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First issue: April 1, 1996

Revised : Aug. 10, 2001

MSDS No. L1-1

LEONA NA100, 1100, 1200, 1300, ORSD, ORLP,
AYR, 1200S, 1300S, 1300F, 1202,
1302, 1402, 1302S, 1402S, 1402SH,
1402F, 1400, 1500, 1500Y, 1700, 1700S,
1502, 1702, T3

AsahiKASEI

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name : Polyamide 66
Trade Name : LEONA NA100, 1100, 1200, 1300, ORSD, ORLP, AYR, 1200S, 1300S, 1300F, 1202, 1302, 1402,
1302S, 1402S, 1402SH, 1402F, 1400, 1500, 1500Y, 1700, 1700S, 1502, 1702, T3
Property in General : Resin Pellets
Classification Hazard : Not applicable.
General Use : Polyamide for automotive parts, mechanical parts, electric and
electronic parts.
Product Description : Polyamide resin.

MANUFACTURER:

Company Name : Asahi Kasei Corporation
Address : Automotive, E&E Plastics Division
Hibiya-Mitsui Bldg. 1-2, Yurakucho 1-chome,
Chiyoda-ku, Tokyo, 100-8440, Japan

EMERGENCY TELEPHONE NUMBER :

Asahi Kasei Corporation (Japan)

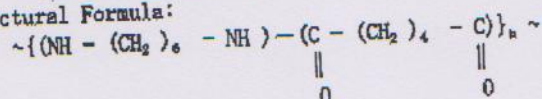
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8:30 am-6 pm Japan Time M-F

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name : Polyhexamethylene adipamide (Polyamide 66)

Chemical or Structural Formula:



COMPOSITION: Polyamide 66 (CAS NO. 32131-17-2) 95 ~ 100%
Other additives: 5 ~ 0%

Light-stabilizer, heat-stabilizer, lubricant, colorant, etc. are added,
in some grades. These additives except carbon black (CAS NO. 1333-86-4) and
Titanium dioxide (CAS NO. 13463-87-7) are not hazardous by definition of Hazard
Communication Standard. Carbon black and titanium dioxide are hazardous ones.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Solid pellet with slight or no odor. Spilled pellets create slipping hazard.

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Product may be flammable when exposed to constant flame or heat sources.
When product burns, it creates dense toxic vapors, gases or fumes.

Note : Fumes produced during melt processing may cause eye, skin and respiratory tract irritation. Operations such as grinding, sanding or sawing, can produce dust which might cause an explosion or respiratory hazard.

POTENTIAL HEALTH EFFECTS:

PRIMARY ROUTES EXPOSURE

INHALATION : Pellets inhalation unlikely due to physical form.

EYE CONTACT: Pellets may cause irritation or injury due to mechanical action.

SKIN CONTACT: Pellets not likely to cause skin irritation.

INGESTION : Oral toxicity data is not established.

Small amount swallowed incidentally during normal handling operations are not likely to cause injury; however, swallowing large amount may cause injury.

Not acutely toxic.

CHRONIC/CARCINOGENICITY:

NTP : Not tested

OSHA : Not regulated

IARC : Carbon black, is added in some grades, is listed by Group 2B of

IARC Cancer Review :

See 11. TOXICOLOGICAL INFORMATION

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Certain sensitive materials or ingredients and individuals with respiratory impairments may be affected by exposure to components in the processing fumes.

MELT PROCESSING HEALTH EFFECTS:

Contact with molten resin causes thermal burn.

Inhalation of gas from molten resin may cause nausea.

NOTE:

Additives containing certain heavy metal compounds may be present. These ingredients are encapsulated in the plastic matrix and are unlikely to contribute to workplace exposure under recommended processing conditions.

4. FIRST-AID MEASURES

EYE CONTACT: If the material is in a molten state, immediately cool and wash with clean

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water for at least 15 minutes. Remove contact lenses immediately if worn,
unless they have adhered to eyes, and seek immediate medical attention.

