# Material Safety Data Sheet

## NITROCELLULOSE MEMBRANE

### 1. Product and company identification

<table>
<thead>
<tr>
<th>Product name</th>
<th>NITROCELLULOSE MEMBRANE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product part number</td>
<td>R7009/R7019</td>
</tr>
<tr>
<td>Kit name</td>
<td>THRESHOLD STICK KIT</td>
</tr>
<tr>
<td>Kit part number</td>
<td>R8003/R8006</td>
</tr>
<tr>
<td>Material uses</td>
<td>For R&amp;D use only.</td>
</tr>
<tr>
<td>CAS number</td>
<td>9004-70-0</td>
</tr>
<tr>
<td>Code</td>
<td>3912 20 11</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>MOLECULAR DEVICES</td>
</tr>
<tr>
<td></td>
<td>1311 Orleans Drive</td>
</tr>
<tr>
<td></td>
<td>Sunnyvale, CA 94089</td>
</tr>
<tr>
<td></td>
<td>USA</td>
</tr>
<tr>
<td>Validation date</td>
<td>12/22/2010</td>
</tr>
<tr>
<td>Prepared by</td>
<td>Atrion Regulatory Services, Inc.</td>
</tr>
<tr>
<td>In case of emergency</td>
<td>1-408-747-3727 (9:00A PT- 5:00P PT) CHEMTREC (24 hours): 1-800-424-9300 (USA/Canada), +1 703-527-3887 (Outside USA/Canada)</td>
</tr>
</tbody>
</table>

### 2. Hazards identification

**Physical state**: Solid.

**Color**: Not available.

**Odor**: Not available.

**Emergency overview**

- **Signal word**: DANGER!
- **Hazard statements**: FLAMMABLE SOLID.
- **Precautions**: Keep away from heat, sparks and flame. Avoid contact with skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use.
- **OSHA/HCS status**: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
- **Routes of entry**: Not available.
- **Potential acute health effects**
  - **Inhalation**: Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
  - **Ingestion**: No known significant effects or critical hazards.
  - **Skin**: No known significant effects or critical hazards.
  - **Eyes**: No known significant effects or critical hazards.
- **Potential chronic health effects**
  - **Carcinogenicity**: No known significant effects or critical hazards.
  - **Mutagenicity**: No known significant effects or critical hazards.
  - **Teratogenicity**: No known significant effects or critical hazards.
  - **Developmental effects**: No known significant effects or critical hazards.
  - **Fertility effects**: No known significant effects or critical hazards.
2. Hazards identification

Over-exposure signs/symptoms

Inhalation: No specific data.
Ingestion: No specific data.
Skin: No specific data.
Eyes: No specific data.
Medical conditions aggravated by over-exposure: None known.

3. Composition/information on ingredients

United States

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellulose nitrate</td>
<td>9004-70-0</td>
<td>60-100</td>
</tr>
</tbody>
</table>

Canada

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellulose nitrate</td>
<td>9004-70-0</td>
<td>60-100</td>
</tr>
</tbody>
</table>

Mexico

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS number</th>
<th>UN number</th>
<th>%</th>
<th>IDLH</th>
<th>H</th>
<th>F</th>
<th>R</th>
<th>Special</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellulose nitrate</td>
<td>9004-70-0</td>
<td>Not available.</td>
<td>60-100</td>
<td>-</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

Eye contact: Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Ingestion: Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Notes to physician: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
5. Fire-fighting measures

**Flammability of the product**: Flammable solid. Runoff to sewer may create fire or explosion hazard.

**Extinguishing media**
- **Suitable**: Use dry chemical, CO₂, water spray (fog) or foam.
- **Not suitable**: Do not use water jet.

