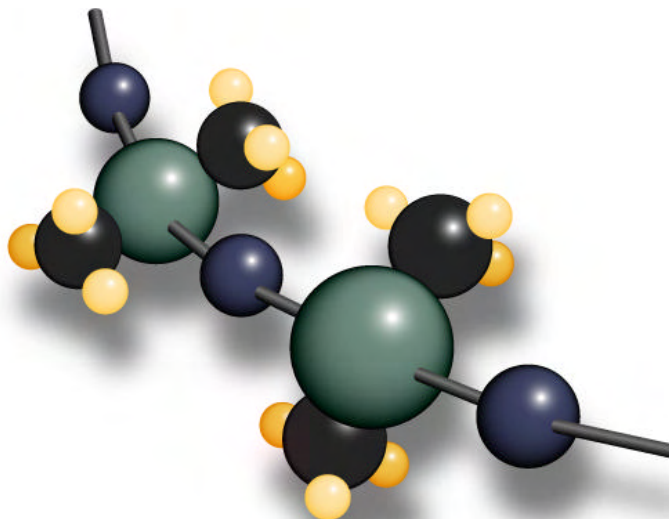


Polymer Systems Technology Limited

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MATERIAL SAFETY DATA SHEET

R-1001

NuSil Technology LLC urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to the use and understanding of the data contained in this MSDS.

To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors, and others whom it knows or believes will use this material of the information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers and other users of the product of this information.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

NuSil Technology LLC 1050 Cindy Lane Carpinteria, California 93013 USA (805) 684-8780	EMERGENCY TELEPHONE NUMBERS: (800) 424-9300 CHEMTREC (805) 684-8780 OUTSIDE OF THE USA (703) 527-3887 CHEMTREC
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PRODUCT NAME: R-1001
CHEMICAL NAME: Naphtha, VM&P
CHEMICAL FAMILY: Paraffinic Hydrocarbon with some Aromatics.
FORMULA: N/A
MOLECULAR WEIGHT: N/A
SYNONYMS: N/A
CAS# : 08030-30-6

2. HAZARDOUS INGREDIENTS

%	<u>MATERIAL</u>	<u>CAS #</u>	<u>EXPOSURE VALUE</u>	<u>CLASSIFICATION</u>
100	Naphtha, VM&P	08030-30-6	See Section 8	See Section 7

3. HAZARDS IDENTIFICATION

EFFECTS OF SINGLE OVEREXPOSURE:

SWALLOWING:

This product may be harmful or fatal if swallowed. This product may cause nausea, vomiting, diarrhea and restlessness. **DO NOT INDUCE VOMITING.** Aspiration into the lungs can cause severe chemical pneumonitis or pulmonary edema/hemorrhage, which can be fatal. May cause gastrointestinal disturbances. Symptoms may include irritation, depression, vomiting and diarrhea. May cause harmful central nervous system effects, similar to those listed under "INHALATION".

SKIN ABSORPTION:

Can be absorbed through skin.

INHALATION:

Nasal and respiratory tract irritation, central nervous system effects including excitation, euphoria, contracted eye pupils, dizziness, drowsiness, blurred vision, fatigue, nausea, headache, loss of reflexes, tremors, convulsions, seizures, loss of consciousness, coma, respiratory arrest and sudden death could occur as a result of long term and/or high concentration exposure to vapors. May also cause anemia and irregular heart rhythm. Repeated or prolonged exposure may cause behavioral changes.

SKIN CONTACT:

Prolonged or repeated contact may cause moderate irritation, defatting (cracking), redness, itching, inflammation, dermatitis and possible secondary infection. High pressure skin injections are **SERIOUS MEDICAL EMERGENCIES**. Injury may not appear serious at first. Within a few hours, tissues will become swollen, discolored and extremely painful. See "NOTES TO PHYSICIAN".

EYE CONTACT:

May cause severe irritation, redness, tearing, blurred vision and conjunctivitis.

