Dear Customer,

we are pleased to send you the material safety data sheet regarding the supplied product: HERAMID S NER FV030
We would like you to keep the above document and give back this letter duly stamped and signed as your acceptance.

We are at your disposal for any further information.

Best Regards

Ghidini Ivan
Quality Assurance

Filled in by:
Date:
Stamp and signature:

Quality System
E-mail: ivan.ghidini@radicigroup.com
1ST SECTION - IDENTIFICATION OF THE PRODUCT AND OF THE PRODUCER

**Name of the producer**  
RADICINOVACIPS

**Address**  
Via Bedeschi n°20 24040 Chignolo d’Isola (BG) I

**Trade name of the product**  
HERAMID S NER FV030

**Synonym**  
Polyamide 6 - Nylon 6

**Chemical name**  
Polycaprolactam

**Chemical formula**  
\[-\text{NH-}(\text{CH}_2)_5-\text{CO}]_n\]

**CAS no. of the base polymer**  
25038-54-4

2ND SECTION - COMPOSITION/INFORMATION ABOUT THE INGREDIENT

This product is composed quite completely by polymers with high molecular weight, which are not considered dangerous.

**Main components**
1°) POLYAMIDE 6  
2°) GLASS FIBER  
3°) PROCESS LUBRICANT  
4°) BLACK MASTERBATCH  
5°)  
6°)  
7°)  
8°)

3RD SECTION - DANGER IDENTIFICATION

**POTENTIAL EFFECT ON THE HEALTH**

**EYE**  
In case of friction with the eyes, the product can cause irritations and/or lesions

**SKIN**  
The product is unlikely to cause skin irritation

**INGESTION**  
The product is not acutely toxic, anyway it is better to avoid the ingestion of granules, because the gastric juice could hydrolyze the material causing the re-formation of the initial monomers and arousing gastric and intestinal irritations.

**INHALATION**  
The granules can unlikely be inhalated, because of their shape

**EFFECTS OF THE MELTING OPERATION ON THE HEALTH**

Melted plastic can cause serious burns. The processing smokes can cause eyes irritation, nausea and hemicrania. By combustion and/or degradation the product can release toxic smokes, like: carbon monoxide, carbon dioxide, nitric oxides, hydrocyanic acid, ammonia, acrylonitrile, formic aldehydeAcetic acid, Acrylic acid. Traces of their derivatives are mixed with these compounds at a degree of oxidation whose quantification is not possible.

**MEDICAL RESTRICTIONS**

Virtually all the thermoplastic resins release smokes when they reach the working temperature. The right composition and concentration of these working smokes depends on the formulation of the resin including the additives, on the stay time in the transformation machines, on the variables of the machines themselves, as for instance the configuration of the plasticisation screw, the systems of degassing and so on, and depends on the working temperature. If the resin is worked using the normal precautions explained in details, it doesn’t produce any negative known effect for the health.

Anyway some sensitive persons and with breathing difficulties can feel a certain temporary irritation if they expose theirselves to some specific components present in the working smokes.

RN 009 C  
Rev. 3 del 02/11/99
### 4TH SECTION - FIRST AID

**EYE** In case of contact with dusts and/or little pieces of polymer, remove possible contact lens and wash immediately the eyes raising the eyelid with plentiful quantity of water. If the irritation holds on, turn yourself to a medician.

**SKIN** Wash carefully the skin with water. In case of burn consult a medician.

**INGESTION** It is important to avoid the ingestion of the granules because the gastric juices could lead the material to hydrolysis with a re-formation of the original monomers which could cause gastric and intestinal irritations. In case of considerable ingestion of the material you are suggested to consult a doctor. In case of spontaneous vomit check that it can freely flow down avoiding the choking.

**INHALATION:** Considered its phisical form (granule), it can’t be inhaled.

**MELTING OPERATIONS** In case the melted material comes in contact with the skin, it must be rapidly cooled with water and it has not to be ripped. Consult immediately a doctor. Don’t try to remove the plastic without a medical assistance. Don’t use solvents for the removing.

In case of irritation due to an inhalation of working or burning smokes, leave the polluted area and breathe fresh air. In case of cough, of breathing difficulties or of every other symptom, advise immediately a doctor even if you should have the symptoms in a second time.

### 5TH SECTION - FIRE MEASURES

**FIRE MEASURES:** In any case of fire use an approved self-protector and defensive clothes.

**MEANS TO PUT OUT A FIRE:** Water sprinkling is the preferable way to put out a fire. Water throw and foam. The water is the best way to extinguish a fire. Usually carbon dioxide and dry chemical products are not suggested because their cooling inability could allow a new burning.

**DANGEROUS PRODUCT FOR THE COMBUSTION:** Among the dangerous products of the combustion there are the deep heat, black smoke, carbon oxide, carbon dioxide, azote oxides, hydrocyanic acid, ammonia, acrylonitrile, formic aldehyde, Acetic acid, Acrylic acid.

These compounds are mixed with traces of their derivates with different degree of oxidation whose quantification is not possible.

**INFLAMMABILITY:** It needs a continuous flame of fire.

**SENSITIVITY TO THE IMPACT:** Not sensitive to the mechanical impact.

**STATIC DISCHARGE:** Not sensitive to the static discharge.

### 6TH SECTION - MEASURES IN CASE OF CAUSAL EMISSION

**GENERALITY:** Recover the product, sweeping carefully the soil to avoid the risk of fallings, put it in a suitable container for the selling of or the regeneration (see information of the selling of).

