1. PRODUCT AND COMPANY IDENTIFICATION

1.1 PRODUCT NAME: Chip Quik Tacky Flux Series: SMD291, SMD291NL, SMD4300, SMDLT
SYNONYMS: Tack Flux, Gel Flux, Paste Flux

1.2 Relevant identified uses of the substance or mixture and uses advised against
PRODUCT USE: Bonding solder joints in production and repair of circuit boards. This product is for industrial use only.

1.3 MANUFACTURER: Chip Quik Inc.
ADDRESS: 3rd Floor, 207 Regent Street, London W1B 3HH (UK and EU)
PHONE: (508) 477-2264
1.4 EMERGENCY PHONE: +44 20 3868 7152 (UK and EU 24/7)

REVISION DATE: 2017/4/12
REVISION NUMBER: EU3.0
REVISED BY: Chip Quik Product Safety

2. HAZARD IDENTIFICATION

2.1 Classified in accordance with European CLP Regulation 1272/2008

Acute Tox. 4
Skins Sens. 1
Aquatic Acute 1
Aquatic Chronic 1

CHEMICAL NAME: NA
CHEMICAL FAMILY: Mixture
CHEMICAL FORMULA: Proprietary

ROUTES OF ENTRY: Inhalation, Ingestion, Skin/Eye Contact

TARGET ORGANS: NA

2.2 Label Elements:
GHS/CLP LABEL ELEMENTS:

Signal Word: Warning
Hazard statement(s)
H302 Harmful if swallowed.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.

Precautionary statement(s)
P102 Keep out of reach of children.
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P233 Keep container tightly closed.
P260 Do not breathe dust/fume/gas/mist/vapor/spray.
P262 Do not get in eyes, on skin, or on clothing.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink, or smoke when using this product.
P271 Use in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
2.3 Other Hazards:

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: May cause moderate irritation. Do not allow material to come in contact with eyes.

SKIN CONTACT: May cause moderate skin irritation.

INHALATION: May cause irritation to the respiratory tract.

INGESTION: Harmful if swallowed. May cause irritation to the mouth, throat, and stomach. May cause abdominal discomfort, nausea, vomiting, and/or diarrhea.

CHRONIC: Not established.

MEDICAL CONDITIONS POSSIBLY AGGRAVATED BY EXPOSURE: Diseases of the blood-forming organs, kidneys, nervous and possibly reproductive systems. Occupational Asthma.

SECTION 2 NOTES:

Chip Quik Inc. does not recommend, manufacture, market, or endorse any of its products for human consumption.

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.2 Classified in accordance with European CLP Regulation 1272/2008

<table>
<thead>
<tr>
<th>Hazardous Ingredients</th>
<th>C.A.S. Number</th>
<th>EC Number</th>
<th>Weight Percent</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified Rosins (Rosin)</td>
<td>8050-09-7</td>
<td>232-475-7</td>
<td>&lt;45</td>
<td>Skin Sens. 1; H317</td>
</tr>
<tr>
<td>Pine Oil Derivatives (Terpineol)</td>
<td>8000-41-7</td>
<td>232-268-1</td>
<td>&lt;5</td>
<td>Skin Irrit. 2; Eye Irrit. 2; H315, H319</td>
</tr>
<tr>
<td>Mixed Carboxylic Acids (Maleic Acid)</td>
<td>110-16-7</td>
<td>203-742-5</td>
<td>&lt;4</td>
<td>Acute Tox. 4; Skin Irrit. 2; Eye Dam. 1; Skin Sens. 1; STOT SE 3; H302, H312, H315, H317, H318, H335</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-Hazardous Ingredients</th>
<th>C.A.S. Number</th>
<th>EC Number</th>
<th>Weight Percent</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surfactants</td>
<td>NA</td>
<td>NA</td>
<td>&lt;4</td>
<td>NA</td>
</tr>
<tr>
<td>Rheological Modifier</td>
<td>NA</td>
<td>NA</td>
<td>&lt;5</td>
<td>NA</td>
</tr>
</tbody>
</table>

4. FIRST-AID MEASURES

4.1 Emergency first aid procedures:

EYES: Flush with plenty of water, contact a physician. If contact lenses can be removed easily, flush eyes without contact lenses.

