SAFETY DATA SHEET (SDS)

1. Product and company (manufacturer) identification

Product: ESOLON Adhesive No.110
Manufacturer: Sekisui Chemical Co., Ltd.
Address: Toranomon 2-3-17, Minato-ku, Tokyo 105-8450
Responsible section: Urban Infrastructure & Environmental Products Company
Industrial Piping Systems Division
Telephone: 03-5521-0555
Urgent telephone: 03-5521-0555
Fax: 03-5521-0753
Urgent contact: same as above
Application & restriction: Adhesive for rigid PVC piping system
Other applications are prohibited.
Document number: #110

2. Hazards identification

GHS Classification
Physicochemical hazards:
- Explosives: Not applicable
- Flammable gases: Not applicable
- Aerosols: Not applicable
- Oxidizing gases: Not applicable
- Gases under pressure: Not applicable
- Flammable liquids: Category 2
- Flammable solids: Not applicable
- Self-active chemicals: Not applicable
- Pyrophoric liquids: Not applicable
- Pyrophoric solids: Not applicable
- Self-heating chemicals: Classification Not Possible
- Chemicals which, in contact with water, emit flammable gases: Not applicable
- Oxidizing liquids: Not applicable
- Oxidizing solids: Not applicable
- Organic peroxides: Not applicable
- Substances corrosive to metals: Not Classified

Health hazards:
- Acute toxicity (oral): Category 4
- Acute toxicity (dermal): Category 4
- Acute toxicity (inhalation: gas): Not applicable
- Acute toxicity (inhalation: vapor): Category 4
- Acute toxicity (inhalation: dust and mist): Classification Not Possible
- Skin corrosion/irritation: Category 2
- Eye damage/irritation: Category 2A
- Respiratory sensitization: Classification Not Possible
- Skin sensitization: Classification Not Possible
- Germ cell mutagenicity: Category 2
- Carcinogenicity: Category 2
- Reproductive toxicity: Category 2
- Specific target organ toxicity (single exposure): Category 2 (Liver, spleen, central nerve system)
- Specific target organ toxicity (repeated exposure): Category 1 (Kidney, liver, central & peripheral nerve systems)
- Aspiration hazard: Not Classified
- Hazard to the aquatic environment (Acute hazard): Not Classified
- Hazard to the aquatic environment (Long-term hazard): Not Classified
- Hazard to the ozone layer: Classification Not Possible

Environmental hazards:

Pictogram or symbol:
- Explosives
- Flammable gases
- Oxidizing gases
- Gases under pressure
- Flammable liquids
- Flammable solids
- Self-active chemicals
- Pyrophoric liquids
- Pyrophoric solids
- Self-heating chemicals
- Chemicals which, in contact with water, emit flammable gases
- Oxidizing liquids
- Oxidizing solids
- Organic peroxides
- Substances corrosive to metals
- Acute toxicity (oral)
- Acute toxicity (dermal)
- Acute toxicity (inhalation: gas)
- Acute toxicity (inhalation: vapor)
- Acute toxicity (inhalation: dust and mist)
- Skin corrosion/irritation
- Eye damage/irritation
- Respiratory sensitization
- Skin sensitization
- Germ cell mutagenicity
- Carcinogenicity
- Reproductive toxicity
- Specific target organ toxicity (single exposure)
- Specific target organ toxicity (repeated exposure)
- Aspiration hazard
- Hazard to the aquatic environment
- Hazard to the aquatic environment
- Hazard to the ozone layer

Signal word: Danger
**Precautionary statement:**

The product may cause skin affection or intoxication if touched to the skin or inhaled the vapor. Please observe the precautions given below and refer to the SDS and the instruction sheet for safe handling.

- Provide local ventilation facility in the work place.
- Do not spill the adhesive when taking out of or returning to the container.
- Avoid skin contact during handling and wear Eyeglasses, long-sleeved shirts and gloves. Use respirator as needed.
- Wash hands and gargle sufficiently after handling.
- Close the cap of container tightly and store it in a cool, dark space.
- If the adhesive touched to skin, wipe the local spot immediately and wash well using soap. If itch or inflammation is felt, seek physician’s counsel.
- In case the adhesive enters in eye or in case drowsiness is caused by inhalation or erroneous swallow is felt, immediately seek physicians council.
- Do not use the adhesive near fire.
- Never use the adhesive for other purposes than intended.

