SAFETY DATA SHEET(SDS)

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FileNo. 3002-3

1.Chemical Product & Company Identification

CHEMICALPRODUCT NAME:	DURAFIDE® 2130A1 HD9000
NAME OF COMPANY:	Polyplastics Co.,Ltd.
ADDRESS:	2-18-1 Konan, Minato-ku, Tokyo,108-8280 Japan
SECTION IN CHARGE:	Quality Assurance Dept.
TELEPHONE NUMBER:	03-6711-8605
FACSIMILE NUMBER	03-6711-8616

2. Hazards identification

[GHS CLASSIFICATION]

Physical and Chemical Hazards : ・Flammable solids : Classification not possible
・Self-reactive substances and mixtures : Not applicable
・Pyrophoric solids : Not classified
・Self-heating substances and mixtures : Not classified
・Substances and mixtures, which in contact with water, emit flammable gases : Not classified
・Oxidizing solids : Not classified
・Corrosive to metal : Not classified

Health Hazards : ・Carcinogeneses : No hazard
・Specific target organ/systemic toxicity (Repeated exposure) : No hazard

Environmental Hazards : No hazard

[SYMBOL] : None

[SIGNAL WORD] : None

[HAZARD STATEMENT] : None

[PRECAUTIONARY STATEMENTS]

Prevention : ・Wash hands thoroughly after handling.
・Wear protective gloves.

Response : -

Storage : Avoid direct sunlight and store in a well-ventilated place.

Disposal : Dispose of contents/container in accordance with local & national regulations.

3. Composition/information on ingredients

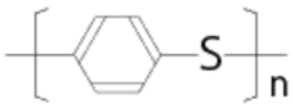
SUBSTANCE/PREPARATION : Mixture

COMMON CHEMICAL NAME : Polyphenylene sulfide

SYNONYMS : Polyphenylene sulfide(PPS)

INGREDIENTS AND COMPOSITION : PPS ≧69%, Carbon fiber 30%, Others ≦1%

CHEMICAL FORMURA :



SERIAL No. IN OFFICIAL GAZETTE : 7-1143(base resin) (Law Concerning Examination and Regulation of Manufacture, etc., of Chemical Substances)

CAS No. : 26125-40-6(base resin)

INGREDIENTS CONTRIBUTING TO THE HAZARD : Cadmium, lead, hexavalent chromium and mercury are not used in this grade.

4. First-aid measures

INGESTION : When a gas generated from the molten polymer has been inhaled, move to area of fresh air without delay and wait until the victim is recovered. If sick feeling continues, ask a physician for advice.

SKIN CONTACT : Cool the contacted skin with clean water without delay, if a

		contact with the polymer in a molten form. Do not force to remove the solid resin on the skin. If any burns are observed on the skin, ask a physician for advice.
EYE CONTACT	:	Cool and rinse the eye with clean water for at least 15 minutes when the eyes had contact with molten polymer. In case of wearing contact lenses, remove the lenses as soon as possible, and ask a physician for advice. When the eye had contact with the polymer in an ordinary solid form, rinse the eye with clean water without delay. If the discomfort persists, ask a physician for advice.
SWALLOW	:	Help to vomit as much as possible. If sick feeling continues, ask a physician for advice.

5. Fire-fighting measures

EXTINGUISHING MEDIA	:	Water, foam fire-extinguishing agent, powder fire-extinguishing agent, and carbon dioxide gas.
SPECIFIC METHODS	:	Extinguish the fire with water. A method of extinguishing an ordinary fire may be applied. Do not apply water directly to processing machines.
SPECIFIC HAZARDS	:	Incomplete combustion leads to generation of toxic gases such as carbon monoxide or sulfur compound gas, in addition to carbonic acid gas and water.
SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS	:	In case the fire gained force, use a gas mask or other protective equipment.

6. Accidental release measures

PERSONAL PRECAUTIONS	:	When pellets were spilled on the road or floor, wipe them off with a besom or cleaner not to cause slipping.
ENVIRONMENTAL PRECAUTION	:	Handle the spillage in accordance with provisions given in the "Resin pellet spillage preventive manual", in order to prevent intakes by marine animals and birds.

