

# Safety Data Sheet (SDS)

Date prepared/revised: 2015/09/01

## Section 1: Product and Company Identification

**Product Name: NOVALLOY (S series)**

**(Grade Name)**

**S4210, S4220, S4230, S5210, S5220, S5230**

### Supplier's Details:

Company	Daicel Polymer Ltd
Address	12 Fujicho, Hirohata-ku, Himeji, Hyogo 671-1123, Japan
Section in charge	Technical Development Center
Phone number	+81-79-238-1209
Fax number	+81-79-238-1241
Emergency phone	+81-79-238-1209

## Section 2: Hazard Identification

### Important Hazards and Effects:

#### Physical and chemical hazards

- Dust may cause dust explosion.

#### Potential health effects

- Polymer particulates may be inhalation-hazardous.
- Gases and fumes evolved during processing may irritate the respiratory tract, skin and eyes.

#### Specific hazards

- Hot molten material can cause thermal burns in contact with skin.

### GHS Classification:

#### Physical and chemical hazards

- |   |                             |
|---|-----------------------------|
| 1. Flammable solids   | Classification not possible |
| 2. Self-reactive substances and mixtures                                      | Classification not possible |
| 3. Pyrophoric solids  | Not classified              |
| 4. Self-heating substances and mixtures                                       | Classification not possible |
| 5. Substances and mixtures which, in contact with water, emit flammable gases | Classification not possible |
| 6. Oxidizing solids   | Classification not possible |
| 7. Corrosive to metals  | Classification not possible |

#### Health hazards

- |  |                             |
|--|-----------------------------|
| 1. Acute toxicity (oral)                               | Not classified              |
| 2. Acute toxicity (dermal)                             | Classification not possible |
| 3. Acute toxicity (gases)                              | Not applicable              |
| 4. Acute toxicity (vapours)                            | Classification not possible |
| 5. Acute toxicity (dusts and mists)                    | Classification not possible |
| 6. Skin corrosion/irritation                           | Not classified              |
| 7. Serious eye damage/eye irritation                   | Not classified              |
| 8. Respiratory sensitization                           | Classification not possible |
| 9. Skin sensitization                                  | Classification not possible |
| 10. Germ cell mutagenicity                             | Not classified              |
| 11. Carcinogenicity                                    | Category 2                  |
| 12. Reproductive toxicity                              | Not classified              |
| 13. Effects on or via lactation                        | Classification not possible |
| 14. Specific target organ toxicity (Single exposure)   | Not classified              |
| 15. Specific target organ toxicity (Repeated exposure) | Not classified              |
| 16. Aspiration hazard                                  | Not applicable              |

#### Environmental hazards

- |   |                             |
|---|-----------------------------|
| 1. Hazards to the aquatic environment (acute)   | Not classified              |
| 2. Hazards to the aquatic environment (chronic) | Not classified              |
| 3. Hazard to the ozone layer                    | Classification not possible |

### GHS Label Elements:

#### Pictograms



**Signal words** Warning  
**Hazard statements** Suspected of causing cancer.  
**Precautionary statements**

Prevention

- Read the Safety Data Sheet (SDS) before handling the material. Do not handle until all safety precautions have been understood.
- Use protective gears when you handle the material.
- Provide a local ventilation system in the processing room.
- Avoid release to the environment.
- Use appropriate fire extinguisher in case of fire.

Response

- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If eye irritation persists: Get medical advice/attention.
- IF ON SKIN: Wash with plenty of water.
- If exposed or concerned: Get medical advice/attention.

Storage

- Protect from sunlight. Store away from heat, open flames and all ignition sources.
- Store locked up.

Disposal

- Dispose of contents and container should be in accordance with applicable laws and ordinances.

