

MATERIAL SAFETY DATA SHEET (MSDS)

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File No. 1001

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

CHEMICAL PRODUCT NAME : DURACON® M90-44
NAME OF COMPANY : Polyplastics Co.,Ltd.
SECTION IN CHARGE : Quality Assurance Dept.
ADDRESS : 2-18-1 Konan, Minato-ku, Tokyo,108-8280 Japan
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 : Substance

COMMON CHEMICAL NAME : Polyoxymethylene

SYNONYMS : Polyacetal(POM)

INGREDIENTS AND COMPOSITION : POM $\geq 84\%$, Others $\leq 16\%$

CHEMICAL FORMULA : $\left[\text{CH}_2 - \text{O} \right]_n / \left[\text{CH}_2\text{CH}_2\text{O} \right]_n$

SERIAL No. IN OFFICIAL GAZETTE	: 7-129 (base resin) (Law Concerning Examination and Regulation of Manufacture, etc., of Chemical Substances)
CAS No.	: 24969-26-4 (base resin)
INGREDIENTS CONTRIBUTING TO THE HAZARD	: Formaldehyde

4. FIRST-AID MEASURES

INGESTION	: Help to vomit as much as possible. If sick feeling continues, and ask a physician for advice.
INHALATION	: When a gas generated from the molten polymer has been inhaled, remove 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.

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 formaldehyde, in addition to carbonic acid gas and water.
SPECIAL EQUIPMENT FOR THE PROTECTION OF FIREFIGHTERS	: In case the fire gained force, use a gas mask or other protective equipment.

6. ACCIDENTAL LEAKAGE 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	: Polyacetal resin in a pellet form will neither ignite nor explode at room temperatures, but it falls under the inflammables designated by the Fire Service Law. Keep it away from the igniting sources, as it quickly gains force once it is ignited.
HANDLING 2	: Polyacetal resin in a powdered form is likely to cause dust explosion and is therefore designated in the Guideline for Hazard of Dust Explosion in U.S. Bureau of Mines. Effective earthing means or use of inert gas like N ₂ are required for dust handling equipment to eliminate static electricity.
HANDLING 3	: Polyacetal pellets spilled on the floor are likely to cause slipping. Remove such spillage at any times.

HANDLING 4	: For molding work, effective means for local exhaust are required to discharge gases generated by melt processing.
HANDLING 5	: Avoid inhaling of gases generated in molding work. Do not directly touch resin of high temperature.
HANDLING 6	: Avoid retaining hot resin in the processing machines for many hours.
HANDLING 7	: Avoid mixed extrusion with strong acid, oxidizing agents and PVC.
STORAGE	: Keep the substance away from any fire or heat sources for the sake of safe storage.
STORAGE 2	: This polymer is a synthetic resin designated as an inflammable substance by the Fire Service Law and should be handled in accordance with municipal rules and regulations (concerning fire-fighting equipment, indoor storage, for instance).
RECOMMENDED PACKAGING MATERIALS	: No information.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

CONTROL CONCENTRATION	: None at present
PERMISSIBLE CONCENTRATION	: OSHA PEL/1985 Max. permissible concentration of inactive powder 15mg/m ³ - ditto - (Aspiration) 5mg/m ³ ACGIH TLV/1992 1993 Exposure limit of the powder TWA 10 mg/m ³ (Reference) Human exposure to formaldehyde - Ministry of Health & Welfare/2002 Guideline value 0.08 ppm OSHA Parameter/1992 TWA 0.75 ppm STEL 2 ppm ACGIH TLV/1992 1993 TWA 0.3 ppm
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.
EYE PROTECTION	: Wear protective glasses or goggles.
HAND PROTECTION	: Wear heat-resisting gloves against burns, when handling molten polymer.
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
SUBLIMATION	: None
MELTING POINT	: 165°C

DENSITY	: 1.41
SOLUBILITY	: Insoluble in water
FLASH POINT	: 320°C or higher
IGNITION POINT	: 400°C or higher
EXPLOSION PROPERTY	: Not applicable
INFLAMMABILITY	: Inflammable(Designated as inflammable resin by the Fire Service Law)
REACTIVITY WITH WATER	: None
OXIDIZABILITY	: None
SELF-REACTIVITY	: None
DUST EXPLOSIVENESS	: Upper explosion limit : Not applicable. Lower explosion limit : 35g/m ³

10. STABILITY AND REACTIVITY

STABILITY AND REACTIVITY	: Stable for normal storage or handling.
CONDITIONS TO AVOID	: Avoid contacts with strong acid, oxidizing agent or PVC under hot melt conditions.
HAZARDOUS DECOMPOSITION PRODUCTS	: Formaldehyde will be generated when heated (for drying or melting) or burnt.

