SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product/Catalog Number(s):

32-60111	100 µg/vial; 1 vial/pack
60-111	20 µg/vial; 5 vials/pack
60-111.01	10 µg/vial; 5 vials/pack
60-111.02	200 µg/vial; 1/pack
60-111.1	100 µg/vial; 5 vials/pack
60-111.2	50 µg/vial; 5 vials/pack
60-111.25	25 µg/vial; 5 vials/pack
60-111.4	1.0 mg/vial; 1 vial/pack
60-126	0.05 mg/vial; 1 vial/pack
60-161	50 µg/vial; 1 vial/pack

Product name: **2-nitrofluorene**

Synonyms: 2-NF, 2NF,2-nitro-9h-fluorene, 2-Nitro-9H-fluorene, 9H-Fluorene, 2-nitrofluoroene

Manufacturer: Molecular Toxicology Inc.

Address: 157 Industrial Park Drive,
Boone, North Carolina, 28607

Phone: (1) 828 264 9099 (8:30 – 17:00 EST)

Fax: 828 264 0103

Emergency contact (Chemtrec): Contact 1800-424-9300 (USA) or 703 527 3887 (International) at other times
Email: chemtrec@chemtrec.com; http://www.chemtrec.com/

Recommended use: Laboratory, For Research Only

Restrictions on use: Not for clinical use

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture per GSH and EU Directive 1272/2008

Warning

Physical hazards None known

Health hazards Carcinogenicity (Category 2)
Chronic aquatic toxicity (Category 2)

Environmental hazards See eco-toxicity section 12.

Labelling

Hazard Statements H351 Suspected of causing cancer

H411 Toxic to aquatic life with long-lasting effects

Precautionary Statements

P201 Receive special instructions before use.
P202 Do not handle until all safety precautions are understood.
P273 Avoid release into the environment.
P281 Wear personal protective equipment as required.
P308+313 IF exposed or concerned: Get medical advice/attention.
P405 Store locked up.
P391 Collect spillage.
P501 Dispose of contents/container to a licensed waste disposal company.

Hazards not otherwise classified (HNOC) or not covered by GHS

None

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture/Hazardous Components

Component	Purpose	CAS-No	EC-No.	Weight %
2-Nitrofluorene $C_{13}H_9NO_2$	Biochemical used in the study of carcinogenesis	607-57-8	210-138-5	100%

SECTION 4. FIRST AID MEASURES

Description of first aid measures

Eye Contact	Flush eyes with water as a precaution.
Skin Contact	Wash off immediately with plenty of soap and water and rinse thoroughly. Consult a physician.
Ingestion	Do NOT induce vomiting. Rinse mouth with plenty of water. Never give anything by mouth to an unconscious person. Consult a physician.
Inhalation	Move to fresh air. If required, provide artificial respiration. Consult a physician.
Protection of first-aiders	Not required

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area. In the event that symptoms develop or persists, obtain medical attention.

Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see **S**ection 2) and/or in **S**ection 11.

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media
Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.
Special hazards arising from the substance or mixture
Carbon dioxide, carbon monoxide, nitrogen oxides.
Combustible.
Advice for firefighters
Fire-fighters should wear fully protective impervious protective equipment and self-contained breathing apparatus (SCBA).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate surrounding areas. Avoid breathing dust.
For personal protection see Section 8.
Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not release material into drains. Discharge into the environment must be avoided.
Methods and material for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shove. Keep in suitable, closed containers for disposal.
Reference to other sections
Refer to Sections 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Do not breathe spray or mist.
Provide appropriate exhaust ventilation.
For precautions see Section 2.
Conditions for safe storage, including any incompatibilities
Storage - Store according to product packaging, tightly sealed. Keep in a dry, well-ventilated place. Light sensitive. Storage class (TRGS 510): 11: Combustible Solids

Specific end use(s)
Apart from the uses mentioned in Section 3 no other specific uses are stipulated.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Exposure controls

Engineering Measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye Protection: Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Hand Protection

Chemical resistant gloves; nitrile rubber recommended. Inspect gloves before use. Use proper glove removal technique (without touching glove's out surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.2 mm

Break through time: 38 min

Material tested: Dermatril® P (KCL) 743 / Aldrich Z677388, Size M)

Data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used under conditions which differ from EM 374, contact the suppler of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering and approval for any specific use scenario.