**3. Composition/information on ingredients**

**Nature of composition:** Mixture

**Chemical or common name:** Adhesive, containing vinyl chloride-vinyl acetate copolymer

<table>
<thead>
<tr>
<th>Component</th>
<th>Content</th>
<th>CAS Number</th>
<th>Reference Number in Gazetted List in Japan</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclohexanone</td>
<td>30 to 40%</td>
<td>108-94-1</td>
<td>(3)–2376</td>
<td></td>
</tr>
<tr>
<td>Tetrahydrofuran</td>
<td>30 to 40%</td>
<td>109-99-9</td>
<td>(5)–53</td>
<td></td>
</tr>
<tr>
<td>Methyl ethyl ketone</td>
<td>5 to 15%</td>
<td>78-93-3</td>
<td>(2)–542</td>
<td></td>
</tr>
<tr>
<td>Resin (CPVC)</td>
<td>13 to 25%</td>
<td>68648-82-8</td>
<td>(6)–75</td>
<td></td>
</tr>
<tr>
<td>Tin compound</td>
<td>0.1 to 1.5%</td>
<td>68109-88-6</td>
<td>(2)–3019</td>
<td>made in Japan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15571-58-1</td>
<td>(2)–2307</td>
<td>made in Taiwan</td>
</tr>
</tbody>
</table>

**4. First-aid measures**

- **If vapor is inhaled:**
  - Take the affected person to a clean-air space and give him rest in a easy-breathing pose.
  - Seek physician’s counsel as may be needed.

- **If touched to skin:**
  - Wash the skin immediately with a lot of water and soap.

- **If gets in eye:**
  - Thoroughly wash the eye with clean water for a several minutes.
  - Remove contact lens if easily removable.
  - Continue washing after removal.

- **If swallowed:**
  - Immediately wash the mouth with water.
  - Immediately seek physician’s counsel.
  - Rinse the mouth well and drink a lot of water to vomit.

- **Anticipated acute & chronic symptoms:**
  - Irritation to respiratory organs, cough and gasp, when inhaled.
  - Irritation to digestive organs, bake, vomit and diarrhea, when swallowed.
  - Skin irritation, defatting, eye irritation, reddening and ache, when contacted.
  - Anaesthesia, headache, drowsiness, restricted vision, vomit, diarrhea and loss of consciousness, when over–exposed to vapor.

- **Protection of first-aid provider:**
  - First–aid provider should use protective wears such as organic solvent mask, when the circumstances require.

- **Special note to physician:**
  - No information

**5. Fire-fighting measures**

- **Extinguishing agents:** Carbon dioxide, powder agent, foam agent
- **Prohibited extinguishing agent:** Water flux
- **Specific hazards:** Fire may cause to generate irritant, toxic or erosive gas.
  - Easily flammable. It will readily be ignited by heat, spark or flame.
  - Heating of container may cause explosion.
  - Easily inflammable liquid and vapor.
- **Proper extinguishing method:**
  - Remove surrounding combustibles and use extinguishing agents.
  - Use foam agent to choke a large scale fire.
  - Spray water over the neighborhood to cool and prevent fire spread.
  - Fight against fire standing to its windward as much as possible and wear Respirator if necessary.
6. Accidental release measures

Health hazard precaution, protective wear and first-aid

Workers should use protective wears (See Chapter 8) to prevent contact with the spilt adhesive and inhalation of its vapor.
Rope off the crowd from the leak spot.
Work from the windward and evacuate the leeward crowd.
In case of indoor leakage, ventilate as much as possible until the cleaning is completed.

Environmental hazard precaution: Prevent flow out to river, etc. so as not to badly affect the environment.

Recovery and neutralization:
For small scale leakage, use absorbent (sawdust, dirt, sand, waste rug) to remove most of the spill and wipe off the rest using waste rug.
For large scale leakage, build bank around the spill and lead the liquid to a safer place for recovery.

Prevention of secondary casualty:
Quickly remove all the combustibles from around the leak spot and provide extinguishers ready for use.

7. Handling and storage precautions

Handling
Technical measures:
Use protective wears if inhalation or skin contact is foreseen.
Fire ban.

Local & total ventilation:
Handling work must be practiced in a room where local or total ventilation facility is functioning.

Safe handling:
Ban of high temperature substance, sparking and fire at nearby points.
Prohibition of eating, drinking and smoking while the product is used.
Wash hands well after handling.
Avoid contact of the product with eye, skin and clothing.
Do not inhale vapor, mist and spray of the product.
Handle it only after reading and understanding all the precautions.
Use the product only in a well ventilated room or outdoors.

Storage
Storing conditions:
Store in a remote room from heat, sparks and naked flame. No smoking in the storage room.
Store in a cool, ventilated room.
Lock the storage room.

8. Exposure controls and personal protection

Facility measures:
Local ventilation of closed work room or total proper ventilation to prevent vapor inhalation.

