# MATERIAL SAFETY DATA SHEET

Version: 2.0
07/01/2011

## SF1204 55G-Drum (420.0LBS-190.68KG)
## Cyclic siloxane mixture D4 + D5

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

| | |
|---|---|
| **Manufacturer Name:** | **Momentive performance material**<br>**260 Hudson River Rd**<br>**Waterford NY 12188** |
| **Revised:** | 07/01/2011 |
| **Prepared by** | PRODUCT STEWARDSHIP COMPLIANCE AND STANDARDS |
| **CHEMTREC** | 1-800-424-9300 |
| **Chemical Family/Use:** | Silicone fluid |
| **Formula:** | Cyclic siloxane(s). |

**HMIS**

| | | | | | |
|---|---|---|---|---|---|
| FLAMMABILITY: | 2 | Reactivity: | 0 | Health: | 0 |

**NFPA**

| | | | | | |
|---|---|---|---|---|---|
| Flammability: | 2 | Reactivity: | 0 | Health: | 1 |

## 2. HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW**

CAUTION! Adverse liver and reproductive effects reported in animals.

**Form:** Liquid **Color:** Colorless **Odor:** Faint

**POTENTIAL HEALTH EFFECTS**

**INGESTION**

None known.

**SKIN**

No adverse effects are expected under normal conditions of use.

**INHALATION**

No adverse effects are expected under normal conditions of use.

**EYES.**

May cause eye irritation.

**MEDICAL CONDITIONS AGGRAVATED**

None known.

**SUBCHRONIC (TARGET ORGAN )**

None known.

**CHRONIC EFFECTS / CARCINOGENICITY**

This product or one of its ingredients present at 0.1% or more is NOT listed as a carcinogen or suspected carcinogen by NTP, IARC, or OSHA.

**ROUTES OF EXPOSURE**

No anticipated routes of exposure

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

| PRODUCT COMPOSITION | CAS-No. | WGT. % |
|---|---|---|
| **A. HAZARDOUS** | | |
| Decamethylcyclopentasiloxane | 541-02-6 | 10 - 30 % |
| Octamethylcyclotetrasiloxane | 556-67-2 | 60 - 100 % |
| **B. NON-HAZARDOUS** | | |

## 4. FIRST AID MEASURES

**INGESTION**

If swallowed, do NOT induce vomiting. Give a glass of water.

**SKIN**

Wash with soap and water.

**INHALATION**

If inhaled, remove to fresh air. If not breathing give artificial respiration using a barrier device. If breathing is difficult give oxygen. Get medical attention.

**EYES.**

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

## 5. FIRE-FIGHTING MEASURES

| | |
|---|---|
| **FLASH POINT:** | 62.00 °C; 144 °F |
| **METHOD** | Closed Cup |
| **IGNITION TEMPERATURE:** | No data available. |
| **FLAMMABLE LIMITS LEL:** | No data available. |
| **FLAMMABLE LIMITS UEL:** | No data available. |

**SENSITIVITY TO MECHANICAL IMPACT:** No

**SENSITIVITY TO STATIC DISCHARGE**

Sensitivity to static discharge is expected; material has a flash point below 200 F.

**EXTINGUISHING MEDIA**

All standard extinguishing agents are suitable.

**SPECIAL FIRE FIGHTING PROCEDURES**

Combustible,Firefighters must wear NIOSH/MSHA approved positive pressure self-contained breathing apparatus with full face mask and full protective clothing.

## 6. ACCIDENTAL RELEASE MEASURES

**ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED**

Wipe, scrape or soak up in an inert material and put in a container for disposal. Wash walking surfaces with detergent and water to reduce slipping hazard. Keep unauthorized personnel away.

## 7. HANDLING AND STORAGE

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE**

Avoid contact with skin and eyes. Attention: Not for injection into humans.