EFFECTS OF REPEATED OVEREXPOSURE:

Inhalation over a prolonged period will produce symptoms of dizziness, weakness, pain in the limbs, paresthesias, and nervousness, and lead to anemia and weight loss.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Preexisting eye, skin, heart, central nervous system and respiratory disorders may be aggravated by exposure to this product.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

Prolonged and repeated inhalation exposure to hydrocarbon vapor in the same boiling range has produced kidney damage in male rats. This effect has not been observed in female rats and male and female mice. The relevance of this information to humans is unknown.

VM&P Naphtha can affect the body if it is inhaled, comes in contact with the eyes or skin or is swallowed. The vapors of petroleum distillates are mild narcotics and mucous membrane irritants. Human subjects had upper respiratory tract irritation in 15 minutes at 880 ppm. Eye irritation and transient olfactory fatigue also occurred. VM&P Naphtha is reported to have an acute toxicity greater than rubber solvent.

OTHER EFFECTS OF OVEREXPOSURE: None known.

4. FIRST AID MEASURES

EMERGENCY AND FIRST AID MEASURES:

SWALLOWING:

Never give anything by mouth to an unconscious person. **DO NOT INDUCE VOMITING**. Aspiration of material into the lungs due to vomiting can cause chemical pneumonitis which can be fatal. Give vegetable oil or charcoal slurry to retard absorption. If spontaneous vomiting occurs, keep head below hips to prevent aspiration of liquid into lungs and monitor for breathing difficulty. **SEEK IMMEDIATE MEDICAL ATTENTION**. Keep person warm and quiet.

SKIN:

Wash exposed area thoroughly with soap and water. Remove contaminated clothing promptly and wash before reuse. Contaminated leather goods should be discarded. If irritation persists or symptoms described in the MSDS develop, seek medical attention. High pressure skin injections are **SERIOUS MEDICAL EMERGENCIES**. Get immediate medical attention.

INHALATION:

Remove to fresh air. If breathing is difficult, ensure clean airway and oxygen may be given by qualified personnel. If not breathing, apply artificial respiration or cardiopulmonary resuscitation. Keep person warm, quiet and get medical attention.

EYES:

Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Seek medical attention if pain or redness occur.

NOTES TO PHYSICIAN:

In case of ingestion, gastric lavage with activated charcoal can be used promptly to prevent absorption. Consideration should be given to the use of an intratracheal tube, to prevent aspiration. Irregular heart beat may occur, use of adrenaline is not advisable. Individuals intoxicated by the product should be hospitalized immediately, with acute and continuing attention to neurological and cardiopulmonary function. Positive pressure ventilation may be necessary. After the initial episode, individuals should be followed for changes in blood variables and the delayed appearance of pulmonary edema and chemical pneumonitis. Such patients should be followed for several days or weeks for delayed effects, including bone marrow toxicity, hepatic and renal impairment. Individuals with chronic pulmonary disease will be more seriously impaired, and recovery from inhalation exposure may be complicated. In case of skin injection, prompt debridement of the wound is necessary to minimize necrosis and tissue loss.

5. FIRE FIGHTING MEASURES

FLASH POINT (test method(s)): 52°F-59°F

AUTOIGNITION TEMPERATURE: > 400°F

FLAMMABLE LIMITS IN AIR (by volume):

LOWER: 1% UPPER: 6%

EXTINGUISHING MEDIA: Apply all-purpose type foam by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical media for small fires.

SPECIAL FIRE FIGHTING PROCEDURES: Flammable Liquid. Water can be used to cool fire-exposed containers and structures and to protect personnel. Do not direct a solid stream of water or foam directly into a pool of hot, burning liquid as this may cause frothing, and may intensify the fire. Use self-contained breathing apparatus when fighting fire in an enclosed area.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Dangerous when exposed to heat or flame. Vapors form flammable or explosive mixtures with air at room temperature. Vapor or gas may spread to distant ignition sources (pilot lights, welding equipment, electrical equipment, etc.) and flash back. Vapors may accumulate in low areas. Vapors may concentrate in confined areas. Flowing product can be ignited by self generated static electricity. Use adequate grounding to prevent static buildup. Runoff to sewer may cause fire or explosion hazard. Containers may explode in heat of fire. Irritating or toxic substances may be emitted upon thermal decomposition. For fires involving this material, do not enter any enclosed or confined space without proper protective equipment, which may include NIOSH approved self-contained breathing apparatus with full face mask. Clothing, rags or similar organic material contaminated with this product and stored in a closed space may undergo spontaneous combustion. Transfer to and from commonly grounded containers.