**Special exposure hazards**: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

**Hazardous thermal decomposition products**: Decomposition products may include the following materials: nitrogen oxides

**Special protective equipment for fire-fighters**: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

**Personal precautions**: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

**Environmental precautions**: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

**Methods for cleaning up**
- **Small spill**: Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.
- **Large spill**: Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. Handling and storage

**Handling**: Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not ingest. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container.
7. Handling and storage

Storage:
Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

United States
No exposure limit value known.

Canada
Occupational exposure limits
No exposure limit value known.

Mexico
Occupational exposure limits
No exposure limit value known.

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures:
If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures:
Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures:
Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory:
Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands:
Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eyes:
Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin:
Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls:
Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

12/22/2010.
9. Physical and chemical properties

- **Physical state**: Solid.
- **Flash point**: Closed cup: 12.85°C (55.1°F)
- **Auto-ignition temperature**: 170°C (338°F)
- **Flammable limits**: Not available.
- **Color**: Not available.
- **Odor**: Not available.
- **Molecular formula**: HNO3.xUnspecified
- **pH**: Not available.
- **Boiling/condensation point**: 34°C (93.2°F)
- **Melting/freezing point**: Not available.
- **Critical temperature**: Not available.
- **Relative density**: Not available.
- **Density**: 1.66 g/cm³
- **Vapor pressure**: Not available.
- **Vapor density**: Not available.
- **Volatility**: Not available.
- **Odor threshold**: Not available.
- **Evaporation rate**: Not available.
- **Viscosity**: Not available.
- **Solubility**: Insoluble in the following materials: cold water and hot water.
- **LogKow**: Not available.

10. Stability and reactivity

- **Chemical stability**: The product is stable.
- **Conditions to avoid**: Avoid all possible sources of ignition (spark or flame).
- **Incompatible materials**: Reactive or incompatible with the following materials: oxidizing materials.
- **Hazardous decomposition products**: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- **Possibility of hazardous reactions**: Under normal conditions of storage and use, hazardous reactions will not occur.

Under normal conditions of storage and use, hazardous polymerization will not occur.

11. Toxicological information

**Acute toxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
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<tbody>
<tr>
<td>Cellulose nitrate</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>&gt;5 g/kg</td>
<td>-</td>
</tr>
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</table>

**Chronic toxicity**

Not available.

**Irritation/Corrosion**

Not available.

**Sensitizer**

Not available.

11. Toxicological information

**Carcinogenicity**
- **Classification**
  Not available.

**Mutagenicity**
- Not available.

**Teratogenicity**
- Not available.

**Reproductive toxicity**
- Not available.

12. Ecological information

**Ecotoxicity**: No known significant effects or critical hazards.

**Aquatic ecotoxicity**
- Not available.

**Persistence/degradability**
- Not available.

13. Disposal considerations

**Waste disposal**
- The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

<table>
<thead>
<tr>
<th>Regulatory information</th>
<th>UN number</th>
<th>Proper shipping name</th>
<th>Classes</th>
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<th>Label</th>
<th>Additional information</th>
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<tr>
<td>DOT Classification</td>
<td>UN3270</td>
<td>Nitrocellulose membrane filters</td>
<td>4.1</td>
<td>II</td>
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<td>Limited quantity</td>
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<td>Packaging instruction</td>
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<td>Quantity limitation: 1 kg</td>
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<td>Cargo aircraft</td>
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<td>Quantity limitation: 15 kg</td>
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12/22/2010. North America
### 14. Transport information

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<th>TDG Classification</th>
<th>UN3270</th>
<th>NITROCELLULOSE MEMBRANE FILTERS</th>
<th>4.1</th>
<th>II</th>
<th>Explosive Limit and Limited Quantity Index</th>
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<td>Mexico Classification</td>
<td>UN3270</td>
<td>FILTROS DE MEMBRANA NITROCELULOSA</td>
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<td>II</td>
<td>Passenger Carrying Ship Index</td>
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<td>IMDG Class</td>
<td>UN3270</td>
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<td>4.1</td>
<td>II</td>
<td>Passenger Carrying Road or Rail Index</td>
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<td>Special provisions</td>
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<td>237, 286</td>
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<td>Emergency schedules (EmS)</td>
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<td></td>
<td></td>
<td></td>
<td>F-A, S-I</td>
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</tbody>
</table>