7. Handling and storage

HANDLING	:	PPS resin in a pellet form will neither ignite nor explode at room temperatures.
HANDLING 2	:	This pellets spilled on the floor are likely to cause slipping. Remove such spillage at any times.
HANDLING 3	:	For molding work, effective means for local exhaust are required to discharge gases generated by melt processing.
HANDLING 4	:	Avoid inhaling of gases generated in molding work. Do not directly touch resin of high temperature.
HANDLING 5	:	Avoid retaining hot resin in the processing machines for many hours.
HANDLING 6	:	Carbon fibers are not generally exposed in a single substance under normal processing and handling conditions as they are compounded in pellets. However, the following measures will be necessary to minimize the exposure to carbon fibers or dusts containing carbon fibers, when pellets or molded parts containing carbon fibers are cut, ground or burnt, depending on environmental and operational conditions. ・Those who are sensitive in skin to carbon fiber should wear suitable(protective) clothes to minimize the exposure of their skin. ・Wash working clothes apart from other laundry, so that the latter will not cause contamination with carbon fibers. ・Provide the workshop with partitions to prevent diffusion of carbon fiber dusts. ・Pay precautions not to rub face, neck or arms with hands. Wash

hands and gargle after working without fall.
・Keep dust sources totally enclosed.
・Installation of a carbon fibers recovery filter at the exhaust port is necessary for keeping carbon fibers from flowing outside, in addition to installation of local air exhausters. Periodical adjustments and inspections are also required at least once or more every year.
・Reduce cutting and grinding processes to the possible minimum, and devise working procedures to minimize dust generation.
・Provide dust-preventive masks, protective glasses and gloves for personal hygiene.
・Determine the operational environment at indoor working places and confirm the effects of environmental improvement.
・There is a risk of short circuit or other troubles in electric systems caused by carbon fibers floating in the atmosphere as they are electrically conductive. Therefore, dust preventive measures are required for sections where carbon fibers are likely to be produced.
・Disposal of carbon fiber wastes are subject to the laws concerning industrial wastes handling. Reclaiming into the soil is recommended for proper disposal. Avoid to burn in incinerators, as it results in diffusion of carbon fiber dusts produced during the peocess into the atmosphere and a subsequent risk of electrical troubles.
Note) Carbon fibers are, like road dusts, told to be least hazardous to human bodies, but proper measures are required to avoid useless inhaling.

HANDLING 7 : Pellets and moulded parts using carbon fiber as filler are electrically conductive in general, and therefore avoid use in places where insulation is required in general.

STORAGE : Keep the substance away from any fire or heat sources for the sake of safe storage.

STORAGE 2 : Handle in accordance with municipal rules and regulations.

RECOMMENDED PACKAGING MATERIALS : No information.

8. Exposure controls/ personal protection

CONTROL CONCENTRATION : None at present

PERMISSIBLE CONCENTRATION : OSHA PEL/1985
Max. permissible concentration of inactive powder 15mg/m3
– ditto – (Aspiration) 5 mg/m3
ACGIH TLV/1992 1993
Exposure limit of the powder TWA 10 mg/m3

ENGINEERING MEASURE : ・When handling dust: Use totally enclosed containers resisting dust explosion.
・When heat melted in molding: Effective local ventilation must be provided.

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION : Wear a dust-proof mask.

HAND PROTECTION : Wear heat-resisting gloves against burns, when handling molten polymer.

EYE PROTECTION : Wear protective glasses or goggles.

SKIN & BODY PROTECTION : Wear long sleeve clothes against burns, when handling molten polymer.

9. Physical and chemical properties

APPEARANCE etc. : Pellet

BOILING POINT	:	Not applicable
VAPOUR PRESSURE	:	Not applicable
VOLATILITY	:	Not applicable
INITIAL BOILING POINT	:	Not applicable
SUBLIMATION	:	None
MELTING POINT	:	275~285℃
DENSITY	:	1.45
SOLUBILITY	:	Insoluble in water
FLASH POINT	:	400℃ or higher
IGNITION POINT	:	500℃ or higher
EXPLOSION PROPERTY	:	Not applicable
INFLAMMABILITY	:	None
REACTIVITY WITH WATER	:	None
OXIDIZABILITY	:	None
SELF-REACTIVITY	:	None
DUST EXPLOSIVENESS	:	Upper explosion limit : Not applicable. Lower explosion limit : 35g/m3

10. Stability and reactivity

STABILITY AND REACTIVITY	:	Stable for normal storage or handling.