**Section 3: Composition/Information on Ingredients****Substance/Mixture:**

Mixture

**Ingredients:**

Polycarbonate(PC)

Acrylonitrile-butadiene-styrene copolymer(ABS)

Brominated flame retardant(#)

Filler

Others (Trade Secret)

(#)Neither PBB(POLYBROMINATEDBIPHENYL) or PBDE(POLYBROMINATED DIPHENYL ETHER) are not used as brominated flame retardants.

**Composition:**

PC+ABS		Equal to or greater than 40 mass percent		
Brominated flame retardant		Less than 15 mass percent		
Filler		Less than 35 mass percent		
Others		Less than 10 mass percent		
Antimony and its compounds as antimony trioxide				
Grade	Mass percent	Grade	Mass percent	
S4210	4.0	S4220	3.5	
S4230	3.0	S5210	4.0	
S5220	3.5	S5230	3.0	

\* Trade secret as to precise ratio of ingredients.

**Hazardous Ingredients/Impurities, which are within the meaning of the GHS, and are present above cut-off level:**

Styrene	Less than 0.3 mass percent
Antimony and its compounds	Refer to "Composition" of this section.

\* Colored materials may contain hazardous ingredients in colorants.

**Published Reference No. of Gazette (Japan):**

PC:7-738, ABS:6-176, Antimony trioxide:1-543

**CAS No:**

PC:25971-63-5, ABS:9003-56-9, Antimony trioxide:1309-64-4

**Section 4: First-Aid Measures****Inhalation:**

If inhaled a volume of vapors or gases of the hot molten material, remove victim to fresh air and keep

at rest. Get medical attention in case having coughs, breathing or other difficulties.

**Skin Contact:**

Wash with water. Get medical attention in case of suffering from eczema. If contacted with condensates of gases evolved from the hot molten material, wash thoroughly with soapy water. If contact with the hot molten material, cool in clean water and get medical attention.

**Eye Contact:**

Rinse eyes with plenty of water immediately. Rubbing eyes may cause irritation or injure the cornea. Remove contact lenses, if present and easy to do. Get medical attention in case of any abnormalities.

**Ingestion:**

No acute toxicity if swallowed. If large amount swallowed, get medical attention.

---

**Section 5: Fire-Fighting Measures****Extinguishing Media:**

Water, carbon dioxide, dry chemical, foam

**Specific Hazards arising from the Chemical:**

The material may produce intense heat, dense black smoke, toxic fumes of gases containing carbon dioxide, carbon monoxide and nitrogen/phosphorus/halogen compounds on combustion.

**Special Protective Actions for Fire-Fighters:**

Fire-fighters should be equipped with self-contained breathing apparatus and wear proper protective equipment (helmet with face shield, bunker coats, gloves and rubber boots).

---

**Section 6: Accidental Release Measures****Personal Precaution, Protective Equipment and Emergency Procedures:**

Spilled material may cause slippage. Collect and dispose them with proper protective gears on if spilled.

**Environmental Precautions:**

Spills and releases of the material might cause environmental pollution. Immediate and full recovery should be done if accidentally spilled or released.

**Methods and Materials for Containment and Cleaning Up:**

Shovel and sweep up spills and releases, or use industrial vacuum cleaner. Put them into container for disposal.

**Second Accident Prevention Measure:**

Eliminate heat, open flames and all ignition sources nearby.

---

**Section 7: Handling and Storage****Handling:****Technical measure**

- Wear protective gears to avoid burn on molding process.
- Wear protective gears to avoid contact in eyes or on skin, and to avoid inhalation, whenever gases, fumes or dusts are generated on handling or processing. Local ventilation may be recommended.

**Hygienic measure**

- Gases and fumes evolved during processing may irritate the respiratory tract and skin, large amount of them might cause nausea and headache in certain people. Avoid inhalation.

**Precautions for safe handling**

- Molten material under high temperature may decompose and produce hazardous gases and may ignite at worst when left in air uncooled, so cool it down (for example, in water) immediately.
- Molten material inside the heating unit (for example, heating barrel of injection machine) under high temperature may produce hazardous gases when left for a time, so be careful.
- Dust emerged from cutting, sanding, grinding or other mechanical processing may cause dust explosion with static discharge or electrical sparks. Keep work places clean to avoid accumulation.