<table>
<thead>
<tr>
<th>Control concentration:</th>
<th>Cyclohexanone</th>
<th>Tetrahydrofuran</th>
<th>Methyl ethyl ketone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permissible concentration (Exposure limit, Biological exposure guide line)</td>
<td>20 ppm</td>
<td>50 ppm</td>
<td>200 ppm</td>
</tr>
<tr>
<td>Japan society for occupational health (2005 version)</td>
<td>25 ppm</td>
<td>200 ppm</td>
<td>200 ppm</td>
</tr>
<tr>
<td>ACGIH (2005 version) TLV-TWA</td>
<td>25 ppm</td>
<td>50 ppm</td>
<td>200 ppm</td>
</tr>
</tbody>
</table>

Protective wears:
Respiratory protection:
Use aspirator with appropriate filter
Hand protection:
Impermeable gloves
Eye protection:
Solvent-resistant goggles
Skin and body protection:
long-sleeve fatigue uniform
Hygienic measures:
Wash hands well after handling.

9. Physical and chemical properties

Physical state, form, color:
Colorless transparent liquid
Odor:
Characteristic stimulative odor
pH:
Not applicable
Bp, initial bp & boiling range
-17°C (Closed Method)
Specific gravity (density):
0.89 to 0.99
Auto ignition point:
320°C
Viscosity:
c. 1600 mPa-s

10. Stability and reactivity

Stability:
Stable under normal conditions and handling.

Possibility of hazardous reaction:
Vigorously reacts with strong oxidizing agents and ignites.

Prohibitive conditions:
Heat

Prohibitive contact:
With oxidizing agent

Hazardous decomposed substances:
Generates Aldehyde, Acid and Organic matter by thermal decomposition.
Acute toxicity (oral):
The product contains substances of acute toxicity (oral) of Categories indicated in Appendixed Table. The dose is calculated for the mixture (the product) to be \( \text{ATE mix}=1753 \text{ mg/kg.} \)
The product, as a mixture, falls in Category 4 (Harmful if swallowed).

Acute toxicity (dermal):
The product contains substances of acute toxicity (transdermal) of Categories indicated in Appendixed Table. The dose is calculated for the mixture (the product) to be \( \text{ATE mix}=1155 \text{ mg/kg.} \)
The product, as a mixture, falls in Category 4 (Harmful in contact with skin).

Acute toxicity (inhalation: vapor):
The product contains substances of acute toxicity (vapor inhalation) of Categories indicated in Appendixed Table. The dose is calculated for the mixture (the product) to be \( \text{ATE mix}=4713 \text{ ppm.} \)
The product, as a mixture, falls in Category 4 (Harmful if inhaled).

Skin corrosion/irritation:
The product contains skin-irritating substances of the following Categories:
Category 2: Cyclohexanone (30 to 40 %), tetrahydrofuran (30 to 40 %), methyl ethyl ketone (5 to 15 %).
The product, as a mixture, falls in Category 2 (Causes skin irritation).

Eye damage/irritation:
The product contains caustically injuring and irritating substances of the following Categories:
Category 2A: Cyclohexanone (30 to 40 %), tetrahydrofuran (30 to 40 %), Category 2B: Methyl ethyl ketone (5 to 15 %).
The product, as a mixture, falls in Category 2A (Causes serious eye irritation).

Respiratory sensitization:
Respiratory organ sensitization: No available data.

Skin sensitization:
Skin sensitization: No available data.

Germ cell mutagenicity:
The product contains mutagenicity substances of the following Category:
Category 2: Cyclohexanone (30 to 40 %).
The product, as a mixture, falls in Category 2 (Suspected to causing genetic defects).

Carcinogenicity:
The product contains carcinogenic substances of the following Category:
Category 2: Cyclohexanone (30 to 40 %).
The product, as a mixture, falls in Category 2 (Suspected to causing cancer).

Reproductive toxicity:
The product contains genotoxic substances of the following Category:
Category 2: Cyclohexanone (30 to 40 %).
The product, as a mixture, falls in Category 2 (Suspected to damaging fertility or the unborn child).

Specific target organ toxicity
(single exposure):
The product contains single-exposure toxic substances of the following Categories:
Cyclohexanone (30〜40%) >1%, Category 1 (Liver, spleen, central nerve system),
Category 2 (Lung) and Category 3 (Anesthesia, bronchial irritation),
Tetrahydrofuran (30〜40%) >1%, Category 2 (Nerve system) and Category 3 (Bronchial irritation),
Methyl ethyl ketone (5〜15%) >1%, Category 1 (Central nerve system), Category 2 (Kidney) and Category 3 (Bronchial stimulation).
The product, as a mixture, falls in Category 1 (Causes damage to central nerve system, spleen and liver), Category 2 (May cause damage to lung, kidney and nerve system) and Category 3 (May cause drowsiness or dizziness).

