MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product identifier **LPS® NoFlash NU**

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CAS # Mixture

Part Number C04015

Product use An aggressive non-flammable solvent blend for the removal of dirt, moisture, dust, flux and oxides from the internal components of electronic or precision equipment such as circuit boards, and the internal components of electronic devices used in factories and other industrial settings.

Manufacturer information

ITW Pro Brands
4647 Hugh Howell Rd
Tucker, Georgia 30084
United States
www.lpslabs.com

1-800-241-8334/	770-243-8800
Chemtrec	1-800-424-9300

Supplier Not available.

2. Hazards Identification

Emergency overview DANGER

Aerosol. Contents under pressure. Pressurized container may explode when exposed to heat or flame.

Harmful if swallowed. Suspected of causing cancer. May damage fertility or the unborn child. Irritating to eyes, respiratory system and skin. Vapors may cause drowsiness and dizziness. May cause damage to organs through prolonged or repeated exposure.

Potential health effects

Routes of exposure Eye contact. Skin contact. Inhalation. Ingestion.

Eyes Avoid contact with eyes. Causes eye irritation.

Skin Avoid contact with the skin. Causes skin irritation. May be harmful if absorbed through skin.

Inhalation Avoid breathing dust/fume/gas/mist/vapors/spray. Irritating to respiratory system. Prolonged inhalation may be harmful.

Ingestion Harmful if swallowed. Do not ingest.

Target organs Eyes. Skin. Central nervous system. Respiratory system. Liver.

Chronic effects May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion and blurred vision) and/or damage. Pregnant women or women of child-bearing age should not be exposed to this product. Can cause adverse reproductive effects - such as birth defects, miscarriages, or infertility. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. Kidney injury may occur. Liver injury may occur.

Signs and symptoms Irritating to eyes, respiratory system and skin. Symptoms may include redness, edema, drying, defatting and cracking of the skin. Exposed individuals may experience eye tearing, redness, and discomfort. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Behavioral changes. Decrease in motor functions. Narcosis. Sterility. Birth defects.

Potential environmental effects Harmful to aquatic organisms. May cause long-term adverse effects in the environment.

3. Composition / Information on Ingredients

Hazardous components	CAS #	Percent
n-Propyl Bromide	106-94-5	60 - 70
ETHANE, 1,1,1,2-TETRAFLUORO-(HFC-134a)	811-97-2	30 - 40

Hazardous components	CAS #	Percent
PROPYL ALCOHOL	71-23-8	1 - 5
1,2 Butylene Oxide	106-88-7	< 1

Non-hazardous components	CAS #	Percent
TERT-BUTANOL	75-65-0	< 1

4. First Aid Measures

First aid procedures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. For breathing difficulties, oxygen may be necessary. Call a physician if symptoms develop or persist.

Skin contact Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion Call a physician or poison control center immediately. Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Notes to physician Provide general supportive measures and treat symptomatically.

General advice Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Call a POISON CENTER or doctor/physician if you feel unwell.

5. Fire Fighting Measures

Flammable properties Not flammable by WHMIS criteria.

Extinguishing media

Suitable extinguishing media Powder. Alcohol resistant foam. Water spray. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Protection of firefighters

Protective equipment for firefighters Firefighters should wear full protective clothing including self contained breathing apparatus.

Fire fighting equipment/instructions Containers should be cooled with water to prevent vapor pressure build up.

Explosion data

Sensitivity to static discharge None known.

Sensitivity to mechanical impact None known.

Hazardous combustion products May include oxides of carbon. Hydrogen bromide

6. Accidental Release Measures

Personal precautions Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. For personal protection, see section 8 of the MSDS.

Environmental precautions Do not contaminate water.

Methods for containment Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. Move the cylinder to a safe and open area if the leak is irreparable. Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewer, basements or confined areas.