**Storage:****Conditions for safe storage**

- Protect from sunlight. Keep away from heat, open flames and all ignition sources. Take precautionary measures against static discharge. Protect from water and moisture. Avoid overload to prevent collapse of cargos.

**Specific designs for vessels**

- No information is available.

---

**Section 8: Exposure Controls/Personal Protection****Control Concentration:**

Not established.

**Tolerable Concentration:**

Not established. The figures shown below can be used for reference.

Japan Association of Industrial Health (2014) Class 3 dust

TWA respirable 2 mg/m<sup>3</sup>

TWA total 8 mg/m<sup>3</sup>

ACGIH (2012)

PNOS (Particle Not Otherwise Specified)

TLV-TWA respirable 3 mg/m<sup>3</sup>

TLV-TWA total 10 mg/m<sup>3</sup>

#### Engineering Measure:

Gases and fumes may be evolved during processing at high temperature, therefore, installation of local ventilation is recommended.

#### Respiratory Protection:

Dust respirator should be worn in mechanical processing or sanding of moldings that may cause dust. In high gases/fumes concentration area, a chemical cartridge respirator (for organic chemicals) should be worn.

#### Hand Protection:

Use adiabatic gloves in handling molten material.

#### Eye Protection:

Use protective goggles in operations that may cause dust.

#### Skin and Body Protection:

Wear clothes with long sleeves in handling hot molten material.

### Section 9: Physical and Chemical Properties

<b>Appearance:</b>	Solid in granular shape
<b>Odour:</b>	Odourless (normal temperature)
<b>Odour Threshold:</b>	No information
<b>Melting Point/Freezing Point:</b>	Shows no definite melting point.
<b>Initial Boiling Point and Boiling Range:</b>	No information
<b>Flash Point:</b>	No information
<b>Upper/Lower Flammability or Explosive Limits:</b>	No information
<b>Vapour Pressure:</b>	No information
<b>Relative Density:</b>	1.2 - 1.5
<b>Solubility:</b>	Insoluble in water.
<b>Auto-Ignition Temperature:</b>	No information
<b>Explosive Nature:</b>	Polymer particles might form explosive gas mixture.

### Section 10: Stability and Reactivity

#### Reactivity:

The material does not react with water.

#### Chemical Stability:

Stable in normal storage and handling.

#### Possibility of Hazardous Reactions:

No information

#### Conditions to Avoid:

Handling and storage near heat, open flames and all ignition sources. Storage under sunlight.

#### Incompatible Materials:

None

#### Hazardous Decomposition Products:

The material may produce dense black smoke, toxic fumes of gases containing carbon dioxide, carbon monoxide and nitrogen/phosphorus/halogen compounds on combustion.

### Section 11: Toxicological Information

#### Acute Toxicity (Oral):

Oral LD50 (Rat) > 5000mg/kg (Assumed Value)

#### Acute Toxicity (Dermal):

No data available

#### Acute Toxicity (Gases):

No data available

#### Acute Toxicity (Vapours):

No data available

#### Acute Toxicity (Dusts and Mists):

No data available

**Skin Corrosion/Irritation:**

No data available (Gases/fumes evolved during drying/processing may be irritative.)

**Serious Eye Damage/Eye Irritation:**

No data available (Gases/fumes evolved during drying/processing may be irritative.)