**STORAGE**

Store in original container. Keep container tightly closed. Keep out of the reach of children.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**ENGINEERING CONTROLS**

Eye wash facilities and emergency shower must be available when handling this product.; Ventilation and other forms of engineering controls are preferred for controlling exposures. Respiratory protection

may be needed for non-routine or emergency situations.

**RESPIRATORY PROTECTION**

If exposure limits are exceeded or respiratory irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Supplied air respirators may be required for non-routine or emergency situations. Respiratory protection must be provided in accordance with OSHA regulations (see 29CFR 1910.134).

**EYE AND FACE PROTECTION**

Safety glasses with side shields

**OTHER PROTECTIVE EQUIPMENT**

Wear suitable protective clothing and eye/face protection.

**Exposure Guidelines**

| Component | CAS-No. | Source | Value |
|---|---|---|---|
| Octamethylcyclotetrasiloxane | 556-67-2 | Z_INTL_OEL, REL | 5 ppm |

Absence of values indicates none found

PEL - OSHA Permissible Exposure Limit; TLV - ACGIH Threshold Limit Value; TWA - Time Weighted Average; INTL REL - Internal Recommended Exposure Limit

OSHA revoked the Final Rule Limits of January 19, 1989 in response to the 11th Circuit Court of Appeals decision (AFL-CIO v. OSHA) effective June 30, 1993. See 29 CFR 1910.1000 (58 FR 35338).

## 9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|---|
| **BOILING POINT (°C):** | 175.80 °C; 348 °F |
| **VAPOR PRESSURE:** | 0.75 |
| **VAPOR DENSITY (AIR=1):** | Negligible |
| **FREEZING POINT:** | 11.00 °C; 52 °F; Not applicable |
| **PHYSICAL STATE:** | Liquid |
| **ODOR:** | Faint |
| **Color:** | Colorless |
| **EVAPORATION RATE (BUTYL ACETATE=1):** | Negligible |
| **SPECIFIC GRAVITY:** | 0.95 |
| **DENSITY:** | ca. 0.956 g/cm3 |
| **ACID / ALKALINITY (MEQ/G):** | < 0 |
| **pH:** | Not applicable |
| **SOLUBILITY IN WATER (20 C):** | Insoluble |
| **SOLUBILITY IN ORGANIC SOLVENT (STATE SOLVENT):** | Soluble in toluene |

**VOLATILE ORGANIC CONTENT:** Not applicable

## 10. STABILITY AND REACTIVITY

**STABILITY**
Stable

**HAZARDOUS POLYMERIZATION.**
Hazardous polymerisation does not occur.

**HAZARDOUS THERMAL DECOMPOSITION / COMBUSTION PRODUCTS**
Carbon dioxide; Formaldehyde.; This product contains methylpolysiloxanes which can generate formaldehyde at approximately 300 degrees Fahrenheit (150'C) and above, in atmospheres which contain oxygen. Formaldehyde is a skin and respiratory sensitizer, eye and throat irritant, acute toxicant, and potential cancer hazard. A MSDS for formaldehyde is available from Momentive.

**INCOMPATIBLE MATERIALS**
None known.

**CONDITIONS TO AVOID**
Keep away from sources of ignition - No smoking. Keep away from sources of ignition - No smoking.

## 11. TOXICOLOGICAL INFORMATION

**ACUTE ORAL**
LD50; Species: Rat; > 5,000 mg/kg;

**ACUTE DERMAL**
LD50; Species: Rabbit; > 10,000 mg/kg;

**ACUTE INHALATION**
LC50; Species: Rat; 36 mg/l;

**OTHER**
Octamethylcyclotetrasiloxane (D4) Ingestion: Rodents given large doses via oral gavage of octamethylcyclotetrasiloxane (1600mg/kg/day,14 days), developed increased liver weights relative to unexposed control animals due to hepatocellular hyperplsia (increased number of liver cells which appear normal) as well as hypertrophy (increased cell size). Inhalation: In inhalation studies, laboratory rodents exposed to octamethylcyclotetrasiloxane (300 ppm five days/week, 90 days) developed increased liver weights in female animals relative to unexposed control animals. When the exposure was stopped, liver weights returned to normal. Microscopic examination of the liver cells did not show any evidence of pathology. This reponse in rats, which does not affect the animal's health, is well-documented and widely recognized. It is related to an increase of liver enzymes that metabolize

