Hazard  
 Sudden Release of Pressure Hazard  
 Chronic Health Hazard

**California Prop. 65** : This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

**New Jersey RTK** : 1,2-Dichloro-1,1,2-trifluoroethane 354-23-4

**WHMIS Classification** : Not Rated  
 This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

**Global warming potential** : 90

**Ozone depletion potential (ODP)** : 0.02

**SECTION 16. OTHER INFORMATION**

|                 | <b>HMIS III</b> | <b>NFPA</b> |
|-----------------|-----------------|-------------|
| Health hazard   | : 2*            | 2           |
| Flammability    | : 1             | 1           |
| Physical Hazard | : 0             |             |
| Instability     | :               | 0           |

\* - Chronic health hazard

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Hazard rating and rating systems (e.g. HMIS® III, NFPA): This information is intended solely for the use of individuals trained in the particular system.

**Further information**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user. This information should not constitute a guarantee for any specific product properties.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

Previous Issue Date: 08/09/2013

Prepared by Honeywell Performance Materials and Technologies Product Stewardship Group