SECTION-1  PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Identifier</th>
<th>N727H/B23</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Use</td>
<td>Friction material</td>
</tr>
<tr>
<td>Product Description</td>
<td>Molded articles</td>
</tr>
<tr>
<td>Company name</td>
<td>Nisshinbo Automotive Manu.</td>
</tr>
<tr>
<td>Address</td>
<td>6100 19 Mile Road, Sterling Heights, MI 48314</td>
</tr>
<tr>
<td>Telephone number</td>
<td>+1-586-997-1000 (Mon-Fri, 9am-5pm EST)</td>
</tr>
</tbody>
</table>

SECTION-2  HAZARDS IDENTIFICATION

This product is article in accordance with 29CFR1910.1200 and not subject to GHS classification. And this product will not occur hazard as shipped. There is possibility of dust occurrence by machining such as cutting, grinding and drilling etc., and it may cause adverse effect on lung.

GHS classification: Not applicable
Physical hazard: Not applicable
Health hazard: Not applicable
Environmental hazard: Not applicable
GHS label elements
Symbol: Not applicable
Signal word: Not applicable
Hazard statement: Not applicable
Precautionary statements

Prevention
Rubber gloves are recommended for handling. Wash hand after handling.

Response
If dust in eyes, do not rub. Wash eyes with plenty of water.

Storage
Avoid high temperature, high humidity and direct sunlight, store cool and dry place for the quality.

Disposal
Dispose of contents/container in accordance with local/regional/national/international/regulations.
SECTION-3  COMPOSITION / INFORMATION ON INGREDIENTS

OSHA Hazardous Components :

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS No.</th>
<th>TSCA No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cured Phenolic resin</td>
<td>Not Applicable</td>
<td>Not Listed</td>
<td>1-10</td>
</tr>
<tr>
<td>Calcium hydroxide</td>
<td>1305-62-0</td>
<td>1305-62-0</td>
<td>1-10</td>
</tr>
<tr>
<td>Calcium carbonate</td>
<td>471-34-1</td>
<td>471-34-1</td>
<td>1-10</td>
</tr>
<tr>
<td>Zirconium silicate</td>
<td>10101-52-7</td>
<td>10101-52-7</td>
<td>1-10</td>
</tr>
<tr>
<td>Mica</td>
<td>12001-26-2</td>
<td>Exempted (Natural substance)</td>
<td>1-10</td>
</tr>
<tr>
<td>Graphite</td>
<td>7782-42-5</td>
<td>7782-42-5</td>
<td>1-10</td>
</tr>
<tr>
<td>Barium sulfate</td>
<td>7727-43-7</td>
<td>7727-43-7</td>
<td>20-30</td>
</tr>
<tr>
<td>Silica, amorphous</td>
<td>60676-86-0</td>
<td>7631-86-9</td>
<td>1-10</td>
</tr>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>7440-50-8</td>
<td>1-10</td>
</tr>
<tr>
<td>Lithium potassium titanate</td>
<td>39318-30-4</td>
<td>39318-30-4</td>
<td>1-10</td>
</tr>
<tr>
<td>Tin sulfide</td>
<td>1314-95-0</td>
<td>1314-95-0</td>
<td>1-10</td>
</tr>
</tbody>
</table>

SECTION-4  FIRST AID MEASURES

If any of the symptoms persist, seek medical attention immediately.

Inhalation : Wash mouth with water. Get medical advice/attention if you fell unwell.

Skin : Wash out dust with running water, then wash skin with soap and water. Seek medical attention for persistent irritation.

Eyes : Flush eye with cool running water. Do not rub eyes. Seek medical attention if reddening/irritation persists.

Ingestion : Wash mouth with water, get medical advice/attention.

Note to Physician : No special first aid or medical treatment procedures are required.

SECTION-5  FIRE FIGHTING MEASURES

Suitable extinguishing media : Water, Spray, Dry, Chemical, Form, CO₂

Protection of firefighters : Decomposition product may be irritating to eyes, skin and the respiratory tract. Firefighters should wear self-contained breathing apparatus.

SECTION-6  ACCIDENTAL RELEASE MEASURES

Personal Precautions : In case dust may occur, use personal protective equipment recommended in Section8.

Personal protection : Wear protective gloves/clothing/safety glass.

Environmental Precautions : Not applicable.

