MATERIAL SAFETY DATA SHEET

Date prepared : Dec.22.2009
Date revised : Dec.27.2010

1. Product and Company Identification

≪Material Identification≫
Product Name : Chukoh Flo ® Spaghetti Tube(PTFE)
≪Company Identification≫
Company Name : CHUKOH CHEMICAL INDUSTRIES, Ltd
Headquarters' Address : ATT New Tower 10F, 2-11-7, Akasaka, Minato-ku, Tokyo, JAPAN
Phone : 81-3-6230-4414 (key number)
Fax : 81-3-6230-4413

2. Hazard Identification

≪Classification of the Product≫ Classification standards do not apply.
≪Hazardousness≫ None.
≪Potential Health Effects≫
None. Microparticulate matter that cause polymer fume fever is generated when the product is heated to the melting point or higher or heated at 260°C or higher for a long period of time.
≪Environmental Influence≫
Please look at clause 12.

3. Composition/ Information on Ingredients

Substance or Preparation : Preparation
Chemical name : Polytetrafluoroethylene (PTFE)
Chemical or structural formula : $-(CF_2-CF_2)_n-$
Official publication file No. : Law Concerning the Examination and Regulation of Manufacture, Etc. of Chemical Substances 6-939
CAS No. : 9002-84-0
Notifiable Substance
Industry Safety &Health Act : Not applicable
PRTR※ Act : Not applicable

※We confirmed revised PRTR Law(2010 Act).

4. First Aid Measures

Upon entry into the eye : Receive the treatment of a physician immediately.
Upon attachment to skin: There is no harm upon attachment to skin.
If there is an abnormality, receive the treatment of a physician.
Upon inhalation : If fumes generated by heating or combustion of a tube is inhaled, move to a location of fresh air. If there is an abnormality thereafter, receive the treatment of a physician.
Upon ingestion : If a tube is ingested, induce vomiting immediately and receive the diagnosis of a physician.

5. Fire Fighting Measures

・Fire extinguishing method : Though the substance is self-extinguishing and is difficult to burn, if a fire has occurred in the surroundings, cut off the combustion source and extinguish using an extinguisher.

・ Fire extinguisher : Any fire extinguisher, such as water, foam extinguisher, powder extinguisher, etc., may be used.

・ Protective ware : If a tube exists in a fire, wear a self-contained respirator and protective ware. Also, use neoprene gloves.

・ Caution : Since hazardous microparticles, fume, and gas will be generated when a tube is exposed to a high temperature, escape towards the upwind side while avoiding inhalation in case of fire.

6. Accidental Release Measures

: Refer to 5 and 7 clauses 8 for the generation of the cracked gas at the high temperature. When making to the spall, and scattering, it collects, and it abandons it according to clause 13.

7. Handling and Storage

・Handling : Smoking is prohibited at the handling area. Avoid contamination in order not to stain a cigarette or a tobacco with the dust of PTFE because the stained PTFE reacts and becomes to the toxic gas/vapors by heating on his smoking.
Wash hands and face sufficiently after handling the product.
Pay attention neither to transfer nor to carry the dust of the product resin to another place.
Do not heat up nor use the products over 260℃. Install a ventilation fan, if it is expected to expose or to use the product at the place over 260℃.

・Storage : Store the product on the condition of a room temperature and in a dark place. We recommend to store the product under 25℃ and less than 60% humidity condition.

8. Exposure Controls/ Personal Protection

・ Control concentration : Does not apply.

・ Allowable concentration : Does not apply.

・ Equipment measures : Install a local ventilation device in the case of a process in which heating to 260°C or more is performed.

・ Protective ware : Unnecessary for normal handling. If the product is heated to a handling temperature of 260°C or higher and a human body is exposed to the decomposition products that are generated, use an air line mask. Also wear safety glasses, protective gloves, protective clothes, protective shoes, etc. where necessary.