6. ACCIDENTAL RELEASE MEASURES**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**

Extinguish and do not turn on any ignition source until the area is determined to be free from explosion or fire hazards. See Section 5, "Unusual Fire and Explosion Hazards".

Product may be collected with absorbent or vacuumed up. Be sure to wear appropriate protective clothing when performing any cleanup operations.

WASTE DISPOSAL METHOD: Dispose of in accordance with all Federal, State, and local regulations.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Normal precautions common to safe manufacturing practice should be followed in handling and storage.

Keep container closed, in a cool dry place	S3/S7/S8
Do not breathe vapor and avoid contact with skin and eyes	S23/S24/S25
Flammable	R10
Harmful if inhaled or swallowed	R20/R22

WARNING: Hot organic chemical vapors or mists are susceptible to sudden spontaneous combustion when mixed with air. Ignition may occur at temperatures below those published in the literature as "autoignition" or "ignition" temperatures. Ignition temperatures decrease with increasing vapor volume and vapor / air contact time, and are influenced by pressure changes.

Ignition may occur at typical elevated-temperature process conditions, especially in processes operating under vacuum if subjected to sudden ingress of air, or outside process equipment operating under elevated pressure if sudden escape of vapors or mists to the atmosphere occurs.

Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE VALUES AND SOURCE:

Naphtha, VM&P: 100 ppm - 8 hours TWA (ACGIH, OSHA)
 400 ppm - STEL/CEIL(C) (OSHA)

RESPIRATORY PROTECTION:

Use NIOSH approved respirator or self-contained breathing apparatus as needed to maintain personnel exposure below established Occupational Exposure Value.

VENTILATION:

General (mechanical) room ventilation with local ventilation as needed to maintain exposure below established Occupational Exposure Value.

PROTECTIVE GLOVES: Use solvent resistant gloves.

EYE PROTECTION: Use safety goggles.

OTHER PROTECTIVE EQUIPMENT: Eye bath and safety shower.

9. PHYSICAL AND CHEMICAL PROPERTIES (based on typical material)

BOILING POINT: 245°F - 296°F

SPECIFIC GRAVITY (H₂O=1): 0.733 - 0.753 @ 60°F

FREEZING POINT: N/A

VAPOR PRESSURE : 15 mm Hg @ 77°F

VAPOR DENSITY (air=1): 4.0

EVAPORATION RATE (Butyl Acetate=1): 0.99

SOLUBILITY IN WATER (By wt): Negligible

APPEARANCE: Clear

ODOR: Slight Hydrocarbon Odor

PHYSICAL STATE : Liquid

PERCENT VOLATILES (by wt): 100%

Note: The above information is not intended for use in preparing product specifications.

10. STABILITY AND REACTIVITY DATA

STABILITY: Stable under normal conditions of use.

CONDITIONS TO AVOID: Heat, sparks, open flame, static electricity or any other potential ignition sources should be avoided. Prevent vapor accumulation.

INCOMPATIBILITY: Avoid strong oxidizing agents (peroxide, permanganate, dichromate, chlorine, etc.), strong acids, caustics and halogens.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Combustion may produce oxides of carbon and reactive hydrocarbons (aldehydes, aromatics, etc.). Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant. Acute overexposure to the products of combustion may result in irritation of the respiratory tract.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

COMPONENT:

R-1001:

Acute Oral LD ₅₀ (mg/kg):	50-500 (Rat) Inferred from ingredient hazard(s)
Acute Dermal LD ₅₀ (mg/kg):	200-1000 (Rbt.) Inferred from ingredient hazard(s)
Acute Inhalation LC ₅₀ (mg/l):	0.5-2 (Rat) Inferred from ingredient hazard(s)
Other:	N/A.
Ames Test:	N/A.