SKIN: Wash affected area with plenty of warm, soapy water. If irritation persists, seek medical attention.

INGESTION: Call a physician or Poison Control Center immediately. Do not induce vomiting.

INHALATION: Remove to fresh air. If not breathing, seek immediate medical attention.

4.2 Not available

4.3 Not available

5. FIREFIGHTING MEASURES

5.1 EXTINGUISHING MEDIA: Dry chemical, foam

5.2 UNUSUAL FIRE AND EXPLOSION HAZARDS: This product does not present any unusual fire and explosion hazards.

5.3 SPECIAL FIRE FIGHTING PROCEDURES: Do not use water. Use (EU: EN 137:2006) self-contained Breathing Apparatus and full protective clothing if involved in a fire.

6. ACCIDENTAL RELEASE MEASURES

6.2 ACCIDENTAL RELEASE MEASURES: If material spills or leaks use a spatula to collect and place it in a plastic or glass jar. Remove traces of residue using cloth rags or paper towels moistened with Isopropyl Alcohol. Exposure to spilled material may be irritating. Follow on-site personal protective equipment recommendations.
6.3 ENVIRONMENTAL PRECAUTIONS: Avoid release to the environment. Collect spillage.

6.4 SECTION 6 NOTES:
See Sections 2, 4, and 7 for additional information.

7. HANDLING AND STORAGE

7.1/7.2 HANDLING/STORAGE: Keep containers tightly closed when not in use. Use care to avoid spills. Avoid inhalation of fumes or dust. Avoid contact with eyes, skin, and clothing. Store in a closed corrosive resistant container, with corrosive resistant liner, in cool dry place. Wear appropriate personal protective equipment when working with or handling. Always wash hands thoroughly after handling this product. Dispose of following Federal, State/Provincial, and Local regulations.

7.3 OTHER PRECAUTIONS: Empty containers may retain product residues in vapor, liquid, and/or solid form. All labeled hazard precautions should be observed.

WORK HYGIENIC PRACTICES: Cosmetics/Food/Drink/Tobacco should not be consumed or used in work areas. Always wash hands after handling material and before applying or using cosmetics/food/drink/tobacco.

SECTION 7 NOTES:
For industrial use only.
Keep out of reach of children.
Not for internal consumption.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Occupational Exposure Limit Values:
Rosin flux fumes (as total resin acids)
MEL: 0.05 mg/m$^3$ 8h TWA.
MEL: 0.15 mg/m$^3$ 15 min.
Extraction is necessary to remove fumes evolved during reflow.
Also see section 3.

8.2 ENGINEERING CONTROLS: Use only with production equipment designed for use with tacky flux.

VENTILATION: Provide sufficient mechanical (general and/or local exhaust) ventilation.

RESPIRATORY PROTECTION: A (EU: EN 140:1998, EN 14387:2004 A)-approved air-purifying respirator with fume/organic chemical cartridge should be worn when airborne concentrations may be exceeded. General and local exhaust ventilation is the preferred means of protection.

EYE PROTECTION: Use with appropriate eye protection: Goggles or face shield (EU: EN 166-S 3 9).

SKIN PROTECTION: Protective gloves should be worn when the possibility of skin contact exists (EU: EN 374-1:2003).

PROTECTIVE CLOTHING OR EQUIPMENT: Work clothes should be worn and laundered in accordance with current Lead (Pb) standards.

WORK HYGIENIC PRACTICES: Cosmetics/Food/Drink/Tobacco should not be consumed or used in areas where solder products may be used. Always wash hands after handling soldering products and before applying or using cosmetics/food/drink/tobacco.