Methods for cleaning up Should not be released into the environment. Stop the flow of material, if this is without risk. Isolate area until gas has dispersed. Following product recovery, flush area with water. Clean up in accordance with all applicable regulations. For waste disposal, see section 13 of the MSDS.

Other information Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling

Pressurized container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. Ground and bond containers when transferring material. Do not re-use empty containers. Do not breathe dust. Avoid contact with skin. Avoid contact with eyes. Avoid prolonged exposure. When using do not eat or drink. Do not use in areas without adequate ventilation. Wear personal protective equipment. Wash thoroughly after handling. Avoid release to the environment.

Storage

Level 1 Aerosol.

Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122 °F. Contents under pressure. Do not expose to heat or store at temperatures above 120°F/49°C as can may burst. Do not puncture, incinerate or crush. Do not handle or store near an open flame, heat or other sources of ignition. Store in a closed container away from incompatible materials. Store away from incompatible materials (see Section 10 of the MSDS). Keep out of the reach of children. Use care in handling/storage.

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value
n-Propyl Bromide (CAS 106-94-5)	TWA	0.1 ppm
PROPYL ALCOHOL (CAS 71-23-8)	TWA	100 ppm
TERT-BUTANOL (CAS 75-65-0)	TWA	100 ppm

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
PROPYL ALCOHOL (CAS 71-23-8)	STEL	984 mg/m3
		400 ppm
	TWA	492 mg/m3
		200 ppm
TERT-BUTANOL (CAS 75-65-0)	TWA	303 mg/m3
		100 ppm

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value
n-Propyl Bromide (CAS 106-94-5)	TWA	10 ppm
PROPYL ALCOHOL (CAS 71-23-8)	TWA	100 ppm
TERT-BUTANOL (CAS 75-65-0)	TWA	100 ppm

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value
n-Propyl Bromide (CAS 106-94-5)	TWA	0.1 ppm
PROPYL ALCOHOL (CAS 71-23-8)	TWA	100 ppm
TERT-BUTANOL (CAS 75-65-0)	TWA	100 ppm

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value
n-Propyl Bromide (CAS 106-94-5)	TWA	10 ppm
PROPYL ALCOHOL (CAS 71-23-8)	TWA	100 ppm

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value
TERT-BUTANOL (CAS 75-65-0)	STEL	150 ppm
	TWA	100 ppm

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value
PROPYL ALCOHOL (CAS 71-23-8)	STEL	614 mg/m3
		250 ppm
	TWA	492 mg/m3
		200 ppm
TERT-BUTANOL (CAS 75-65-0)	TWA	303 mg/m3
		100 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
PROPYL ALCOHOL (CAS 71-23-8)	PEL	500 mg/m3
		200 ppm
TERT-BUTANOL (CAS 75-65-0)	PEL	300 mg/m3
		100 ppm

Biological limit values No biological exposure limits noted for the ingredient(s).

Exposure guidelines

Canada - Quebec OELs: Skin designation

PROPYL ALCOHOL (CAS 71-23-8) Can be absorbed through the skin.

Engineering controls Not available.

Personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles). Eye wash fountain and emergency showers are recommended.

Skin protection Wear suitable protective clothing. Wear protective gloves.

Respiratory protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Chemical respirator with organic vapor cartridge.

Hand protection Viton or nitrile rubber gloves are recommended. Suitable gloves can be recommended by the glove supplier.

9. Physical & Chemical Properties

Appearance Liquid.

Physical state Gas.

Form Aerosol.

Color Clear

Odor Strong.

Odor threshold Not established

pH Not applicable

Vapor pressure > 100 mm Hg @20°C

Vapor density ~4.3 (air = 1)

Boiling point 158 °F (70 °C)

Melting point/Freezing point Not established

Solubility (water) 3 - 5 %

Specific gravity 1.29 - 1.32 @20°C

Relative density Not available.

