Material Safety Data Sheet

Date : 2016.5.10. R5

Product	NK.D-101M

1. Chemical Product and Company Identification

1) Product

NK.D-101M (High-Expansion Foam)

2) Recommended use of the chemical and restrictions on use

○ Recommended use : Fire Extinguishing Foam

○ Restrictions on use : Do not use for purposes other than

3) Manufacture/Supplier information

○ Supply company : NKTECH Co., Ltd.

○ Address : 541-3, Won-dong, Osan, Kyungki-Do, Korea

○ Information service or emergency call : 82-31-377-3311

2. Health Hazards

1) Classification of the substance or mixture

○ Skin Irritant : Category 2

○ Eye Damage : Category 1

2) GHS labels, including precautionary statements

○ Symbol

○ Signal word : Warning

○ Hazard statement

H315 Causes skin irritation

H318 Causes serious eye damage.

○ Precautionary statement

- Prevention

P260 Do not breathe spray

P264 Wash hands thoroughly after handling

P280 Wear protective gloves/protective clothing/eye protection/face protection

- Response

P301+P312 If swallowed : Call a poison center or doctor/physician if you feel unwell

P305+P351+P338 If in eyes : Rinse cautiously with water for serial minutes. Remove contact lenes, easy to do. If present and Continue rinsing

- Storage

P403+P235 Store in a well-ventilated place. Keep container tightly closed

P405 Store locked up.

- Disposal

P501 Dispose of contents/ container in accordance with regulation.

3) Other hazards which do not result in classification

○ NFPA

- Health 2
- Fire 0
- Reactivity 0

3. Composition and Information on Ingredients

Component	CAS No.	Classification	Content(vol.%)
Butyl Cellosolve	111-76-2	Acute toxicity - Oral: Category4 - Dermal: Category2 - Inhalation vapours:Category3 Skin irritation : Category2 Eye irritation : Category2	12%
Sodium Docecyl Sulfate	151-21-3	Acute toxicity - Oral: Category4 - Dermal: Category3	12%
Triethanolamine lauryl sulfate	139-96-8	Skin irritation : Category2	15%
Lauryl Alcohol	112-53-8	Acute toxicity - Oral: Category1	3%
Sodium laurylether(3) sulfate	9004-82-4	Acute toxicity - Oral: Category4 Skin irritation : Category2 Eye irritation : Category2	15%
water	7732-18-5	-	balance

4. First Aid Measures

1) Eye contact

Flush eye with water for 15 minutes. Get medical attention.

2) Skin contact

Wash with soap and water. Get medical attention if irritation develops or persists. Injection injuries may not appear serious at first but within a few hours, without proper treatment, the area will become swollen, discolored and extremely painful. Wash clothing before reuse. Destroy contaminated shoes and other leather products.

3) Inhalation

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen and continue to monitor. Get immediate medical attention

4) Ingestion

Do not induce vomiting! Do not give liquids! Get medical attention immediately.

5) Most important symptoms/effects, acute and delayed

Dyspnoea, Vomiting

6) First-aid treatment and information on medical doctors

Symptoms may be delayed.

5. Fire Fighting Measures

1) Extinguishing media

When extinguishment by smothering, Use dry sand or soil.
Water spray or fog, foam, carbon dioxide, dry chemical powder.

2) Specific hazard from chemical material

May produce oxides of carbon, sulphur and nitrogen on combustion.

3) Special protective actions for fire-fighter

Exposed fire-fighters must wear NIOSH-approved positive pressure self-contained breathing apparatus with full-face mask and full protective clothing. Do not inhale combusted gases.

6. Accidental Release Measures

1) Necessary actions to protect human health

Avoid breathing dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing
Stop leak if safety to do so.

2) Necessary actions to protect the environment

Prevent spills from entering sewers or drains and contact with soil.

3) Purification and removal methods

○ Small leak : Take up with sand or other oil absorbing materials.
○ Large leak : Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal.

7. Handling and Storage

1) Precautions for safe handling

Avoid breathing (dust, vapor, mist, gas). Avoid prolonged or repeated contact with skin. Avoidcontact with eyes. Wash thoroughly after handling. Do not allow material to contact humans, exposed food or food utensils. When handling, do not eat, drink or smoke.

2) Conditions for safe storage, including incompatibilities

Store in a well-ventilated place. Keep container tightly closed. Store locked up. Store in corrosive resistant… container with a resistant inner liner. Protect containers against physical damage and check regularly for leaks.

