# SAFETY DATA SHEET

## 1. Identification of the hazardous chemical and of the supplier

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|---|---|
| Product identifier | Shodex STANDARD P-82 |
| Other means of identification | Not available |
| Recommended use of the chemical and restrictions on use | |
| Recommended use of the chemical | Calibration standard for size exclusion chromatography. |
| Restrictions on use | Not available |
| Manufacturer/exporter identification | Resonac Corporation<br>Functional Chemicals Business Unit, Specialty Chemicals Department |
| Address | Tokyo Shiodome Building, 1-9-1, Higashi-Shimbashi, Minato-ku, Tokyo 105-7325, Japan |
| Telephone | +81-3- 6263-8112 |
| E-mail address | rec_shodex@resonac.com |
| Emergency telephone number | +65-3158-1074 (East/South Asia - NCEC) |
| Local supplier identification | Resonac Asia Pacific Pte. Ltd. |
| Address | 4 Shenton Way #16-02/06, SGX Centre 2, Singapore 068807 |
| Telephone | +65-6836 6988 |

## 2. Hazard identification

Classification of the hazardous chemical

Reproductive toxicity — Category 1B

Hazards not described are "Not classified", "Not applicable" or "Classification not possible".

**Label elements**

Hazard pictogram or symbol

| | |
|---|---|
| Signal word | Danger |
| Hazard statement(s) | May damage fertility or the unborn child |
| Precautionary statement(s) | |
| Prevention | Obtain special instructions before use.<br>Do not handle until all safety precautions have been read |

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| | and understood. |
| | Use personal protective equipment as required. |
| Response | IF exposed or concerned: Get medical advice/attention. |
| Storage | Store locked up. |
| Disposal | Dispose of contents/container in accordance with local/regional/national/international regulation. |

Other hazards that do not result in classification: Not available

## 3. Composition and information of the ingredients of the hazardous chemical

Identification of substance or mixture Mixture

| Ingredient name | CAS No. | Concentration or concentration range |
|---|---|---|
| Pullulan | 9057-02-7 | ≥90% |
| Methanol | 67-56-1 | <1% |
| Water | 7732-18-5 | <10% |

## 4. First-aid measures

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|---|---|
| Inhalation | In case of inhaling a large amount of dust, immediately move the victim to fresh air to rest and get medical advice/attention as needed. If vomiting occurs, turn the head to the side, and take care to prevent suffocation. |
| Skin contact | Thoroughly wash off with plenty of water or with soap as needed. If irritation occurs, get medical advice/attention as needed. |
| Eye contact | Immediately flush the eye with clean running water for at least 15 minutes and get medical advice/attention. When washing the eyes, open the eyelids and move the eyeballs in all directions so that the water can be flushed to every corner of the eyeballs. |
| Ingestion | Wash mouth thoroughly with water and get medical advice/attention immediately. It is recommended to give plenty of water for drinking and induce vomiting if possible. |
| Most important symptoms /effects, acute and delayed | Not available |

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|---|---|
| Indication of immediate medical attention and special treatment needed, if necessary | Not available |

## 5. Fire-fighting measures

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| Suitable extinguishing media | Spray water, foam, carbon dioxide and dry chemical. |
| Unsuitable extinguishing media | Not available |
| Specific hazards arising from the chemical | There is a risk of ignition or explosion of dust. |
| Special protective equipment and precautions for fire-fighters | Extinguish the fire from the upwind direction in case that harmful gases are generated. Do not allow unauthorized persons to enter the area around the fire. Evacuate unrelated personnel to a safe area. If possible, remove container from fire. Avoid strong water injection to cause the spillage to spread. Surrounded fire-fighting wastewater by a dike for disposal.<br>Wear appropriate protective equipment. Wear respiratory protective equipment in case that harmful gases are generated. |

## 6. Accidental release measures

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|---|---|
| Personal precautions, protective equipment and emergency procedures | Wear appropriate protective equipment during working. |
| Environmental precautions | Take care to prevent the spillage from being discharged into rivers, etc., which will have an impact on the environment. |
| Methods and material for containment and cleaning up | Immediately eliminate nearby ignition sources, high temperature objects, etc. Sweep up the spillage and recover it into a sealed container. Prohibit unauthorized personnel from approaching. |
| Prevention measures for secondary disaster | Prepare an appropriate fire extinguisher in case of a fire. |

## 7. Handling and storage

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|---|---|
| Precautions for safe handling | Wear appropriate protective equipment during handling to prevent inhalation and avoid contact with eyes, skin and clothing. Wash hands and face etc. thoroughly after handling.<br>Avoid exposure to strong oxidants.<br>Use explosion-proof equipment and pay full attention to avoid dust scattering.<br>Grounding to prevent static electricity (which is easily charged).<br>Operation and disposal should be carried out in places with local exhaust ventilation. |
| General hygiene | Wash contaminated clothing before reuse.<br>Wash hands thoroughly after handling. |
| Conditions for safe storage, including any incompatibilities | Store in a cool and well-ventilated place. Avoid humidity, high temperature and direct sunlight. Keep container tightly closed.<br>Avoid accumulation of static electricity by appropriate grounding.<br>Use explosion-proof electrical/ventilating/lighting equipment. |

