

**Date of issue :** 01.03.2015  
**Version:** AK15-00  
**Product Name:** CFO  
**EU Directive 1907/2006**



## 1. Identification of the substance/preparation and of the company/undertaking

1.1 Trade name: Carbon Fiber Reinforced ABS - CFO  
1.2 Use of the product: 3D Printing Filament  
1.3 Supplier: OOKUMA Additive Manufacturing Technologies and Materials, Inc.  
Atatürk Oto San. Sit. 2. Kısım 5. Sok. No:113  
Maslak İST.  
Phone: 0090 850 811 6781  
Fax : 0090 850 811 6781  
Emergency phone number: 0090 850 811 6781

## 2. Hazards identification

2.1 Classification: Not a hazardous substance or preparation according to EC-directives 1999/45/EC and 1272/2008/EC unless indicated.  
2.2 Special advice on hazards: Danger of burns in contact with hot polymer. Burning produces obnoxious and toxic fumes. Avoid formation of dust and aerosols.

## 3. Composition / information on ingredients

3.1 Chemical characteristics: This product consists primarily of high molecular weight polymers which are not expected to be hazardous. The ingredients in this product are present within the polymer matrix and are not expected to be hazardous.

## 4. First-aid measures

4.1 On skin contact: In case of contact with molten polymer rinse immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.  
4.2 After inhalation: After inhalation of decomposition gases or dust Move to fresh air. Call a physician immediately.  
4.3 On ingestion: No hazards which require special first aid measures.  
4.4 On eyes contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.

## 5. Fire-fighting measures

5.1 Suitable fire extinguishing media: Foam. Water. Carbon dioxide (CO2). Dry chemical. Alcohol resistant foams are preferred if available. General-purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively  
5.2 Special exposure hazards: During incomplete combustion release of carbon monoxide, carbon dioxide and hydrocarbons.  
5.3 Special protective equipment: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.  
5.4 Remark: Fine dust dispersed in air may ignite. Risks of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust, e.g. on floors and ledges.

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## 6. Accidental release measures

- 6.1 Personal precautions: Use suitable protective clothing. Avoid eye contact and inhalation of dusts. Keep ignition sources away.
- 6.2 Methods for cleaning up: Shovel into suitable container for disposal. Avoid ingress of material into drainage systems.

## 7. Handling and storage

- 7.1 Handling: Avoid contact with molten polymer with skin and eyes. Avoid dust formation. Low hazard for usual industrial or commercial handling. Use personal protective equipment
- 7.2 Storage: Store in cool place. Keep at temperatures below 50 °C. No special restrictions on storage with other products. Protect against moisture.

## 8. Exposure controls/ personal protection

- 8.1 Technical safety measures: With suitable ventilation the threshold limits assumably will not be reached. Avoid electrostatic charge by use of grounding cables.
- 8.2 Personal safety equipment: Use adequate safety equipment as protective clothing, eye protection glasses with side-shields, heat protection gloves.  
In case of dust formation wear mask with particle filter.
- 8.3 Work hygiene: No eating or drinking during working.  
Avoid contact of hot material with the skin.  
Avoid breathing dust and vapours.

## 9. Physical and chemical properties

- 9.1 Form: Filaments
- 9.2 Color: Black
- 9.3 Odor: None
- 9.4 Melting range: This product does not exhibit a sharp melting point but softens gradually over a wide range of temperatures.
- 9.5 Oxidising properties: not self igniting / not flammable
- 9.6 Explosions limits: not applicable
- 9.7 Density: 1.08 g/cm<sup>3</sup>
- 9.8 Solubility in water: None known

## 10. Stability and reactivity

- 10.1 Stability: Stable under recommended storage conditions
- 10.2 Conditions to be avoided: Avoid exposure to extreme heat and all sources of ignition. Thermal decomposition > 508°C.
- 10.3 Hazardous decomposition products: Burning produces obnoxious and toxic fumes. Aldehydes. Carbon monoxide (CO). carbon dioxide (CO<sub>2</sub>).