SKIN CONTACT: If the material is in a molten state, cool with clean water immediately.
Do not forcibly remove any solidified resin stuck to the skin, but continue
cooling until it becomes readily removable. Get medical attention for thermal burn.

INHALATION: If inhalation of gas from molten resin causes nausea, remove the individual to
fresh air and keep him at rest for recovery.
If his condition does not improve, seek medical attention.

INGESTION: Induce vomiting only if the victim is conscious. In case of heavy ingestion,
seek medical attention.

MELTING PROCESSING: If molten plastic contacts skin, cool rapidly with water and immediately
seek medical attention.

WARNING: Do not attempt removal of plastic without medical assistance.

Do not use solvent for removal.

If inhalation of processing fumes causes irritation, leave contaminated area and
breathe fresh air. If coughing, difficult breathing or any other symptoms develop,
seek medical attention at once, even if symptoms develop at a later time.
For skin contact with fume condensate, immediately wash affected area thoroughly
with soap and water. If irritation develops, seek medical attention.

NOTE TO PHYSICIAN : Treat symptomatically.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

Flash point : Not applicable
Lower flammable limit : Not established

Upper flammable limit : Not established
Autoignition Temperature : $\geq 400^{\circ}\text{C}$ ($\geq 752^{\circ}\text{F}$)

EXTINGUISHING MEDIA : Water spray and foam. Water is the best extinguishing media.
Carbon dioxide and dry chemical are not generally recommended
because their lack of cooling capacity may permit reignition.

FIRE FIGHTING INSTRUCTIONS : Approved pressure demand breathing apparatus and protective
clothing should be used for all fires. Water spray is a preferred
extinguishing medium. This material will melt but will not be
carried on the surface of water.

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HAZARDOUS COMBUSTION PRODUCTS : Hazardous combustion products may include intense heat, dense black smoke, carbon monoxide, carbon dioxide, a trace of HCN and NH_3 .

6. ACCIDENTAL RELEASE MEASURES

Spills over road or floor may cause slipping and falling; spilt pellets should be collected and disposed of properly. (Method of disposal must be in compliance with 13. DISPOSAL CONSIDERATIONS)

7. HANDLING AND STORAGE

HANDLING: Should process this product under the recommended temperature range (270~310°C) (520~590°F)

- Do not inhale gas during processing of the material.
- Do not hold the material at high temperatures over an extended time.

STORAGE: Store in a dry place away from excessive heat and ignition sources. Avoid direct sunlight.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS : In cases where possibilities of dust formation, gas generation or vapor emission exist, provide local ventilation. Ventilation requirements must be locally determined to minimize exposure to materials at their point of use.

PERSONAL PROTECTIVE EQUIPMENT:

EYE/FACE PROTECTION : Wear safety glasses or chemical goggles while using of handling this materials.

SKIN PROTECTION : When handling pellets, avoid prolonged or repeated contact with skin. During melt processing, wear long pants, long sleeves, well insulated gloves and face shield. Use appropriate protective clothing, including

chemical resistant gloves, to prevent any contact with processing fume condensates.

RESPIRATORY

: When processing fumes are not adequately controlled, use appropriate mask for protection from organic vapors and acid gases. When dust or powder from secondary operations, (such as grinding, sanding, or sawing) are not adequately controlled, use appropriate respirator for protection from dust.

EXPOSURE GUIDELINES :

EXPOSURE LIMITS:

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Particulates not otherwise classified

OSHA PEL : 15mg/m³ (Total dust)
 : 5mg/m³ (Respirable fraction)
 ACGIH TLV-TWA (2001) : 10mg/m³ (Inhalable particulate)
 : 3mg/m³ (Respirable particulate)

Carbon black

OSHA PEL : 3.5mg/m³
 ACGIH TLV-TWA (2001) : 3.5mg/m³

Titanium dioxide

OSHA PEL : 15mg/m³ (Total dust)
 ACGIH TLV-TWA (2001) : 10mg/m³

PERSONAL PROTECTIVE EQUIPMENT:

RESPIRATORY

PROTECTION : Wear appropriate respirator as needed.