Method for containment/Clean up : Use wet method or vacuum to clean up dust from products.
SECTION-7  HANDLING AND STORAGE

Handling:
- Keep away from fire, heat, and flame. Keep material dry.
- Avoid contact with strong acid, alkali, oxidizer and reducer.
- Wear appropriate respiratory protection in case of dust occurrence.
- Avoid dust dispersion by local ventilation if needed.
- Wash contaminated clothing before reuse.
- Wash hands thoroughly after handling.

Storage:
- Keep away from fire, heat, and flame. Keep material dry.
- Avoid contact with strong acid, alkali, oxidizer and reducer.
- Avoid high temperature, high humidity and direct sunlight, store cool and dry place for the quality.
- Local ventilation is recommended.

SECTION-8  EXPOSURE CONTROLS / PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Ingredients Name</th>
<th>CAS No</th>
<th>OSHA TWA</th>
<th>ACGIH TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cured Phenolic resin</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Calcium hydroxide</td>
<td>1305-62-0</td>
<td>15mg/m³ (total dust)</td>
<td>5mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5mg/m³ (respirable fraction)</td>
<td></td>
</tr>
<tr>
<td>Calcium carbonate</td>
<td>471-34-1</td>
<td>5mg/m³ (respirable fraction)</td>
<td>10mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15mg/m³ (Total dust)</td>
<td></td>
</tr>
<tr>
<td>Zirconium silicate</td>
<td>10101-52-7</td>
<td>5mg/m³ (dust, as Zr)</td>
<td>5mg/m³</td>
</tr>
<tr>
<td>Mica</td>
<td>12001-26-2</td>
<td>20mppcf</td>
<td>3mg/m³</td>
</tr>
<tr>
<td>Graphite</td>
<td>7782-42-5</td>
<td>15mppcf (natural)</td>
<td>2mg/m³ (all forms except graphite fibers, respirable fraction)</td>
</tr>
</tbody>
</table>

This product is molded article of fibers, friction modifier and filler by thermosetting resin, and will not release substance so no exposure may occur. Small amount of dusts occurred by production process exist on the surface of product, and this product release dust by drilling etc., handle with following notice.
Barium sulfate  |  7727-43-7  |  15mg/m³ (total dust)  |  10mg/m³ (respirable fraction)  
Silica, amorphous  |  60676-86-0  |  20mppcf  |  none  
Copper  |  7440-50-8  |  0.1mg/m³ (fume)  |  0.2mg/m³ (fume)  
  |  |  1mg/m³ (dust and mist)  |  1mg/m³ (dust and mist)  
Lithium potassium titanate  |  39318-30-4  |  EPA NCEL 5mg/m³  |  none  
Tin sulfide  |  1314-95-0  |  2mg/m³ (dust, as Sn)  |  2mg/m³  

**Engineering controls:** 
Friction materials are molded articles and neither gives off nor reveals hazard materials. But machining (grinding, drilling, etc.) can result in the release of airborne dust, and OSHA permissible exposure level (PEL) excessive dust is considered hazardous. Use local ventilation.

**Personal Protective Equipment:**
- **Respiratory protection:** Not required under normal conditions and adequate ventilation. If the exposure limit is exceeded, use of NIOSH approved face mask (N-95 or better) is recommended. In the case of fire or explosion, Self-Contained Breathing Apparatus (SCBA) should be used.
- **Hand protection:** Rubber gloves are recommended.
- **Eye protection:** Safety glasses are recommended.
- **Skin and body protection:** Work clothes that can avoid contact with dust is recommended.
- **General hygiene considerations:** Avoid breathing the dust. Avoid contact with dust and skin, eyes. Wash thoroughly after handling.
<table>
<thead>
<tr>
<th>Appearance</th>
<th>Articles</th>
<th>Evaporation rate</th>
<th>No data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor</td>
<td>Odorless</td>
<td>Vapor pressure</td>
<td>No data</td>
</tr>
<tr>
<td>Color</td>
<td>Gray</td>
<td>Vapor density</td>
<td>No data</td>
</tr>
<tr>
<td>pH</td>
<td>No data</td>
<td>Specific gravity</td>
<td>2 ~ 3</td>
</tr>
<tr>
<td>Melting point</td>
<td>No data</td>
<td>Solubility in water</td>
<td>No data</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data</td>
<td>Viscosity</td>
<td>No data</td>
</tr>
</tbody>
</table>

**SECTION-10  STABILITY AND REACTIVITY**

**Stability:** Stable.

**Possibility of hazardous reactions:** Will not occur.

**Conditions to avoid:** Keep away from fire, heat, and flame.

**Incompatible materials:** Avoid contact with strong acids, strong alkalis, strong oxidizers and reducers.

**Hazardous decomposition products:** Toxic and irritating materials may be released in a fire.

**SECTION-11  TOXICOLOGICAL INFORMATION**

This Product is not evaluated as mixture. The following data is ingredient's information.