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## 11. Toxicological information

- 11.1 Local irritation: LD50/oral/rat >5000 mg/kg, LD50/dermal/rabbit >2000 mg/kg, no information available on subchronic toxicity. Substance does not generally irritate and is only mildly irritating to the skin
- 11.2 Other remarks: The toxicological data has been taken from products of similar composition.
- 11.3 Special studies: Styrene: A reproduction study in rats exposed to 125 and 250 ppm in drinking water (approximately 14-21 mg/kg/day) produced no treatment-related effects on reproductive performance over 3-generations. The only treatment related findings were reduced pup survival index in the F1 and F2 offspring. There was no evidence of developmental effects and no other effects were reported. The parental NOEL was 250 ppm and the NOEL for the F1 and F2 offspring was 125 ppm. In developmental toxicity studies in rats, rabbits, and hamsters styrene was not a selective toxicant to the fetus and was toxic at only those doses that produced maternal toxicity. In humans, styrene is associated with central nervous system depression (headache, fatigue, nausea, and dizziness) at inhalation concentrations greater than 50 ppm. Styrene has also been reported to reduce sensory nerve conduction in occupation settings after exposure to 100 ppm or more. Styrene has also been reported to produce color vision deficiencies (dyschromatopsia) at concentrations greater than 8 ppm (averaging 24 ppm). Twelve epidemiology studies have been reported for styrene and half have supported the hypothesis that styrene produces lymphatic and hematopoietic cancers (LHC). However, those that show an increase of LHC has generally been small in size (limited statistical power), have shown no dose-response relationship, and/or had multiple chemical exposures. Of the six studies that have not shown an association with styrene and LHC, these studies tended to be larger in size (higher statistical power), had an older study population, and had good exposure data. Overall, the weight of evidence suggests that there is not an association of LHC and styrene exposure in humans. In a recent inhalation cancer bioassay, Sprague Dawley derived rats (70/sex/group) were exposed whole body to styrene vapor at 0, 50, 200, 500, or 1000 ppm 6 h/day 5 days/week for 104 weeks. Males exposed to 500 and 1000 ppm and females exposed to 200 ppm and higher gained significantly less weight than the controls. There were no changes of toxicologic significance in hematology, clinical chemistry, urinalysis, or organ weights. Styrene-related nonneoplastic histopathologic changes were confined to the olfactory epithelium of the nasal mucosa. The incidence and severity were related to dose. There was no evidence that styrene exposure caused treatment related increases of any tumor type in males or females or in the number of tumor

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bearing rats in the exposed groups compared to controls. In 2-year carcinogenicity bioassays conducted by the National Toxicology Program, rats and mice (50/sex/group) received 0, 500, 1000, or 2000 mg/kg/day and 0, 150, or 300 mg/kg/day, respectively, via oral gavage. In male or female rats and female mice there was no significant difference in tumor incidence when compared to the control groups. In male mice there was a positive association between styrene dose and the incidence of the combination of adenomas and carcinomas of the lung. However, due to the high background incidence of this tumor type in male mice, no firm conclusion was drawn for the carcinogenicity. In a study that administered styrene (125 and 250 ppm) in the drinking water of rats for 2 years, there was no evidence of carcinogenicity. In other chronic inhalation toxicity studies, rats were exposed to styrene via inhalation at concentrations up to 300 ppm for 4-6 hours/day, 5 days/week, for 1 year or up to 1000 ppm for 2 years. There was a slightly increased, but not statistically significant, incidence of mammary tumors in the females in both studies. Because the control incidence was also high and there was no dose-response relationship the studies were considered to be negative.

## 12. Ecological information

- 12.1 Ecotoxicological effects: Do not flush into surface water or sanitary sewer system.
- 12.2 Biological degradation: This water-insoluble polymeric solid is expected to be inert in the environment. Surface photodegradation is expected with exposure to sunlight. No appreciable biodegradation is expected.
- 12.3 Bioaccumulation: Does not bioaccumulate.

## 13. Disposal considerations

- 13.1 Waste from residues / unused products : In accordance with local and national regulations. Do not contaminate ponds, waterways or ditches with chemical or used container. Contact manufacturer.
- 13.2 Uncleaned packaging: Packaging material has to be emptied completely and disposed in accordance with the regulations.

## 14. Transport information

- 14.1 Transport regulations: Not classified as hazardous under transport regulations  
DOT, ADR, ADN, RID, ICAO/IATA, DGR

## 15. Regulatory information

- 15.1 EU regulations: This product does not require a hazard warning label in accordance with EC Directives.

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#### 16. Other information

Oo-kuma urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

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