Refer to Section 3 for further discussion of the health hazards associated with this preparation.

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: Complete information not yet available.

CHEMICAL FATE INFORMATION: Complete information not yet available.

13. DISPOSAL CONSIDERATIONS

Dispose of in accordance with all Federal, State, and local regulations.

14. TRANSPORT INFORMATION

DOT HAZARD CLASSIFICATION:

Proper Shipping Name: Petroleum Distillates, n.o.s. (Naphtha solution)
 Hazard Class: 3
 Hazard Label: Flammable Liquid
 UN Number: UN1268
 Packaging Group: II

TRANSPORTATION INFORMATION:

Proper Shipping Name: Petroleum Distillates, n.o.s. (Naphtha Solution)
 Hazard Class: 3
 Hazard Label: Flammable Liquid
 UN Number: UN1268
 Packaging Group: II

15. REGULATORY INFORMATION

STATUS ON SUBSTANCE LISTS:

The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations. Trade Secrets are indicated by "TS".

C.H.I.P. REGULATIONS

Chemicals (Hazard Information and Packaging for Supply) Regulations 2008 requires physico-chemical and health hazard determination of all substances and preparations manufactured, transported, stored, modified, or consumed within the U.K. Components present in this product at a level, which could require reporting under the statute, are:

<u>MATERIAL</u>	<u>CAS NUMBER</u>	<u>UPPER BOUND CONCENTRATION</u>
Naphtha, VM&P	08030-30-6	100 %

FEDERAL EPA

Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQ's) in 40 CFR 302.4. Components present in this product at a level which could require reporting under the statute are: ***** NONE *****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQ's) and release reporting based on Reportable Quantities (RQ's) in 40 CFR 355 (used for SARA 302, 304, 311, and 312). Components present in this product at a level which could require reporting under the statute are: ***** NONE *****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDS's that are copied and distributed for this material. Components present in this product at a level which could require reporting under this statute are: ***** NONE *****

INVENTORY STATUS

The ingredients of this product are listed on, or are exempt from listing on, the TSCA inventory.

STATE-RIGHT-TO-KNOW

CALIFORNIA Proposition 65

This product contains no levels of listed substances, which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute.

Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products. Components present in this product at a level which could require reporting under the statute are:

<u>MATERIAL</u>	<u>CAS NUMBER</u>	<u>UPPER BOUND CONCENTRATION</u>
Naphtha, VM&P	08030-30-6	100 %

PENNSYLVANIA Right-To-Know, Hazardous Substance List

Hazardous Substances and Special Hazardous Substances on the List must be identified when present in products. Components present in this product at a level which could require reporting under the statute are:

<u>MATERIAL</u>	<u>CAS NUMBER</u>	<u>UPPER BOUND CONCENTRATION</u>
Naphtha, VM&P	08030-30-6	100 %

CALIFORNIA SCAQMD RULE 443.1 VOC'S:


Volatile Organic Components (VOC's) = Substances with vapor pressure of ≥ 0.5 mm Hg at 104°C (219.2°F).
This product contains < 800 g/L VOC's.

OTHER REGULATORY INFORMATION:

EPA Hazard Categories: Immediate Health Hazard
Delayed Health Hazard
Fire Hazard

C.H.I.P. Regulations:

Designation: **R-1001**
Symbol: F, Xn

Indication of Danger: Flammable  **FLAMMABLE**
Safety Phrases: S3/S7/S8/S23/S24/S25
(Ref. Sect. 7) R10/R20/R22

Harmful  **HARMFUL**

16. OTHER INFORMATION

HMIS FORMAT:

Health: 2

Flammability: 3

Reactivity: 0

We believe that the information contained herein is current as of the date of this Material Safety Data Sheet, and is offered in good faith. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of NuSil Technology, it is the user's obligation to determine the conditions of safe use of the product.

-NuSil Technology LLC Regulatory Compliance Department

Effective Date: January 1, 2009