EYE PROTECTION : Wear as needed.

HAND PROTECTION : Wear as needed.

SKIN PROTECTION : Wear as needed.

9. PHYSICAL & CHEMICAL PROPERTIES

PHYSICAL STATE : Solid
 ODOR AND APPEARANCE : Pellets with slight odor.
 VOLATILITY : None
 SPECIFIC GRAVITY : 1.1 ~ 1.2
 MELTING POINT : 255~270°C (491~518° F)
 SOLUBILITY IN WATER : Insoluble

10. STABILITY & REACTIVITY

CHEMICAL STABILITY CONDITIONS TO AVOID

: Stable under recommended conditions storage.
 : In order to avoid autoignition / hazardous decomposition of hot
 thick masses of plastic, purgings should be collected in small,
 flat shapes or thin strands to allow for rapid cooling in water.

HAZARDOUS DECOMPOSITION PRODUCT :

When ignited, carbon monoxide, carbon dioxide, HCN, NH₃.

Autoignition temperature : ≥ 400°C (≥ 752° F)

Flammability

: See 3. HAZARDS IDENTIFICATION
 (Emergency overview for more information.)

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Storage stability : Stable at room temperature.
Hazardous polymerization : Will not occur.

11. TOXICOLOGICAL INFORMATION

ACUTE INHALATION EFFECTS : Not available
EYE EFFECT : This material is not considered primary eye irritant.
SKIN EFFECTS : This material is not considered primary skin irritant.
ACUTE ORAL EFFECTS : Not available
SUBCHRONIC EFFECTS : Not available
CHRONIC EFFECT/CARCINOGENICITY :

Carbon black is listed by Group 2B of IARC Cancer Review and
titanium dioxide is listed by Group 3 of IARC Cancer Review.

12. ECOLOGICAL INFORMATION

Never dump or discharge this material into ocean or any other body of water, to avoid ingestion
by marine life or birds.

13. DISPOSAL CONSIDERATIONS

Comply with your national and local regulations.
Do not release into sewers, ground or a body of water.

14. TRANSPORT INFORMATION

UN Class : Not applicable
UN Number : Not applicable

NOTE : Avoid water and careless handling to prevent damage to the container.

15. REGULATORY INFORMATION

No information available
Please refer to any other national measures that may be relevant.

US Federal Regulations:

OSHA STATUS: This product is hazardous under the Federal OSHA hazard communication
standard 29 CFR 1910.1200.

TSCA STATUS: on TSCA INVENTORY

CERCLA REPORTABLE QUANTITY (40CFR117.302): NOT ESTABLISHED

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SARA TITLE II

SECTION 302(40CFR355)

SECTION 311/312(40CFR370)

SECTION 313(40CFR372)

Extremely Hazardous Substances : NONE

Hazard Categories : NOT HAZARDOUS

Toxic Chemicals : NONE

16. OTHER INFORMATION

NOTE : The information furnished in this Material Safety Data Sheet is accurate to the best knowledge of Asahi Kasei Corporation ("Asahi") as of the date of its publication. This MSDS is not intended to create any liability of any kind on the part of Asahi. In no event will Asahi be responsible for any death, injury or damage of any nature resulting from the use of, reliance upon, or misuse of the MSDS or material to which it refers. The data on this sheet relates only to the specific material designated herein. No representations or warranties, whether express or implied, of merchantability, fitness for particular purpose, or any other nature, are made hereunder. This MSDS is not intended as a recommendation for uses that infringe valid patents or extend licenses under valid patents. This MSDS is furnished under the express condition that all persons receiving it will make their own determination as to its suitability for their purpose prior to use. Responsibility for compliance with applicable federal, state or local regulations concerning dissemination of the MSDS and sale and use of the material to which it refers rests solely upon the purchaser. For more information, please contact Asahi at the address and telephone number listed on this sheet.

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