8. Exposure Control and Protective Equipment

1) Exposure limits and biological exposure limits of chemical

Occupational exposure limit : Not available
Biological limit : Not available

2) Engineering management

Use with adequate ventilation. Good general ventilation should be sufficient to control airborne levels. Isolate process, ventilate area, washing and shower equipment required

3) Personal protection equipment

○ Respiratory protection :
In case of inadequate ventilation wear respiratory protection. Wear protective gloves/protective clothing's protection/face perfection.
○ Eyes protection :
Use chemical splash goggles and face shield.
○ Hands protection :
The glove's listed below may provide protection against permeation. Gloves of other chemically resistant materials may not provide adequate protection. Protective gloves are recommended to protect against contact with product. Polyethylene, Neoprene, Nitride, Polyvinyl alcohol, Vinton.

○ Human body protection :

are required. The following materials are acceptable for use as protective clothing: Polyvinyl alcohol If where splashing is possible, full chemically resistant protective clothing (e.g., acid suit) and boots (PVA), Polyethylene; Neoprene, Nitrile, Viton, Polyurethane, Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Remove contaminated clothing and wash before reuse.

9. Physical and Chemical Properties

1) Appearance	light yellow liquid
2) Odor	Peculiar odor
3) pH	6.5~8
4) Freezing point	-2℃
5) Solubility	Completely soluble in water
6) Relative density	1.001 g/㎖
7) Viscosity	14 CP Method of testing Brookfield DV

* This product is not flammable nor volatile liquids

10. Stability and Reactivity

1) Chemical stability

Stable when stored under proper conditions. Container may explode when heated.

2) Toxicant generation possibility during reaction

Not available.

3) Prohibited conditions

Corrosion-free storage containers, Have the courage to use the specified coating.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.

4) Prohibited materials

Combustible materials.

5) Toxicant during decomposition

Combustion may produce carbon monoxide, carbon dioxide and other asphyxiants.

11. Toxicological Information

1) Information on the likely routes of exposure

○ Inhalation : Harmful if inhaled.
○ Ingestion : Harmful if swallowed.
○ Skin contact : Harmful if absorbed through skin.
○ Eye contact : Harmful if absorbed into eye

2) Delayed and immediate effects and chronic effects from short or long term exposure

○ Acute toxicity
- Oral : LD50 1746 ml/kg Rat
- Dermal : LD50 99 ml/kg Rabbit
- Inhalation : LC50 2.2 mg/ℓ 4ht Rat

○ Skin corrosion/irritation : Irritants
○ Serious eye damage/eye irritation : Irritants

12. Ecological Information

1) Hazardous to the aquatic environment

○ Fish : LD50 49mg/L (48hr, minnow)
○ Crustacea : EC50 5.45mg/L (48hr, cladoceran)
○ Algae : ErC50 2.41mg/L (72hr)

2) Persistence and degradability

○ Persistence and Degradability : The product is expexted to be biodegradable

3) Ready Biodegradability

○ Ready Biodegradability : 96.8%(n=3, 28day)/test standard: OECD 301A, DOC Die-Away Test: 1992

4) Mobility in soil

○ Mobility : The product contains substances, which are water soluble abd may apread in water systems

5) Other adverse effects

No data

13. Disposal Considerations

Follow local regulations.

2) Disposal cautions

Do not flush material to drain or storm sewer. Contract to authorized disposal service.

14. Transport Information

1) UN number

Not determined

2) UN Proper Shipping Name

Not determined

3) Transport hazard classes

Not determined

4) Packing group, if applicable

Not determined

5) Environmental hazards

Not determined

○ Emergency management type of fire : Butyl cellosolve (F-A)
○ Emergency management type of leak : Butyl cellosolve (S-A)

15. Regulatory Information

1) Industrial safety and health act (Korea)

Occupation environment measurement material

2) Toxic chemical substance subject to management act (Korea)

Observational chemicals

3) Wastes control act (Korea)

Not determined

4) Hazardous material safety act (Korea)

Not determined

5) Other internal and foreign acts

○ Persistent organic pollutant control act (Korea) :
Not determined
○ EC classification
Not determined
○ U.S. acts
- OSHA (29CFR1910.119) : Not determined

16. Other Information

1) References

IUCLID Dataset
KOSHA Material Safety Data Sheet
OSHA :U.S. Occupational Safety & Health Administration

2) Date of preparation of the first version

2010-1-10

3) Revision

Revision No : 4
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