MATERIAL SAFETY DATA SHEET

JH-A110 SILANE COUPLING AGENT

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

Product Name: JH-A110 Silane Coupling Agent
3-Aminopropyltriethoxysilane
Supplier Castle Chemicals Ltd, Peak House
6 Oxford Road, Altrincham, Cheshire WA14 2DY
Tel: +44 161 608 8800 Fax: +44 161 608 1910
Email: info@castlechemicals.com

2. HAZARD IDENTIFICATION

Classification of the substance or mixture

According to Regulation (EC) No1272/2008
Skin corrosion (Category 1B)
Acute toxicity Oral (Category 4)
Causes burns. Harmful if swallowed.

Label elements
Signal word Danger
Hazard statement(s) H314 Causes severe skin burns and eye damage.
H302 Harmful if swallowed.
Precautionary statement(s) P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.

Hazard symbol(s) C Corrosive
R-phrase(s) R22 Harmful if swallowed.
R34 Causes burns.
S-phrase(s) S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39 Wear suitable protective clothing, gloves and
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Other hazards - none

### 3. COMPOSITION INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance Name</th>
<th>3-Aminopropyltriethoxysilane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula</td>
<td>C₉H₂₃NO₅Si</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>221.37 g/mol</td>
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<tr>
<td>CAS-No.</td>
<td>919-30-2</td>
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<tr>
<td>EC-No.</td>
<td>213-048-4</td>
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<tr>
<td>Classification</td>
<td>Skin Corr. 1B; Acute Tox. 4; H314, H302; C, R22 – R34</td>
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<tr>
<td>Concentration</td>
<td>-</td>
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</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

### 4. FIRST AID MEASURES

**General advice**
Consult a physician. Show this safety data sheet to the doctor in attendance.

**If inhaled**
If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.

**In case of skin contact**
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact**
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**If swallowed**
Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

### 5. FIREFIGHTING MEASURES

**Suitable extinguishing media**
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**Special protective equipment for fire-fighters**
Wear self contained breathing apparatus for fire fighting if necessary.

**Further information**
Under fire conditions, material may decompose to form flammable and/or explosive mixtures in air.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions**
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

**Environmental precautions**
Do not let product enter drains. Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.
7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Normal measures for preventive fire protection.

Conditions for safe storage
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment
Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN374 derived from it. Handle with gloves.

Eye protection
Face shield and safety glasses

Skin and body protection
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form
Clear liquid

Color
Colorless

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>At Temperature or Pressure</th>
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<tbody>
<tr>
<td>pH</td>
<td>N/A</td>
<td></td>
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<tr>
<td>Melting point</td>
<td>N/A</td>
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</tr>
<tr>
<td>Boiling point</td>
<td>213 - 216°C</td>
<td>760 mmHg</td>
</tr>
<tr>
<td>Flash point</td>
<td>98 °C</td>
<td>closed cup</td>
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<tr>
<td>Ignition temperature</td>
<td>N/A</td>
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<tr>
<td>Refractive Index</td>
<td>1.423</td>
<td>25°C</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>0.8%(V)</td>
<td></td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>4.5%(V)</td>
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</tr>
<tr>
<td>Vapour pressure</td>
<td>&lt;13hPa</td>
<td>100°C</td>
</tr>
<tr>
<td></td>
<td>133hPa</td>
<td>155°C</td>
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<tr>
<td>Density</td>
<td>0.945 g/mL</td>
<td>25°C</td>
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<tr>
<td>Relative vapour density</td>
<td>7.64 (Air=1.0)</td>
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</table>

N/A = not available
10. STABILITY AND REACTIVITY

Storage stability
Stable under recommended storage conditions. May decompose on exposure to moist air or water.

Materials to avoid
Strong oxidizing agents, Acids

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions - Carbon oxides, nitrogen oxides (Nox), silicon oxides.

11. TOXICOLOGICAL INFORMATION

Acute toxicity
LD50 Oral rat 1780 mg/kg
LD50 Dermal rabbit 3.8 g/kg

Skin corrosion/irritation
Skin rabbit Severe skin irritation 24 h

Serious eye damage/eye irritation
Eyes rabbit Severe eye irritation 24 h

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
no data available

Specific target organ toxicity
no data available

Single exposure
no data available

Repeated exposure
no data available

Aspiration hazard
no data available

Potential health effects
Inhalation
May be harmful if inhaled. Causes respiratory tract irritation.

Ingestion
Harmful if swallowed.

Skin
May be harmful if absorbed through skin. Causes skin irritation.

Eyes
Causes eye burns.

Signs and Symptoms of Exposure
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting.

Additional Information
RTECS: TX2100000

12. ECOLOGICAL INFORMATION

Toxicity
no data available

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
no data available
13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

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<tr>
<th>ADR/RID</th>
<th>UN-Number: 2735</th>
<th>Class: 8</th>
<th>Packing group: II</th>
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<tbody>
<tr>
<td>Proper shipping name: AMINES, LIQUID, CORROSIVE, N.O.S. (3-Aminopropyltriethoxysilane)</td>
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<td>Proper shipping name: AMINES, LIQUID, CORROSIVE, N.O.S. (3-Aminopropyltriethoxysilane)</td>
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<tr>
<td>Marine pollutant: No</td>
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<table>
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<th>Class: 8</th>
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<tr>
<td>Proper shipping name: Amines, liquid, corrosive n.o.s. (3-Aminopropyltriethoxysilane)</td>
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</table>

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

16. OTHER INFORMATION

Text of H-code(s) and R-phrase(s) mentioned in Section 3
Acute Tox. Acute toxicity
H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

Skin Corr. Skin corrosion
C Corrosive

R22 Harmful if swallowed.

R34 Causes burns.

Disclaimer
Not for drug, household or other uses.

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Castle Chemicals Ltd shall not be held liable for any damage resulting from handling or from contact with the above product.

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ISSUE: 2

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