9. Physical/ Chemical Properties

- Appearance : White, odorless.
- Boiling point : None.
- Melting point : 327°C
- Vapor pressure : None.
- Specific gravity : 2.1 to 2.3g/cm^3 (20°C)
- Solubility : Insoluble in water.

10. Stability and Reactivity

- Flash point : None.
- Ignition point : None.
- Combustibility : Incombustible. (UL: 94V-0)
- Stability, reactivity : The product is stable under normal storage conditions.
  Fire or explosion may occur upon reaction with a powder of a metal, such as aluminum and magnesium, or a fluorine compound oxidizing agent, such as fluorine (F_2) and trichlorofluorine (Cl_3F).

11. Toxicological Information

- Acute toxicity : Oral rat LD_{50} 12,500mg/kg
- Animal experiments : No irritation to the skin.
  Animal experiments show no significant toxicity effects even upon repeated administration. However, the white blood cell count changes when administered over a long period of time.
- Carcinogenicity : No indications given by the Japan Society for Occupational Health (2008 edition), OSHA (Occupational Safety and Health Administration), or NTP (National Toxicology Program).
  IARC (International Agency for Research on Cancer): Group 3

(When PTFE undergoes thermal decomposition)

- Effects on human health
  : When the fume generated upon combustion is inhaled, it may give rise to polymer fume fever with temporary cold-like symptoms such as fever, chills, coughing, etc.
  The symptoms may last for 24 hours in some cases.
  Absorption from the skin will not occur and there have been no reports concerning sensitization.
- Effects of hydrogen fluoride
  : Upon inhalation of a low concentration of hydrogen fluoride, breathing becomes difficult at first, coughing occurs, heavy irritation of the eyes, nose, and throat occurs, and after fever and chills continues for 1 or 2 days, dyspnea, cyanosis, and pulmonary edema occur.
  Exposure to a high concentration of hydrogen fluoride over a short term or long term leads to damage of the liver and the kidneys.

・ Effects of carbonyl fluoride

Skin	:	Causes discomfort or rash.
Eyes	:	Causes damage of the cornea or conjunctiva.
Respiratory system	:	Irritation.
Lungs	:	Causes temporary irritation symptoms, such as coughing, discomfort, dyspnea, breathlessness, etc. (A person with a lung disorder will readily receive toxic effects due to excessive exposure to thermal decomposition products.)

12. Ecological Information

・ Decomposition properties : No data.
・ Accumulation properties : No data.
・ Fish toxicity : No data.

13. Disposal Considerations

Subject to landfill treatment without incinerating.

In disposing waste, commission an industrial waste treatment firm, licensed by the prefectural governor in accordance to the "Waste Disposal and Public Cleansing Law", for treatment or, in the case where a local public organization is performing treatment, commission the organization for treatment.

14. Transport Information

Precautions : Avoid leakage water and breakage of wrapping and packing.
Do not stack excessively.

UN classification and No. : None.

15. Regulatory Information

: There are no applicable laws and regulations.

16. Miscellaneous

The hazard and harmfulness information provided here have been prepared on the premise of general handling methods, etc. for industrial applications. Therefore in actual use, adequate care should be taken upon referencing the hazard and harmfulness information indicated here.

< Usage restrictions > This product is not specially designed or manufactured for use in medical equipment, etc. to be transplanted into a human body or brought in contact with body fluids or living tissue.

< References >

(1) " Fluoro-plastics handbook"
: Japan fluoro-polymers Industry Association issued in '08.
(2) " Fluoro-plastics Treating Handbook"
: Japan fluoro-polymers Industry Association issued in '08
(3) "Thermal Decomposition of a Product of Fluoro-plastics"
: State Labor Safety & Health Laboratories in U.S.A issued in'82.
(4) Model sheet of MSDS made by Japan fluoro-polymers Industry Association.
(5) MSDSs made by other material manufacturers.

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End of MSDS