

MATERIAL SAFETY DATA SHEET**KOPA - POLYAMIDE**

Updated Date: Jun. 01. 2010

1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF THE SUPPLIER

| | |
|---|--|
| PRODUCT | Polyamide |
| TRADE NAME | KOPA KN333G15HI |
| RECOMMENDED USE OF THE CHEMICAL AND RESTRICTIONS ON USE: | |
| RECOMMENDED USE OF THE CHEMICAL | injection molding |
| RESTRICTIONS ON USE | N.A |
| SUPPLIER'S DETAILS | |
| MANUFACTURER NAME | KOLON PLASTICS, Inc. |
| ADDRESS | Kolon Tower, 1-22, Byelyang-Dong, Kwacheon-City Kyunggi-Do, S.Korea |
| EMERGENCY PHONE | (82) 2-3677-3580 ~ 3588 |

2. HAZARDS IDENTIFICATION

| | | | | | |
|--|--|------|------------------------|------------|---|
| CLASSIFICATION HAZARDS | This product is not classified as dangerous. | | | | |
| WARNING SIGN PERTAINING TO PREVENTIVE MEASURE WORDS | | | | | |
| PICTORIAL SYMBOLS | N.A | | | | |
| SIGNAL WORDS | N.A | | * N.A : Not Applicable | | |
| HAZARDS WORDS | N.A | | | | |
| PREVENTIVE MEASURE WORDS | N.A | | | | |
| OTHER HAZARDS NOT INCLUDED CLASSIFICATION HAZARDS | | | | | |
| health | 1 | fire | 0 | reactivity | 0 |

3. COMPOSITION / INFORMATION ON INGREDIENTS

| | | |
|--------------------------|--|-----------------|
| CHEMICAL NAME | Polymer: poly(hexamethylene dodecanediamide) | |
| CHEMICAL FORMULA | Polymer: $[\text{NH}(\text{CH}_2)_6\text{NHCO}(\text{CH}_2)_4\text{CO}]_n$ | |
| GENERAL NAME | polyamide 6/6 | |
| ABBREVIATION NAME | PA6/6, N6/6, N66 | Contents |
| CAS NO. | Polymer : 32131-17-2 | >75% |
| | Glass Fiber : 65997-17-3 | =15±3% |
| | Olefin Impact Modifier : Confidential | <10% |

4. FIRST-AID MEASURES

INHALATION

- In working you inhale the gas, go to avoid that area and breath fresh air.
- When excessivly, after doing above state and take a measure with doctor

SKIN CONTACT

- Cool it with proper water, when the molten flow contact.
- Don't remove it enhancing the skin when it is attached very critically
- In allergic conditon, wash it with clean water and soap
- With injured, go to doctor for measure

EYE CONTACT

- If not hot comes, wash eye with flowing, clean water
- Don't rub eye, wash it with blink
- If hot melten contact, go to doctor immediatly for measure

INGESTION

- Vomit it after drinking several cup of water if not hot material
- In case of hot material, drinking clean water and take a measure from doctor

5. FIRE-FIGHTING MEASURES

EXTINGUISH KNACK

- Occupy safty distance, and spray an extinguisher of fiber
- If there is not extinguisher available, use sand or hydrant
- Firefighter should wear proper protective equipment
- Take the people shelter who is near by.
- The harzard gas can be occured when combusting
Gas can be occured : Carbon Dioxide
Carbon Monoxide
- Note, sometimes water might be not available, when extinguishment

A KIND OF EXTINGUISHMENT

- ABC POWDER, HARON EXTINGUISHMENT, SAND, CARBONDIOXIDE, WATER, etc

FIREFIGHTING PROTECTIVE EQUIPMENT

- Full firefighting turn-out gear (bunker gear).
- Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
- Any self-contained breathing apparatus with a full facepiece.

6. ACCIDENTAL RELEASE MEASURES

MEASURES FOR HANDLING PERSONNEL

- Shut off all sources of ignition : no flames, no smoking in area

MEASURES FOR ENVIRONMENTAL EFFECTS

- Take away in assortment
- Don't discharge to river

MEASURES WHEN HANDLING SPILLED SUBSTANCES

- Keep it saperately after having it swepted

7. HANDLING AND STORAGE

HANDLING

Exposure control for handling personnel

Use only in the well-ventilated areas

Don't breathe dust

When using, don't somke and don't have igniter

Protective measures against & explosion

Shut off all gas polot and electrical(spark or hot wire)ignites and other sources of ignition during use and until all vapors(odors) are gone.

Prevent deposition of dust.

Don't expose to friction or shock

Prevent build-up of electostatic charges (e-g . by grounding)

In case of fire and/or explosion, don't breathe fumes.

Others

Avoid rough handling or dropping

Don't flush to sewer or waterways.

Don't mix with : In a molding machine : acids

STORAGE

Make it packed to prevent the moisture

Keep away from heat, steam pipe or sunlight.