11. TOXICOLOGICAL INFORMATION

SKIN CORROSIVE PROPERTIES	: No finding.
SENSITIZING & IRRITANT EFFECTS	: Gas generated in drying or melting is irritating eyes and skins.
ACUTE TOXICITY(INCLUDING LD50)	: No finding.
SUBACUTE TOXICITY	: No finding.
CHRONIC TOXICITY	: No finding.
CARCINOGENICITY	: No finding.
MUTAGENICITY(Mi cro 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	: Formaldehyde will be generated when heated (for drying or melting) or burnt.

OTHER CAUTIONS : Carcinogenicity class of formaldehyde, which may be generated if
3 overheated.
IARC(International Agency for Research on Cancer): Group1

12. ECOLOGICAL INFORMATION

BIODEGRADABILITY : No finding.

BIOACCUMULATION : No finding.

FISH TOXICITY : No finding.

13. DISPOSAL CONSIDERATION

WASTE FROM RESIDUES : This is designated as waste plastics among industrial wastes by the Wastes Disposal Law. Disposal waste Duracon 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 CONSIDERATION

UN CLASSIFICATION NUMBER : Not applicable

OTHER CAUTIONS : Handle with care so as not to give damages to containers or not to be subjected to wetting.

OTHER CAUTIONS : Secure the containers firmly so as not to cause collapsing.
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15. REGULATORY INFORMATION

FIRE SERVICE LAW : Inflammable synthetic resin
Designated quantity: More than 20m³ for the foamed product.
More than 3,000 kg for other types.

WASTE DISPOSAL LAW : Waste plastics among industrial wastes.

LAW CONCERNING REPORTING, ETC. OF RELEASES TO THE ENVIRONMENT OF SPECIFIC CHEMICAL SUBSTANCES AND PROMOTING IMPROVEMENTS IN THEIR MANAGEMENT(PRT R) : The following color numbers contain Class I Designated Chemical Substance Cabinet order Annex 1 No.309(nickel compound; Government ordinance No.356, revised on October 1 2009) as follows.
PL—RM2214N 2. 30%
PL—T1725N 0. 15%
PL—T2244N 0. 14%
PL—T5510N 0. 29%
PL—T5521N 0. 19%
PL—T5531N 0. 13%
PL—T5542N 0. 14%
PL—T7A413 0. 31%
PL—T7A530 0. 28%
PL—T8503 0. 37%
PL—T9585N 0. 11%
PL—T9A399 0. 11%
PL—T9A893 0. 14%
PL—T9G034 0. 19%
PL—T9G448 0. 10%

Color number PL—RM 2214N contains Class I Designated Chemical Substance Cabinet order Annex 1 No.31(antimony and its compounds; Government ordinance No.356, revised on October 1 2009, 2.31%).

INDUSTRIAL SAFETY AND HEALTH LAW	: Many colored products contain carbon black(designated as cabinet order No.93 Annex 9 No.130), antimony and its compounds(No.38), chromium and its compounds(No.142), copper and its compounds(No.370), nickel and its compounds(No.418), cobalt and its compounds(No.172), titanium dioxide(No.191), iron oxide(No.192), mineral oil(No.168) and/or silica(No.312) more than the threshold to be declared.
ORDINANCE ON INDUSTRIAL SAFETY AND HEALTH ARTICLE 95-6	: Many colored products may contain "antimony and its compounds", "cobalt and its compounds" and /or "titanium dioxide" in 2006 Ministry of Health, Labour and Welfare's notification No25(revised on November 20 2008) Article 1.
OTHERS	: Formaldehyde is designated as Class 2 substance by the Industrial Safety and Health Law(Regulations concerning hazards caused by specific chemicals) and designated as deleterious substance by the Poisons and Deleterious Substance Control Law. Recommended usage,criteria,and limit values are provided by Japan Industrial Safety and Health Society,OSHA and ACGIH.

16. OTHER INFORMATION

HANDLING OF THE DETAILS GIVEN ABOVE	: This MSDS is the English version translated from the Japanese MSDS 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 INFORMATION	: Polyplastics Co.,Ltd. Quality Assurance Dept. Tel. No 03-6711-8605