Skin and body protection

Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory Protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hygiene Measures - Handle in accordance with good industrial hygiene and safety practice. Wash hands, forearms and face thoroughly after handling chemical products, before smoking, eating and using lavatory, and at the end of the work period. Employ techniques to avoid contamination of clothing. Keep away from food, beverages, and feed.

Environmental exposure controls – Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Exposure limits
Permissible Exposure Limits and Threshold Limit Values not specified by OSHA.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Solid, light yellow
Auto-ignition temperature	No data available
Boiling point	350.9°C (rough estimate)
Decomposition temperature	No data available
Upper/lower flammability or explosive limits	No data available
Flash point	No data available
Formula	$C_{13}H_9NO_2$
Melting point/range	156 – 158°C (lit)
Molecular weight	211.22
Odor threshold	No data available
Osmolality	No data available
Partition Coefficient	3.37 (LogP)
pH	No data available
Solubility in water	Insoluble
Specific gravity	No data available
Vapor density	No data available
Vapor pressure	No data available
Viscosity	Not applicable

Other information

SECTION 10. STABILITY AND REACTIVITY

Reactivity
No data available
Chemical stability
Stable under recommended storage conditions.
Possibility of hazardous reactions
No data available
Conditions to avoid
Strong bases.
Incompatible materials
Strong bases.
Hazardous decomposition products
Hazardous decomposition product formed under fire conditions - Carbon monoxide and carbon dioxide, Nitrogen oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects
Acute toxicity

Acute toxicity
Inhalation: No data available
Dermal: No data available
Mouse: LD50 Intraperitoneal – 1,600 mg/kg

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
Rat Liver - Unscheduled DNA synthesis
Mouse lymphocyte - DNA damage
Mouse Liver - Unscheduled DNA synthesis
Mouse fibroblast - Micronucleus test
Mouse lymphocyte - Mutation in mammalian somatic cells.
Hamster Lungs Cytogenetic analysis
Hamster Embryo Morphological transformation
Hamster ovary Sister chromatid exchange
Rat, *S. typhimurium* - Ames test Result: positive
Human HeLa cell - DNA inhibition

Rat – DNA damage
Rat – Unscheduled DNA synthesis
Hamster – Sister chromatid exchange
Rat – Morphological transformation

Carcinogenicity
Limited evidence of carcinogenicity in animal studies

IARC: 2B - Group 2B: Possibly carcinogenic to humans (2-Nitrofluorene)

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: LL8225000

SECTION 12. ECOLOGICAL INFORMATION

Toxicity

Aquatic ecotoxicity:
Toxic to aquatic life with long lasting effects.

Persistance and degradability: No data available.
Behavior in environment systems:
Bioaccumulative potential: No data available.
Mobility in soil: No data available.

Additional ecological information:

General notes:
Do not allow undiluted product or large quantities of it to reach ground water, water course, or sewage system.
Do not allow material to be released to the environment without proper governmental permits.

Results of PBT and vPVB Assessment
PBT: Not applicable
vPvB: Not applicable

Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life with long lasting effects.

SECTION 13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

Not a hazardous material for transportation

DOT (US) regulations:
Hazard class: None

IMDG

UN number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (2-Nitrofluorene)
Marine pollutant: Marine pollutant

IATA
UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (2-Nitrofluorene)

Further information
When sold in quantities of less than or equal to 1 ml, or 1g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10. Therefore, packaging does not have to be labeled as Dangerous Goods/Excepted Quantity.

SECTION 15. REGULATORY INFORMATION

OSHA Hazards
Carcinogen

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Chronic Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

2-Nitrofluorene	CAS-No. 607-57-8	Revision Date 2007-03-01

New Jersey Right To Know Components

2-Nitrofluorene	CAS-No. 607-57-8	Revision Date 2007-03-01

California Prop. 65 Components
Warning! This product contains a chemical known to State of California to cause cancer, birth defects, and other reproductive harms.

SECTION 16. OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Molecular Toxicology, Inc. shall not be held liable for any damage resulting from handling or from contact with the above product. See www.moltox.com and/or the invoice or packing slip for additional terms and conditions of sale.