**Respiratory Sensitization:**

No data available

**Skin Sensitization:**

No data available

**Germ Cell Mutagenicity:**

No data available

**Carcinogenicity:**

No data available

Antimony trioxide contained in the material is categorized as follows:

- Carcinogenicity A2 designated by ACGIH
- Carcinogenicity 2B designated by IARC

**Reproductive Toxicity:**

No data available

**Effects on or via Lactation:**

No data available

**Specific Target Organ Toxicity (Single Exposure):**

No data available

**Specific Target Organ Toxicity (Repeated Exposure):**

No data available

**Aspiration Hazard:**

No data available

**Section 12: Ecological Information****Toxicity:**

No data available

**Persistence and Degradability:**

No data available

**Bioaccumulative Potential:**

No data available

**Mobility in Soil:**

No data available

**Hazard to the ozone layer:**

No data available

**Other adverse effects:**

Never be abandoned or dumped in any ocean or water area in order to prevent marine animals and birds from ingesting.

**Section 13: Disposal Consideration**

Dispose of the material and its container should be in accordance with applicable laws and ordinances.

**14: Transport Information**

The material is not classified as dangerous/hazardous substance/mixture under any international transport regulations by road, rail, sea or air.

**UN Number:**

Not classified

**UN Proper Shipping Name:**

Not classified

**UN Transport Hazard Class:**

Not classified

**UN Packing Group:**

Not classified

**Environmental Hazards:**

Not classified as marine pollutant substance/mixture according to the IMDG Code.

**Special Precautions for users:**

- Secure the containers firmly to prevent collapse of cargos.
- Avoid wetting or rough handling to prevent the containers from damage.
- Spilled material may cause a slipping hazard, therefore, collect them immediately if spilled.

**Section 15: Regulatory Information****Domestic Regulation(Japan):****The Fire Defense Law**

- Designated as Flammables (3,000kg or above in storage).

**Poisonous and Deleterious Substances Control Law**

- Not designated as poisonous nor deleterious substances.

**Pollutant Release and Transfer Register (PRTR Law)**

- The products contain the following chemical substances subjected to reporting by PRTR Law.

Class 1 Antimony and its compounds as antimony trioxide (No.31)

- \* Colored materials may contain the following PRTR chemical substances in colorants:

Antimony/ chromium/ cobalt/ nickel/ copper compounds

**Industrial Safety and Health Law (Article 57-2)**

- The products contain the following chemical substances subjected to notification.

(No.323)

Antimony and its compounds as antimony trioxide (No.38)

- \* Colored materials may contain the chemical substances subjected to notification with higher amount than the threshold levels, such as titanium dioxide, carbon black, chromium/ antimony/ cobalt/ nickel/ copper compounds or others.

- \* As to Toxicological Information and GHS classification (Health Hazards and Ecological Information) for the colorants, please refer to the website of National Institute of Technology and Evaluation (NITE).

[http://www.safe.nite.go.jp/english/ghsi\\_index.html](http://www.safe.nite.go.jp/english/ghsi_index.html)

**Wastes Disposal and Public Cleaning Law**

- Industrial Waste (Waste Plastics)

**Foreign Exchange and Foreign Trade Law**

- Goods relevant to row 16 of appended Table 1 of Export Trade Control Order.

**International Regulation:**

The material is not subject to the Montreal Protocol on Substances that Deplete the Ozone Layer, the Stockholm Convention on Persistent Organic Pollutants nor the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

---

**Section 16: Other Information****Disclaimer:**

- The information herein has been prepared on the basis of the materials, information, and data available at the time being drawn up. The information may be revised with subsequently acquired knowledge. Normal handling has been presupposed for the precautionary items. Safety measures appropriate to application and usage should be taken in special handling or usage.
- User is solely responsible for decision of applying the information herein in usage of the appropriate products.
- This SDS is the English version translated from the Japanese SDS which is prepared for domestic use.
- The Japanese SDS is prepared according to JIS Z 7253 (2012) which is based upon UN GHS (Fourth revised edition).

**References:**

1. Manual for Preventing the Discharging of Resin Pellets / Japan Plastics Industry Federation, May 1993
2. Prevention of dust explosion / Technology Institution of Industrial Safety, November 1983
3. Website of the Ministry of Health, Labor and Welfare