and eliminate a material from the body. The increased liver weight reverses even while the D4 exposure continues. The finding is not advers, but is considered a natural adaptive change in rats, and does not represent a hazard to humans. Inhalation studies utilizing laboratory rabbits and guinea pigs showed no effects on liver weights. Inhalation exposures typical of industrial usage (5-10 ppm) showed no toxic effects in rodents. Range finding reproductive studies were conducted (whole body inhalation, 70 days prior to mating, through mating, gestation and lactation), with D4. Rats were exposed to 70 and 700 ppm. In the 700 ppm group, there was a statistically significant reduction in mean litter size and in implantation sites. No D4 related clinical signs were observed in the pups and no exposure related pathological findings were found. Interim results from a two generation reproductive study in rats exposed to 500 and 700 ppm D4 (whole body inhalation, 70 days prior to mating, throught mating, gestationa dn lactation) resulted in a statistically significant decrease in live mean litter size as well as extended periods of off-spring deliver (dystocia). These results were not observed at the 70 and 300 ppm dosing levels. Extensive additional research has demonstrated that the mode by which D4 acts in rats is different than in humans, and therefore, these findings do not indicate that D4 represents a hazard for humans. A two-year, combined chronic/carcinogenicity study, during which rats were exposed to D4 by inhalation, data showed a statistically significant increase in a benign uterine tumor in female rats exposed at the highest level--a level much higher than the low levels that consumers or workers may encounter. An expert panel of independent scientists who have reviewed the results of this research concur that the finding seen in the two-year study occurred through a biological pathway that is specific to the rat and is not relevant to humans. Therefore, this observed effect does not indicate a potential health hazard to humans. In developmental toxicity studies, rats and rabbits were exposed to D4 at concentrations up to 700 ppm and 500 ppm, respectively. No teratogenic effects (birth defects) were observed in either study.
,Decamethylcyclopentasiloxane (D5) Ingestion or Inhalation: Rodents repeatedly exposed to D5 via inhalation or ingestion developed increased liver weights relative to unexposed control animals. When the exposure was stopped, livers returned to normal. Microscopic examination ofthe liver cells did not show any evidence of pathology. Liver enlargement was due to an increase in metabolizing enzymes, and a temporary increase in the number and size of normal cells (hyperplasia and hypertrophy). This response in rats, which does not affect the animal's health, is well-documented and widely recognized. Itis related to an increase of liver enzymes that metabolize and liminate a material from the body. the increased liver weightreverses even while the D5 exposure continues. The finding is not adverse, but is considered a natural adaptive change inrats, and does not represent a hazard to humans.
Inhalation exposures tha tare typical in industrial use (5-10 ppm) showedno toxic effects in rodents. In a two-year, combined chronic/carcinogenicity study, rats were exposed by inhalationup to the highest possible vapor concentrations of D5. There were no findings in male rats. Data showed a statisticallysignificant trend for a certain type of tumor (uterine endometrial adenocarcinoma) in female rats exposed at the highest level--a level much higher than the low levels that consumers or workers might encounter. Based on the finding infemale rates, silicone manufacturers conducted extensive follow-up research to determine the cause of the finding. Results of this research indicate that the finding seen in the two-year study occurred through a biological pathway that isspecific to the rat and and is not relevant to humans. D5, which acts on the pituitary gland like dopamine, stimulated a change inblalance between two hormones in the rat, estrogen and progesterone. This change is a biological response unique torats. the same affect does not occur in humans following exposure to chemicals and drugs mimicking dopamine agonists suchas D5. Scientific studies have shown that although exposure to chemicals and drugs mimicking dopamine might result in uterinetumors in female rats, they would not do so in humans. Therefore, this observed effect does not indicate a potentialhealth hazard to humans. This conclusion is supported by an expert panel of independent scientists who have reviewed theresearch results and have come to the same conclusion. Based on our present knowledge, it is unlikely that industrial,commercial, or consumer uses of product

containing D5 would result in a significant risk to humans. Momentive's recommendedExposure Guideline for D5 is 10 ppm.