Incompatibility (Specific materials to be avoided) : acids, bases, oxydizing agents, water

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Control parameter e.g. occupational exposure limit values or biological limit values

| | |
|-------------------------|-----|
| local regulation | N.A |
| ACGIH regulation | N.A |
| biological limit values | N.A |

Appropriate engineering controls

Use only in the well-ventilated areas

Don't breathe dust

When using, don't smoke and don't have igniter

Shut off all gas pilot and electrical(spark or hot wire)ignites and other sources of ignition during use and until all vapors(odors) are gone.

Prevent deposition of dust.

Don't expose to friction or shock

In case of fire and/or explosion, don't breathe fumes.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory protection

Any air-purifying respirator with a high-efficiency particulate filter.

Any powered, air-purifying respirator with a high-efficiency particulate filter.

Eye Protection

Wear protective eyeglasses or chemical safety goggles.

Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Hand Protection

Wear appropriate chemical resistant gloves.

Body Protection

Wear appropriate chemical resistant cloths.

Matters that require attention for reasons of sanitation

N.A

Exposure standard

N.A

9. PHYSICAL & CHEMICAL PROPERTIES

| | | | |
|--------------------------|--------------------|---------------------------------|----------------------|
| Appearance | Pellet form solids | Vapor pressure | N.A |
| Odor | Odorless | Solubility(%) | in water : insoluble |
| Threshold Of Odor | Odorless | Vapor Density | N.A |
| pH | N.A | Specific Gravity | 1.22 |
| Melting Point | 255 °C | Distribution Coefficient | N Δ |

| | | | |
|-----------------------------|-----|----------------------------|-----|
| Boiling Point | N.A | Of Octanol/Water | N.A |
| Flash Point | N.A | Combution Temp. | N.A |
| Volatility | N.A | Decomposition Temp. | N.A |
| Flammability | N.A | Melt Index | N.A |
| Span Of Flammability | N.A | Molecular Weight | N.A |

10. STABILITY & REACTIVITY

Chemical reactivity and stability

In general condition it is most safe.

Possibility of hazardous reactions

In general condition it is most safe.

Condition to be avoided

Mixture with acids or bases.

Exposure of water

Incompatibility with Other Material

Strong acids, base (decomposes forming formaldehyde) and oxidizing materials. At melt temperatures,

Harzard Gases from combustion

Mono-oxide, Carbon dioxide

This product is considered a stable material under normal and anticipated storage

The mixture of air and dust can be explosion.

11. TOXICOLOGICAL INFORMATION

Information about high chance of exposure rute

INHALATION : N.A

SKIN. EYE : N.A

INGESTION : N.A

Acute and chronic main sympton

Acute toxicity

N.A

Skin corrosiveness or stimulation

N.A

Serious eye damage

N.A

Respiratory irritability

N.A

Skin irritability

N.A

Carcinogenic effects : OSHA

N.A

NTP

IARC

| | |
|--|-----|
| Gamete mutagenicity | N.A |
| Reproductive toxicity | N.A |
| Specific target organ toxicoid(acute exposure) | N.A |
| Specific target organ toxicoid(chronic exposure) | N.A |

12. ECOLOGICAL INFORMATION

| | |
|-------------------------------|-----|
| Ecotoxicity | N.A |
| persistence and degradability | N.A |
| Bioaccumulative potential | N.A |
| Mobility in soil | N.A |
| Other adverse effects | N.A |

13. DISPOSAL CONSIDERATION

Discard methods : According to method of administration of waste.

Disposal Considerations: Discard it within an airtight container to prevent spilling.

14. TRANSPORT INFORMATION

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|---|--|
| UN number : | There is no reliable information about classification. |
| UN proper shipping name: | N.A |
| Transport hazard class : | N.A |
| Packing group, if applicable : | N.A |
| Environmental hazards : | N.A |
| Transport in bulk : | N.A |
| Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises : | N.A |

15. REGULATORY INFORMATION

U.S. REGULATIONS

| | |
|--|-------------|
| TSCA INVENTORY STATUS: | Y |
| TSCA 12(b) EXPORT NOTIFICATION: | Not listed. |
| CERCLA SECTION 103 (40CFR302.4): | N |
| SARA SECTION 302 (40CFR355.30): | N |
| SARA SECTION 304 (40CFR355.40): | N |
| SARA SECTION 313 (40CFR372.65): | N |
| SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40CFR370.21) | |
| ACUTE: | N |
| CHRONIC: | N |
| FIRE: | N |
| REACTIVE: | N |
| SUDDEN RELEASE: | N |
| OSHA PROCESS SAFETY (29 CFR 1910.1200): | N |
| STATE REGULATIONS: | |
| CALIFORNIA PROPOSITION 65: | N |

16. OTHER INFORMATION

The information related to this specific material may not be valid for using in combination with any other materials or with any other process. Kindly, note that the matter is user's responsibility.

The information herein given is good faith, but no warranty, expressed or implied, is made.

Please consult Kolon Plastics, Inc. for further information.

To the best of our knowledge, the information contained here in is accurate, however, neither Kolon Plastics nor any subsidiaries assumes 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 user.

All materials may present unknown hazards and should be used in caution. Although certain hazards are described herein, we can't guarantee that these are the only hazards exist.

This information contained in this data sheet represents the best information currently available to us.

But, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It is advised to make their own tests to determine the safety and suitability of each product of combination for their own purposes.