## 8. Exposure controls and personal protection

**Control parameters**

**Exposure monitoring**

Malaysia USECHH 2000

| | |
|---|---|
| Methanol | TWA 200ppm, 262mg/$m^3$ (Skin) |

ACGIH

| | |
|---|---|
| Methanol | TWA 200ppm STEL 250ppm (Skin) |

**Biological monitoring**

ACGIH

| Name | Determinant | Sampling time | Biological Exposure Index |
|---|---|---|---|
| Methanol | Methanol in urine | End of shift | 15mg/L (B);(Ns) |

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| Appropriate engineering controls | Seal the equipment as far as possible or set up local exhaust ventilation system to avoid direct exposure of |

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| | operators. Eye-washing and shower equipment should be installed near the workplace. |
| Individual protection measures, such as PPE | |
| Respiratory protection | Wear dust masks or simple dust masks, etc. according to the situation. |
| Hands protection | Wear rubber gloves, etc. |
| Eye/face protection | Wear safety glasses (with side shields), protective glasses (goggle type), protective masks according to the situation. |
| Skin or body protection | Wear protective clothing, aprons, boots, etc. according to the situation. |
| Thermal hazards | Not available |

## 9. Physical and chemical properties

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|---|---|
| Appearance (physical state, colour, etc.) | White solid powder |
| Odour | Odorless |
| Odour threshold | Not available |
| pH | Not available |
| Melting point/freezing point | Melting point: None |
| Boiling point or initial boiling point and boiling range | Boiling point: None |
| Flash point | >55°C (Estimated value) |
| Evaporation rate | Not available |
| Flammability (solid, gas) | Not available |
| Upper/lower flammability or explosive limits | Upper: Not available;<br>Lower: Not available |
| Vapour pressure | Not available |
| Vapour density | Not available |
| Density/Relative density | Not available |
| Solubility(ies) | Can be diluted with water. |
| Partition coefficient: n-octanol/water | Insoluble |
| Auto-ignition temperature | Approx. 280°C |
| Decomposition temperature | Not available |
| Viscosity | Not available |

## 10. Stability and reactivity

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|---|---|
| Reactivity | Not available |
| Chemical stability | Stable under room temperature. |
| Possibility of hazardous reactions | Take care not to contact with oxidants. |
| Conditions to avoid | Intense heat, sparks and open flames. |
| Incompatible materials | Oxidant. |
| Hazardous decomposition products | Not available |

## 11. Toxicological information

Acute Toxicity:

| | |
|---|---|
| Oral | Product: Not classified<br>Pullulan: Mouse $LD_{50}$>14.28 g/kg (SDS of other companies)<br>Methanol:<br>It is classified as category 3 in ICOP 2019. |
| Dermal | Product: Not classified<br>Methanol:<br>It is classified as category 3 in ICOP 2019. |
| Inhalation | Product: Not classified<br>Methanol:<br>It is classified as category 3 in ICOP 2019. |

Skin corrosion or irritation:

Product: Not classified

Methanol:

Rabbit Skin irritation test (20 hours): No irritation (DFGMAK)

Rabbit Skin irritation test (24 hours): Moderate irritation (Effect of degreasing) (DFGMAK)

Serious eye damage or eye irritation:

Product: Not classified

Methanol:

Rabbit Eye irritation test (Draize test): Conjunctival oedema and chemosis (recovery or not within 7 days is unknown) (EHC)

Rabbit Eye irritation test: Moderate irritation (EHC)

Respiratory sensitization:

Classification not possible

Skin sensitization:

Product: Not classified

Methanol:

Guinea pig Skin sensitization test: No sensitization (EHC)

Human patch test: Positive (Cannot be concluded that Methanol will cause sensitization.) (DFGMAK)

Germ cell mutagenicity:

Product: Not classified

Pullulan:

Salmonella　Ames test: Negative (CCRIS)

Bacillus subtilis　DNA repair test: Positive (RTECS)

Methanol:

Mouse　chromosomal aberration test/Sister chromatid exchange test/Micronucleus test (inhalation exposure): Negative (DFGMAK)

Mouse　micronucleus test (Intraperitoneal administration): Negative (DFGMAK)

Salmonella/Escherichia coli　Ames test: Negative (DFGMAK)

Carcinogenicity:

Product: Not classified

Pullulan:

Rat　62-week feeding test: No toxic effect

NOAEL: (male)> 4450 mg/kg/day, (female)> 5080 mg/kg/day (CCRIS)

Methanol:

Rat　Drinking water administration test, 500~20000 ppmv/v: carcinomas of the head and neck, hemolymphoreticular neoplasms(ACGIH)

Rat/mouse/monkey　18 or 24 months inhalation exposure test up to 1000 ppm: Non-carcinogenic (ACGIH)

Reproductive toxicity:

Product: May damage fertility or the unborn child

Methanol:

In a test by inhalation exposure to pregnant mice during organogenesis period with 6500 $mg/m^3$ or more: Fetal resorptions and exencephaly, fetal malformations (nerve and eye abnormalities, cleft palate, hydronephrosis and limb abnormalities) (EHC)