### 7TH SECTION - MANIPULATION AND STORAGE

**MANIPULATION:** Follow some good practices of industrial hygiene. Arrange in advance a right aeration directly connected with the outside air. Don’t inhale the air contained in the packaging. The material is a substance at a high molecular weight and its manipulation at a room temperature does not get a specifical risk for the operators: Take particular care of the manipulation of the material when it is melted because the material in this case has a slow heat cession and it can cause serious burns. Avoid shedding of granules in the warehouse and in the working areas because they can allow fallings. As concerns the coloured materials, take particular care not to overpass the suggested temperatures because the colors can create products of decomposition which can be injurious.

**STORAGE:** Inert material on normal conditions of storage. No particular precaution is requested. Keep the product dry to allow a normal working. To avoid risks of collapse if some packagings are casually exposed to the water don’t store the material on a too high piles without an appropriate support.

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**RN 009 C**

**Rev. 3**

**del 02/11/99**
8TH SECTION  - CONTROL OF THE EXPOSITION / INDIVIDUAL PROTECTION

TECHNICAL CONTROLS: You are suggested to let the fresh air come in the working place and to remove working smokes through installations for the ventilation.

PERSONAL PROTECTION

EYE/FACE: Use protective glasses with lateral protection or glasses for chemical products.
SKIN: When you handle granules try to avoid a long and repeated contact. When you work the melted material, wear long trousers, long sleeves, gloves with a good isolation and protection for the face when it is necessary wear gloves when you handle warm material.

BREATHEING: A good hygienical industrial practice needs a general and right aeration of the working place.
When the dust (due to secondary operations like the grinding, the lapping or the cutting) is not rightly checked, use a special and approved breathing set to protect from powder.
When the working smokes are not appropriately controlled, use an approved breathing set to protect from organic vapors and acid gases.

9TH SECTION  - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE Solid
SMELL AND LOOK Plastic granules (light smell)
BOILING POINT Not applicable
MELTING POINT 220±3 °C
VAPOR PRESSURE (mmHg) Negligible
VAPOR DENSITY (aria = 1) Not applicable
SPECIFIC GRAVITY (acqua = 1) 1.35 ÷ 1.37 Kg/dm³
SOLUBILITY IN THE WATER Insoluble
% VOLATILE COMPONENTS Negligible
pH Not applicable
THRESHOLD OF SMELL Not established
EVAPORATION RATE Negligible
COEFFICIENT OF DISTRIBUTION WATER/OIL Not established
FLASH POINT > 400°C.
INFLAMMABILITY LOW LIMIT Not established
INFLAMMABILITY TOP VALUE Not established
SELF-IGNITION 440°C. estimated

10TH SECTION  - STABILITY AND REACTIVITY

STABILITY Polyamides are considered stable, so they can be conserved for long times.

REACTIVITY The product doesn’t react in the suggested handling, storing, working and using conditions.
The product produces dangerous reactions with strong acids and oxidative agents.

CONDITIONS TO BE AVOIDED To avoid the dangerous self-ignition/ decomposition of thick very warm plastic masses, the drains must be collected in little flat forms or in thin strands to allow the speed cooling in the water too.
Don’t let the product at high temperatures for long times; drain with resin for general uses. (For suggestions about the breathing protection see section CONTROLS OF THE PERSONAL EXPOSITION/PROTECTION).

DANGEROUS DECOMPOSITION The working smokes developing in conditions of treatment (thermic decomposition > 340°C) can contain traces of hydrocyanic acid, Ammonia, Acrylonitrile, Formic aldehyde and their derivates.
11TH SECTION - TOXICOLOGICAL INFORMATION

| PRODUCT | This product has not been tested for toxicity, but datas obtained on nylon resins are summarised below: Slightly irritating to eyes but not sufficient for classification. |

12TH SECTION - ECOLOGICAL INFORMATION

| GENERALITY | The product does not cause any ecological problem. The product is not biodegradable. It can be recycled using the suitable technologies. |

13TH SECTION - CONSIDERATION ON THE ELIMINATION

| ELIMINATION OF RUBBISH | Recycling process: This product can be recycled both in its original parts and in other possible applications. Elimination of rubbish: This product is not considered a dangerous rubbish. Eliminate the rubbish accordingly with the local provisions. |

14TH SECTION - INFORMATION ABOUT THE TRANSPORT

| GENERALITY | This product is not subject to regulations of transport. |

15TH SECTION - INFORMATION OF REGULATION

| | This product is not considered dangerous according to the CEE Directives 67/548/EEC and 88/379/EEC. |

16TH SECTION - OTHER INFORMATION

| | This issue gives information and suggestions for a safe use and treatment of the resins of RADICINOVACIPS and it is based on the experience and knowledges currently at disposal. Please consider this issue nor as a complete data sheet about the performance of this product or as a guide containing the opportunities to use our materials. The readers have to follow the local regulations concerning the health and the security about the work and have to transmit this issue to all the interested employees and the customers. |

Editor: RADICINOVACIPS via Bedeschi n°20 24040 Chignolo d’Isola (BG) I for further information you are pleased to call the following tel. number 035/4991311