OTHER: Maintain eye wash stations in work areas. Avoid the use of contact lenses in high fume areas. Clean protective equipment regularly. Clean up spills immediately.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE: Clear, White, or Yellow to Dark Amber gel
ODOR: Mild odor
ODOR THRESHOLD: NE
pH as Supplied: N/A
MELTING POINT: NE
FREEZING POINT: NE
INITIAL BOILING POINT: NE
BOILING RANGE: NE
FLASH POINT: NE
EVAPORATION RATE: NE
FLAMMABILITY (solid): NE
UPPER/LOWER FLAMMABILITY: NE
UPPER/LOWER EXPLOSIVE LIMITS: NE
VAPOR PRESSURE (mmHg): N/A
VAPOR DENSITY (AIR = 1): N/A
RELATIVE DENSITY: NE
SOLUBILITY IN WATER: Partially
PARTITION COEFFICIENT (n-octanol/water): NE
AUTOIGNITION TEMPERATURE: NE
DECOMPOSITION TEMPERATURE: NE
VISCOITY: N/A
10. STABILITY AND REACTIVITY

10.1 Reactivity: NE
10.2 STABILITY: Stable
10.3 POSSIBILITY OF HAZARDOUS REACTIONS: NE
10.4 CONDITIONS TO AVOID (STABILITY): NE
10.5 INCOMPATIBILITY (MATERIAL TO AVOID): Oxidizing materials, acids, hydrogen peroxide, bases
10.6 HAZARDOUS DECOMPOSITION/BY-PRODUCTS: Harmful organic fumes and toxic oxide fumes may form at elevated temperatures.

11. TOXICOLOGICAL INFORMATION

INHALATION:
This product does not present a risk at ambient temperatures. The flux fumes evolved during soldering will irritate the nose, throat and lungs. Repeated or prolonged exposure to flux fumes may cause an allergic affect which may lead to occupational asthma.

SKIN:
Contact with flux fumes and flux residues may cause irritation and sensitization.

EYES:
Flux fumes may cause irritation.

11.1 ACUTE TOXICITY:

<table>
<thead>
<tr>
<th>Product/Ingredient Name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosin</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>7600 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>Terpineol</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>2000 mg/kg</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td>LD50 Inhalation</td>
<td>Rat</td>
<td>4.76 mg/l</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LD50 Dermal</td>
<td>Rat</td>
<td>2000 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>Maleic acid</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>700 mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LD50 Inhalation</td>
<td>Rat</td>
<td>720 mg/m³</td>
<td>1 hour</td>
</tr>
<tr>
<td></td>
<td>LD 50 Dermal</td>
<td>Rabbit</td>
<td>1560 mg/kg</td>
<td></td>
</tr>
</tbody>
</table>

SKIN CORRISION/IRRITATION: Not available
SERIOUS EYE DAMAGE/IRRITATION: Not available
RESPIRATORY OR SKIN SENSITIZATION: NE
GERM CELL MUTAGENICITY: Not available
CARCINOGENICITY:
ACGIH: N/A
NTP: N/A
IARC: N/A
REPRODUCTIVE TOXICITY: Not available
STOT-SINGLE EXPOSURE:
<table>
<thead>
<tr>
<th>Product/Ingredient Name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maleic acid</td>
<td>Category 3</td>
<td>Not applicable</td>
<td>Respiratory tract irritation</td>
</tr>
</tbody>
</table>

STOT-REPEATED EXPOSURE: NE
ASPIRATION HAZARD: NE

12. ECOLOGICAL INFORMATION

12.1 TOXICITY:

<table>
<thead>
<tr>
<th>Product/Ingredient Name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosin</td>
<td>Acute LC50 60.3 mg/l Fresh water</td>
<td>Brachydanio rerio (zebra fish)</td>
<td>96 hours</td>
</tr>
<tr>
<td>Terpineol</td>
<td>Acute LC50 62.80 mg/l Fresh water</td>
<td>Danio rerio (zebra fish)</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 68 mg/l Marine water</td>
<td>Algae – Pseudokirchneriella subcapitata (green algae)</td>
<td>72 hours</td>
</tr>
<tr>
<td>Maleic acid</td>
<td>Acute EC50 316200 μg/l Fresh water</td>
<td>Daphnia - Daphnia magna - Larvae</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 5000 μg/l Fresh water</td>
<td>Fish - Pimephales promelas</td>
<td>96 hours</td>
</tr>
</tbody>
</table>