Inhalation exposure test for rats at 7~15 days gestation, 26000 $mg/m^3$: Malformation in fetus (extra cervical ribs or rudimentary, cervical ribs and urinary or cardiovascular abnormalities), NOAEL = 6500 $mg/m^3$ (EHC)

Specific target organ toxicity - single exposure:

Product: Not classified

Methanol:

Human　acute poisoning symptoms: Central nervous system depression, metabolic acidosis, visual impairment, blindness, headache, vomiting, tachypnea, coma, etc., sometimes death (EHC)

Central nervous system disorders, necrosis in the white substance of the brain (EHC)

Mouse/rat　inhalation exposure test: Narcotic effects (EHC)

Specific target organ toxicity - repeated exposure:

Product: Not classified

Pullulan:

Rat　90-day oral administration test: No toxic effect (SDS of other companies)

Rat　14-month oral administration test: No toxic effects (SDS of other companies)

Methanol:

Human　Long-term exposure at low concentration: Broad range of ocular effects (EHC)

Chronic toxicity effects of occupational exposure: Blindness (ACGIH)

Chronic poisoning patient (exposure to vapours): Conjunctival oedema, headache, dizziness, insomnia, stomach disorder, blindness of both eyes (ACGIH)

Rat　Oral administration test: Hepatocellular hypertrophy, etc. (PATTY)

Aspiration hazard:

Classification not possible

## 12. Ecological information

Ecotoxicity:

Product:

Hazardous to the aquatic environment – acute hazard: Not classified

Hazardous to the aquatic environment – chronic hazard: Not classified

Methanol:

Fish (Bluegill) $LC_{50}$ (96 hr) = 15400 mg/L (SIDS)

Fish (Fathead Minnows) $LC_{50}$ (96 hr) = 28200 mg/L (SIDS)

Crustacean (Brine shrimp) $EC_{50}$ (96 hr) = 1340 mg/L (EHC)

Crustacean (Brine shrimp) $EC_{50}$ (24 hr) = 900.73 mg/L (EHC)

Persistence and degradability:

Pullulan:

Good degradability (SDS of other companies)

Methanol:

Degradability Test (2 weeks): Good degradability (Data of Existing Chemicals)

Bioaccumulation potential:

Methanol:

BCF=0.01~0.51, 0.2 (Calculation value) (EHC)

Mobility in soil:

Methanol:

Koc=1 (Estimated value) (SIDS)

Other adverse effects:

Hazardous to the ozone layer: Classification not possible

## 13. Disposal information

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|---|---|
| Disposal methods | Dispose in compliance with relevant laws and regulations. Entrust waste disposal to an industrial waste processor licensed by the local government in accordance with related regulations and standards. |
| Contaminated container/packing | Empty containers should be disposed of after the contents are completely removed. |

## 14. Transportation information

| | |
|---|---|
| UN number | Not applicable |
| UN proper shipping name | Not applicable |
| Transport hazard class(es) | Not applicable |
| Packing group | Not applicable |
| Marine pollutant (Yes/No) | No |
| Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code) | Not applicable |
| Special precautions | Not available |

## 15. Regulatory information

**Malaysia regulation**

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|---|---|
| Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 | Applicable |
| Industry Code of Practice on Chemicals Classification and Hazard Communication, 2019 | Methanol |
| Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000 | Methanol |

## 16. Other information

| | |
|---|---|
| Revision information | Not available |
| Date of preparation | 09 March 2018 |
| Date of revision | 01 July 2023 |
| Key literature references and sources for data used to compile the SDS | Not available |
| Key/legend to the abbreviations and acronyms used in the SDS | TWA: Time Weighted Average<br>EHC: Environmental Health Criteria<br>BCF: Bioconcentration Factor<br>B: Background<br>Koc: Organic Carbon Adsorption Coefficient<br>STEL: Short Term Exposure Limits<br>SIDS: Screening Information Data Set<br>Ns: Nonspecific<br>$EC_{50}$: Median Effective Concentration<br>$LC_{50}$: Lethal Concentration 50 Percent Kill<br>$LD_{50}$: Lethal Dose 50 Percent Kill<br>RTECS: Registry of Toxic Effects of Chemical Substances<br>ACGIH: American Conference of Governmental Industrial Hygienists<br>NOAEL: No Observed Adverse Effect Level<br>CCRIS: Chemical Carcinogenesis Research Information System<br>Skin: Refers to the potential contribution to the overall exposure by the cutaneous route including the mucous membranes and the eye, either by air-borne or more particularly, by direct contact with the substance.<br>DFGMAK: Maximale Arbeitsplatzkonzentrationen under Deutsche Forschungsgemeinschaft |
| Others | This Safety Data Sheet applies to:<br>Kit product: P-82<br>Single product: P-800, P-400, P-200, P-100, P-50, P-20, P-10, P-5 |

Notice to reader: The information provided in this SDS are based on currently available

materials, information, and other data, however, we cannot assume any liability for the accuracy of the information contained. All chemical products may have unknown, potentially hazardous characteristics. It is recommended that handling should be done with caution.