**Calcium hydroxide**

**Acute Toxicity** Inhalation can cause sore throat, cough, and burning sensation. Skin contact can cause redness, roughness, pain, dry skin, skin burns, and blisters.

Eye contact can cause redness, pain, and severe deep burns. Ingestion can cause burning sensation, abdominal pain, abdominal cramps, and vomiting.

**Chronic Toxicity** Repeated or prolonged contact with skin may cause dermatitis. Lungs may be affected by repeated or prolonged exposure to dust particles.

**Calcium carbonate**

**Acute Toxicity** Exposure to calcium carbonate may result in irritation to eyes, skin and respiratory tract. Acute ingestion may cause mild gastrointestinal distress.

**Chronic Toxicity** Chronic exposure may result in hypercalcemia, alkalosis and renal impairment.

**Zirconium silicate**

**Chronic Toxicity** Inhalation of zirconium compounds may cause pulmonary granulomas. Zirconium silicate contains trace quantities of naturally occurred radioactive uranium and thorium. Inhalation of respirable dusts may cause lung cancer.
Mica
Acute Toxicity
Eye contact may cause irritation
Skin contact may cause irritation
Ingestion may cause gastrointestinal irritation, nausea and diarrhea.
Chronic Toxicity
Long term exposure to high amount of mica without the approved dust mask may lead to chronic cough, dyspepsia or respiratory dysfunction.

Graphite
Acute Toxicity
Inhalation can cause cough.
Skin contact can cause roughness.
Chronic Toxicity
Lungs may be affected by repeated or prolonged exposure to dusts, resulting in graphite pneumoconiosis.

Barium sulfate
Acute Toxicity
Skin contact may cause irritation.
Eye contact may cause irritation.
Chronic Toxicity
Lungs may be affected by repeated or prolonged exposure to dust particles, resulting in baritosis (a form of benign pneumoconiosis).

Silica, amorphous
Acute Toxicity
Inhalation may cause cough.
Skin contact may cause dry skin, roughness.
Eye contact may cause redness, pain.
Chronic Toxicity
The substance may have effects on the lungs, resulting in mild fibrosis.

Copper
Acute Toxicity
Inhalation can cause cough, headache, shortness of breath, and sore throat.
Skin contact can cause redness.
Eye contact can cause redness, pain.
Ingestion can cause abdominal pain, nausea, and vomiting.
Chronic Toxicity
Repeated or prolonged contact may cause skin sensitization.

Lithium potassium titanate
Acute Toxicity
Mouse Oral LD$_{50}$ > 5000mg/kg
This substance has no skin irritation against rabbit skin, but has slight and temporary irritation against rabbit eye.
Safety Data Sheet for N727H/B23

Tin sulfide

- Acute Toxicity: LD₅₀ (Rat Oral) >5000mg/kg
- Skin contact may cause irritation.
- Eye contact may cause irritation.
- Chronic Toxicity: The substance may have effects on the lungs, resulting in a benign pneumoconiosis (stannosis).

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>NTP status</th>
<th>IARC status</th>
<th>OSHA status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium hydroxide</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Toxicity</td>
<td>LC₅₀ (96h) in Clarias gariepinus 33.9mg/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LC₅₀ (96h) in Gambusia affinis 160mg/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium carbonate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Toxicity</td>
<td>LC₅₀ (96h) in Gambusia affinis &gt; 56000 mg/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zirconium silicate</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mica</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphite</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barium sulfate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Toxicity</td>
<td>LC₉ (96h) in Poecilia sp. &gt; 59000mg/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Fate</td>
<td>This material may bioaccumulate to some extent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silica, amorphous</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Toxicity</td>
<td>LC₅₀ (48h) in Daphnia magna 50ug/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bioaccumulation</td>
<td>extent unknown, stored in bone marrow, liver, long half-life</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobility in soil</td>
<td>solid, insoluble, low mobility</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION-12 ECOLOGICAL INFORMATION

This Product is not evaluated as mixture. The following data is ingredient's information.