PERSISTENCE AND DEGRADABILITY: NE
BIOACCUMULATIVE POTENTIAL:

<table>
<thead>
<tr>
<th>Product/Ingredient Name</th>
<th>LogPow</th>
<th>BCF</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosin</td>
<td>1.9 to 7.7</td>
<td>-</td>
<td>High</td>
</tr>
<tr>
<td>Terpineol</td>
<td>NE</td>
<td>-</td>
<td>NE</td>
</tr>
<tr>
<td>Maleic acid</td>
<td>-1.3</td>
<td>-</td>
<td>Low</td>
</tr>
</tbody>
</table>

MOBILITY IN SOIL: NE
12.5 RESULT OF PBT and vPvB ASSESSMENT: Not applicable
13. DISPOSAL CONSIDERATIONS

13.1 WASTE DISPOSAL METHOD: Scrap and waste should be recycled or stored in a dry, sealed container for later disposal. Disposal must be in accordance with Federal, State/Provincial, and Local Regulations.

OTHER PRECAUTIONS: Avoid skin & eye contact, inhalation & ingestion of fumes and material. Wash contaminated clothing before reuse. Keep away from children.

14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements.

14.1 UN Number: Not available
14.2 UN Proper Shipping Name: Not available

14.3 TRANSPORT HAZARD CLASSES:
US DOT Hazardous Material Classification: Non-Hazardous
Water Transportation: Non-Hazardous
IATA Hazardous Material Classification: Non-Hazardous
ADR Road Regulations: Not regulated
IMDG Sea Regulations: Not regulated
ADG Land Transportation: Not regulated

14.4 Packaging Group: Not applicable
14.5 Environmental Hazards: None
14.6 Not applicable
14.7 Not applicable

15. REGULATORY INFORMATION

15.1 EU REGULATIONS: Not regulated
U.S. FEDERAL REGULATIONS: Not regulated
STATE REGULATIONS: Not regulated
INTERNATIONAL REGULATIONS: Not regulated
AUSTRALIAN REGULATIONS: Not regulated

15.2 Not applicable

16. OTHER INFORMATION

LEGEND:
ACGIH American Conference of Governmental Industrial Hygienists
ADG Australian Dangerous Goods Code
ADR European Agreement concerning the International Carriage of Dangerous Goods by Road
AICS Australian Inventory of Chemical Substances
BCF Bioconcentration factor
C.A.S. Chemical Abstract Service
CLP Classification, Labeling and Packaging
DOT Department of Transportation
EC Effective Concentration
EC Number European Community Number
MEL Maximum Exposure Limit
EPA Environmental Protection Agency
GHS Global Harmonized System
HMIS Hazardous Material Identification System
IARC International Agency for Research on Cancer
IATA International Air Transport Association
IMDG International Maritime Dangerous Goods Code
LC Lethal Concentration
LD Lethal Dose
MEL Maximum Exposure Limit
NA Not available
NE Not established
NIOSH National Institute for Occupational Safety & Health
NOEC No observed effective concentration
NOHSC National Occupational Health and Safety Commission (Australia)
NTP National Toxicology Program
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
P<sub>ow</sub> Octanol water partition coefficient
SDS Safety Data Sheet
STEL Short-Term Exposure Limit
STOT Specific target organ toxicity
TLV Threshold Limit Value
TSCA Toxic Substance Control Act
TWA Time Weighted Average
US DOT: United States Department of Transportation

PREPARATION INFORMATION:
This update supersedes all previously released documents.

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