**GENETIC TOXICITY IN VIVO**
Test type: Dominant lethal assay; Rat; Result: negative

**SENSITIZATION**
No data available.

**SKIN IRRITATION.**
Species: Rabbit

**EYE IRRITATION**
Species: Rabbit ; Result: No eye irritation

**MUTAGENICITY**
No data available.

**OTHER EFFECTS OF OVEREXPOSURE**
Contains octamethylcyclotetrasiloxane which may cause reproductive effects based on animal data.

## 12. ECOLOGICAL INFORMATION

**ECOTOXICITY**

No data available.

**DISTRIBUTION**
No data available.

**CHEMICAL FATE**
No data available.

## 13. DISPOSAL CONSIDERATIONS

**DISPOSAL METHODS**
Disposal should be made in accordance with federal, state and local regulations.

## 14. TRANSPORT INFORMATION

**DOT SHIPPING NAME:** Combustible liquid, n.o.s.(Octamethylcyclotetrasiloxane, Decamethylcyclopentasiloxane)

| | |
|---|---|
| **DOT HAZARD CLASS:** | CBL |
| **DOT LABEL (S):** | NON |
| **UN/NA NUMBER:** | NA 1993 |
| **PACKING GROUP:** | III |

**Further Information:** This product is Combustible as defined by the US Department of Transport (DOT). It is regulated for transport in the US in container > 119 gallons. The product is not regulated for transport by the IATA, ADR/RID, ADNR or the IMDG regulations.

## 15. REGULATORY INFORMATION

### Inventories

| | | |
|---|---|---|
| Australia Inventory of Chemical Substances (AICS) | y (positive listing) | |
| EU list of existing chemical substances | y (positive listing) | |
| Japan Inventory of Existing & New Chemical Substances (ENCS) | y (positive listing) | |
| China Inventory of Existing Chemical Substances | y (positive listing) | |
| Korea Existing Chemicals Inventory (KECI) | y (positive listing) | |
| Canada DSL Inventory | y (positive listing) | |
| Canada NDSL Inventory | n (Negative listing) | |
| New Zealand Inventory of Chemicals | y (positive listing) | |
| Philippines Inventory of Chemicals and Chemical Substances (PICCS) | y (positive listing) | |
| TSCA list | y (positive listing) | On TSCA Inventory |

For inventories that are marked as quantity restricted or special cases, please contact Momentive.

### US Regulatory Information

**SARA (311,312) HAZARD CLASS**

Fire Hazard

**SARA (313) CHEMICALS**

**CALIFORNIA PROPOSITION 65**

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

## Canadian Regulatory Information

**WHMIS CLASSIFICATION**

- Combustible liquid.
D2A - Very Toxic Material Causing Other Toxic Effects
D2B - Toxic Material Causing Other Toxic Effects

## Other

**SCHDLE B/HTSUS:** 3824.90.9290 Chemical Products,Other

**ECCN:** EAR99

## 16. OTHER INFORMATION

**OTHER**

These data are offered in good faith as typical values and not as product specifications. No warranty, either expressed or implied, is made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate.

,C = ceiling limit NEGL = negligible
EST = estimated NF = none found
NA = not applicable UNKN = unknown
NE = none established REC = recommended
ND = none determined V = recommended by vendor
SKN = skin TS = trade secret
R = recommended MST = mist
NT = not tested STEL = short term exposure limit
ppm = parts per million ppb = parts per billion
By-product= reaction by-product, TSCA inventory status not required under 40 CFR part 720.30(h-2).