Calcium hydroxide
- Acute Toxicity: LC₅₀ (96h) in Clarias gariepinus 33.9mg/L
- LC₅₀ (96h) in Gambusia affinis 160mg/L

Environmental Fate: This material may bioaccumulate to some extent.
Safety Data Sheet for N727H/B23

Lithium potassium titanate
Not available

Tin sulfide
Not available

SECTION-13 DISPOSAL CONSIDERATIONS

RCRA:
Is the unused product a RCRA hazardous waste if discarded?: No
If yes, the RCRA ID number is:

Other Disposal Considerations:
Dispose in accordance to all applicable federal, state, and local regulations. The information offered here is for the product as shipped. Use and/or alterations to the products such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

SECTION-14 TRANSPORT INFORMATION

This product is not a hazardous material as defined in 49CFR172.101 by the U.S. Department of Transportation.

DOT (Department of Transportation): Not applicable
Proper shipping name: Not applicable
Hazard class number and description: Not applicable
UN identification Number: Not applicable
Packing group: Not applicable
DOT label required: Not applicable
Emergency Response Guide Number: Not applicable
Marine Pollutant: Not applicable

SECTION-15 REGULATORY INFORMATION

TSCA Inventory Status: This product is manufactured from materials found in TSCA inventory.

SARA TITLE III/CERCLA (Comprehensive Response Compensation, and Liability Act):
Reportable Quantities and Threshold Planning Quantities (RQs and TPQs)

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>SARA/CERCLA RQ (lb.)</th>
<th>SARA EHS TPQ (lb.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td></td>
<td>5000</td>
</tr>
</tbody>
</table>

SARA311 Hazard Class: None (Product as shipped)
Safety Data Sheet for N727H/B23

SARA313 Toxic Chemicals:
The following ingredients are SARA313 Toxic chemicals subject to reporting requirement of section313 of EPCRA and 40 CFR 372.

**Ingredient**
Copper

WHIMS: This product is manufactured article as shipped.

State Right to Know Lists:
The following ingredients in raw materials appear on states Right to know lists.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium hydroxide</td>
<td>CA,FL,IL,MA,MN,MO,NC,NJ,OH,PA,RI,SC</td>
</tr>
<tr>
<td>Calcium carbonate</td>
<td>IL,MN,MO,NC,OH,RI,SC</td>
</tr>
<tr>
<td>Zirconium silicate</td>
<td>CA,MN,NC,OH,RI,SC</td>
</tr>
<tr>
<td>Mica</td>
<td>CA,FL,IL,MA,MN,MO,NC,NJ,OH,PA,RI,SC</td>
</tr>
<tr>
<td>Graphite</td>
<td>CA,FL,IL,MA,MN,MO,NC,OH,PA,RI,SC</td>
</tr>
<tr>
<td>Barium sulfate</td>
<td>IL,MA,MN,MO,NC,OH,PA,SC</td>
</tr>
<tr>
<td>Silica, amorphous</td>
<td>CA,FL,IL,MA,MN,MO,NC,OH,PA,RI,SC</td>
</tr>
<tr>
<td>Copper</td>
<td>CA,FL,IL,KY,MA,MI,MN,MO,NC,NJ,OH,PA,RI,SC</td>
</tr>
<tr>
<td>Tin sulfide</td>
<td>CA,MA,MN,NC,OH,RI,SC</td>
</tr>
</tbody>
</table>

SECTION-16 OTHER INFORMATION

Explanation

**OSHA designated carcinogen**
NL : Not Listed

Other abbreviations are indicated below.

**NTP Status:**
- R : Reasonably anticipated to be a human carcinogen
- K : Known to be a human carcinogen

**IARC Status**
- Only Group1,2A and 2B are indicated in this MSDS.
  - Group 1: The agent is carcinogenic to humans.
  - Group 2A: The agent is probably carcinogenic to humans.
  - Group 2B: The agent is possibly carcinogenic to humans.

Disclaimer
To the best of our knowledge, the information contained herein is accurate. However, we can not assume any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards are described herein. We can not guarantee that these are the only hazards which exist.

Issue date: 13th, June, 2013
Latest revised date: 31st, May, 2018