**Emergency schedules (EmS)**
- **Passenger and Cargo Aircraft**
  - Quantity limitation: 1 kg
  - Packaging instructions: 401
- **Cargo Aircraft Only**
  - Quantity limitation: 15 kg
  - Packaging instructions: 401
- **Limited Quantities - Passenger Aircraft**
  - Quantity limitation: 1 kg
  - Packaging instructions: Y401

PG* : Packing group

### 15. Regulatory information

**United States**

- **HCS Classification** : Flammable solid
- **U.S. Federal regulations**
  - TSCA 8(a) IUR: This material is listed or exempted.
  - United States inventory (TSCA 8b): This material is listed or exempted.
  - SARA 302/304/311/312 extremely hazardous substances: No products were found.
  - SARA 302/304 emergency planning and notification: No products were found.
  - SARA 302/304/311/312 hazardous chemicals: Cellulose nitrate
  - SARA 311/312 MSDS distribution - chemical inventory - hazard identification:
    - Cellulose nitrate: Fire hazard
  - **Clean Air Act (CAA) 112 accidental release prevention**: No products were found.

**Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)** : Not listed

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

15. Regulatory information

**State regulations**
- **Massachusetts**: This material is listed.
- **New York**: This material is not listed.
- **New Jersey**: This material is listed.
- **Pennsylvania**: This material is listed.

**California Prop. 65**
None of the components are listed.

**Canadian lists**
- **Canadian NPR**: This material is not listed.
- **CEPA Toxic substances**: This material is not listed.
- **Canada inventory**: This material is listed or exempted.

**Canadian inventory**
This material is listed or exempted.

**DEA List II Chemicals (Essential Chemicals)**
- Not listed

**International lists**
- **Australia inventory (AICS)**: This material is listed or exempted.
- **China inventory (IECSC)**: This material is listed or exempted.
- **Japan inventory**: This material is listed or exempted.
- **Korea inventory**: This material is listed or exempted.
- **New Zealand Inventory of Chemicals (NZIoC)**: This material is listed or exempted.
- **Philippines inventory (PICCS)**: This material is listed or exempted.
- **United States inventory (TSCA 8b)**: This material is listed or exempted.
- **Europe inventory**: Not determined.
- **Canada inventory**: This material is listed or exempted.

**Chemical Weapons Convention List Schedule I Chemicals**: Not listed
- **Chemical Weapons Convention List Schedule II Chemicals**: Not listed
- **Chemical Weapons Convention List Schedule III Chemicals**: Not listed

**Health Flammability Reactivity Special**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

**Mexico**

**Classification**

**International regulations**

**International lists**
- **Australia inventory (AICS)**: This material is listed or exempted.
- **China inventory (IECSC)**: This material is listed or exempted.
- **Japan inventory**: This material is listed or exempted.
- **Korea inventory**: This material is listed or exempted.
- **New Zealand Inventory of Chemicals (NZIoC)**: This material is listed or exempted.
- **Philippines inventory (PICCS)**: This material is listed or exempted.
- **United States inventory (TSCA 8b)**: This material is listed or exempted.
- **Europe inventory**: Not determined.
- **Canada inventory**: This material is listed or exempted.

**Chemical Weapons Convention List Schedule I Chemicals**: Not listed
- **Chemical Weapons Convention List Schedule II Chemicals**: Not listed
- **Chemical Weapons Convention List Schedule III Chemicals**: Not listed
16. Other information

Label requirements : FLAMMABLE SOLID.
Hazardous Material Information System (U.S.A.)

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Date of issue : 12/22/2010.
Date of previous issue : No previous validation.
Version : 1

Indicates information that has changed from previously issued version.

Notice to reader
To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its 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 the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. 