11. Toxicological information

SKIN CORROSION/IRRITATION	:	No finding
SERIOUS EYE DAMAGE/IRRITATION	:	Gas generated in drying or melting is irritating eyes and skins.
RESPIRATORY OR SKIN SENSITISATION	:	No finding
ACUTE TOXICITY(INCLUDING LD50)	:	No finding
SUBACUTE TOXICITY	:	No finding
CHRONIC TOXICITY	:	No finding
CARCINOGENECITY	:	No finding
MUTAGENECITY(Micro organisms, chromosomal aberration)	:	No finding
REPRODUCTIVE TOXICITY	:	No finding
TERATOGENICITY	:	No finding
OTHERS(Including generation of hazardous gases by reaction with water, for example)	:	No finding in this report means that there will be no hazard in general, but no proving data available at the time of reporting.
OTHER CAUTIONS	:	With regard to dust, the maximum permissible concentration and limits are fixed by OSHA and ACGIH.
OTHER CAUTIONS 2	:	Hazardousness of carbon fiber as the filler ・There is no report of actual cases giving hazards to human body which is supposedly attributed to carbon fibers. Public organizations such as IPCS, LARC, WHO and ILO also admit that there is no evidence to prove hazardous properties of carbon fibers. Therefore, they are not taking up carbon fibers in rating of various substances in carcinogenecity. ・There are 2 cases of investigation on carbon fibers manufacturing sites made abroad. The one is a survey in England which has not included a case report. The other one is a survey in Soviet Union which had a report of bronchitis and recommended a permissible concentration of carbon fiber dust as 4 mg/m3. ・A few animal tests and in-vitro tests were carried out. Most of these tests have recognized no influence on living things except a few. And yet, we cannot discuss about hazardousness of carbon fibers from these test results, as most of them have not shown

details of the testing conditions applied. Even some reports which have quoted affirmative influences pointed out that such effects were weaker compared with those of chrysotile asbestos which were tested simultaneously. Carbon is generally told to be biologically adaptable, and carbon fiber and its compounds are so. They are applied to artificial ligaments, dental roots and cardiac valves with successful results. Situations being as above-mentioned, there is no necessity for having an excessive fear of the safety of carbon fibers to the human body. Since carcinogenecity of fine fibrous substances is not yet clarified, we must keep our eyes open on information about asbestos, zeolite and other artificial mineral fibers, understand the situations and further continue investigations, if necessary. As the dust containing carbon fibers is as unpleasant as other dusts and causes stimulation to some people, attention must be called for to the handling of carbon fiber.

WHO : World Health Organization
IPCS : International Programme on Chemical Safety
IARC : International Agency Research on Cancer
ILO : International Labor Organization

12. Ecological information

BIODEGRADABILITY	:	No finding
BIOACCUMULATION	:	No finding
FISH TOXICITY	:	No finding
Hazards to ozone layer	:	None

13. Disposal considerations

WASTE FROM RESIDUES	:	This is designated as waste plastics among industrial wastes by the Wastes Disposal Law. Disposal waste pellets through licensed wastes handlers or local autonomous bodies if they are handling wastes disposal.
WASTE FROM RESIDUES 2	:	When disposed by incineration, use the well controlled incinerators in accordance with the Wastes Disposal Law, Air Pollution Control Law and Water Pollution Prevention Law.

14. Transport information

UN CLASSIFICATION NUMBER	:	Not restricted for ICAO/IATA.
OTHER CAUTIONS	:	Handle with care so as not to give damages to containers or not to be subjected to wetting.
OTHER CAUTIONS 2	:	Secure the containers firmly so as not to cause collapsing.

15. Regulatory information

WASTE DISPOSAL LAW	:	Waste plastics among industrial wastes.

16. Other information

HANDLING OF THE DETAILS GIVEN ABOVE	:	This SDS is the English version translated from the Japanese SDS which is prepared for domestic use. Details given above are based on references, information and data available at this moment, but no warranty can be made on exactness of these details. They are also prepared on the assumption that the product will be handled in a normal way. For special handling, adequate safety and environmental measures should be taken in respect to its applications. Our products are not specifically intended for implants for medical and dental applications, and therefore they are not recommended for such applications. "No finding" in this report means that there will be no hazard in general, but no proving data is available at the time of reporting.
WHERE TO CALL FOR FURTHER	:	Polyplastics Co. , Ltd. Quality Assurance Dept. Tel. No

INFORMATION 03-6711-8605

*DURAFIDE® is a registered trademark of Polyplastics Co., Ltd. in Japan and other countries.