Specific target organ toxicity
(repeated exposure):
The product contains multiple-exposure toxic substances of the following Categories:
Cyclohexanone (30〜40%) >1%, Category 1 (Kidney, liver, central nerve),
Tetrahydrofuran (30〜40%) >1% Category 1 (Kidney, liver, nerve system),
Methyl ethyl ketone (5〜15%) >1%, Category 1 (Central and peripheral nerve systems).
The product, as a mixture, falls in Category 1 (Causes damage to liver, kidney, central and peripheral nerve systems, by elongated or repeated exposure).
Aspiration hazard: The product contains more than 10% in total of respiratory-harmful substances of the following Category, however, the kinematic viscosity at 40°C is more than 14mm²/s:
Category 2: Cyclohexanone (30 to 40 %), tetrahydrofuran (30 to 40 %), methyl ethyl ketone (5 to 15 %).
The product, as a mixture, falls Not Classified.

12. Ecological information

Hazard to the aquatic environment (Acute hazard): Not Classified
Hazard to the aquatic environment (Long-term hazard): Not Classified
Hazard to the ozone layer: Does not contain any ingredient listed in the Annexes to the Montreal Protocol. Classification Not Possible.

13. Notes on disposal

Residual & waste: In the disposal of residual and other wastes, observe the relevant laws/regulations and local government rules. Users of the product should contract with the local government or licensed ‘Industrial Waste Processors’ for disposal of waste. It is important to let the contractor know well of fire and health hazards of the product, prior to disposal.
Contaminated containers & packages: Clean the containers for reuse or dispose them properly in accordance with relevant regulations and local government rules. Completely empty containers prior to disposal.

14. Transport information

International rule
UN number: 1133 (Adhesive, containing inflammable liquid)
UN classification: Class 3 (inflammable liquid)
Container Grade: I
Sea Pollution Prevention Act
Domestic control:
Guidance Number: 128
Onshore control info.
Observe the Fire Defense Law.
Offshore control info.
Observe the Marine Vessel Safety Law.
Air cargo control info.
Observe the Aviation Law.
Special safety measure:
On-board containers of hazardous material must be piled firmly and orderly to avoid falling, tumbling and breaking.
Cargo of hazardous material must be transported in a way the containers or the material itself do not suffer severe friction and vibration.
If possible cause of casualty, such as heavy leakage, is found during transportation, try to remedy the situation and notify the fact to the nearby fire department or the relevant bureau.
The driver carrying hazardous material must hold Yellow Card.
Do not load hazardous materials together with food and feedstuff.

15. Regulatory information

Labor Safety and Hygiene Law:
Hazardous materials to be notified to the authority (Chapter 57, Section 2)
(Cyclohexanone, tetrahydrofuran, methyl ethyl ketone, Tin compound)
Hazardous materials to be posted (Chapter 18 of Ordinance)
(Cyclohexanone, tetrahydrofuran, methyl ethyl ketone)
2nd class organic solvents (Solvent Addiction Prevention Rule, Clause 1.1.4)
(Cyclohexanone, tetrahydrofuran, methyl ethyl ketone)
Fire Defense Law:
No. 4 Haz-Mat, No.1 Petroleum, Non-water soluble liquid (Hazard Degree II)
PRTR Law:
Poisonous & Deleterious Substance Control Law:
Sea Pollution Prevention Act
Not applicable
Hazardous materials to be notified (Chapter 81, Subsection 2)
(Cyclohexanone, tetrahydrofuran, methyl ethyl ketone)
The enforcement order separate table first: Z Group
(Cyclohexanone, tetrahydrofuran, methyl ethyl ketone)
However, it is non-corresponded when net weights of one container are less than 5L

16. Other information

Literature:
1) Chemicals Safety Data Sheet (MSDS) Part 1: Content and Order of Items
3) GHS Classification Database, Site of National Institute of Technology and Evaluation
4) Hazard Handbook of Chemicals by Japan Industrial Safety and Health Association
5) Hazard communication of chemicals based on GHS—Labelling and Safety Data Sheet(SDS) JIS Z 7253:2012

This data sheet is edited by referring to currently available information, however, it is not intended to guarantee the data values or the precision of contained information. The precautions mentioned above are for ordinary handling and use only therefore please handle with care by implementing appropriate safety measures for new application and usage.