Flash point < 73.4 °F (< 23.0 °C) Tag Closed Cup

Flammability limits in air, upper, % by volume	8 %
Flammability limits in air, lower, % by volume	4 %
Auto-ignition temperature	> 914 °F (> 490 °C)
VOC	70.1 % per US State and Federal Consumer Product Regulations
Evaporation rate	6 BuAc
Percent volatile	100 %
Partition coefficient (n-octanol/water)	> 1
Other data	
Decomposition temperature	Not established
Flammability (solid, gas)	Not applicable.
Heat of combustion	12 kJ/g

10. Chemical Stability & Reactivity Information

Chemical stability	Material is stable under normal conditions.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Contact with incompatible materials.
Incompatible materials	Aluminum. Alkali earth metals. Alkaline metals.
Hazardous decomposition products	Carbon oxides. Hydrogen bromide. Hydrogen fluoride.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Components	Species	Test Results
1,2 Butylene Oxide (CAS 106-88-7)		
Acute		
Dermal		
LD50	Rabbit	2100 mg/kg
Inhalation		
LC100	Rat	8000 ppm, 4 Hours
Oral		
LD50	Rat	500 mg/kg
n-Propyl Bromide (CAS 106-94-5)		
Acute		
Dermal		
LD50	Rabbit	>= 10 ml/kg, 24 Hours
	Rat	> 2000 mg/kg, 24 Hours
Inhalation		
LC50	Rat	14374 ppm, 4 Hours
		7000 mg/l, 4 Hours
		253 mg/l, 30 Minutes
		35 mg/m3, 4 Hours
		25 - 35 mg/l, 6 Hours
Oral		
LD50	Rabbit	540 mg/kg
	Rat	> 2000 mg/kg

Components	Species	Test Results
PROPYL ALCOHOL (CAS 71-23-8)		
Acute		
Dermal		
LD50	Rabbit	4032 mg/kg, 24 Hours
Inhalation		
LC50	Rat	> 33.8 mg/l, 4 Hours
		> 26.76 mg/l, 7 Hours
		> 9.8 mg/ml, 4 Hours
Oral		
LD50	Mouse	6800 mg/kg
	Rabbit	2.8 g/kg
	Rat	1870 mg/kg
		1.87 g/kg
TERT-BUTANOL (CAS 75-65-0)		
Acute		
Oral		
LD50	Rabbit	3.6 g/kg
	Rat	3.5 g/kg

Acute effects Harmful if swallowed. Narcotic effects. May cause respiratory irritation.

Sensitization Based on available data, the classification criteria are not met.

Local effects Harmful if swallowed. Irritating to eyes and skin. Irritating to respiratory system.

Chronic effects Prolonged inhalation may be harmful. May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity Suspected of causing cancer.

ACGIH Carcinogens

n-Propyl Bromide (CAS 106-94-5)	A3 Confirmed animal carcinogen with unknown relevance to humans.
PROPYL ALCOHOL (CAS 71-23-8)	A4 Not classifiable as a human carcinogen.
TERT-BUTANOL (CAS 75-65-0)	A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

1,2 Butylene Oxide (CAS 106-88-7)	2B Possibly carcinogenic to humans.

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/irritation Causes serious eye irritation.

Mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Reproductive effects May damage fertility or the unborn child.

Teratogenicity Avoid exposure to women during early pregnancy.

Symptoms and target organs Irritating to eyes, respiratory system and skin. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause redness and pain. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Behavioral changes. Narcosis. Decrease in motor functions.

Synergistic materials Not available.

Further information Reproductive toxicity. Symptoms may be delayed.

12. Ecological Information

Ecotoxicological data

Components		Species	Test Results
n-Propyl Bromide (CAS 106-94-5)			
Aquatic			
Fish	LC50	Fathead minnow (Pimephales promelas)	67.3 mg/l, 96 hours

Components		Species	Test Results
PROPYL ALCOHOL (CAS 71-23-8)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	3339 - 3977 mg/l, 48 hours
Fish	LC50	Bleak (Alburnus alburnus)	3000 - 4000 mg/l, 96 hours
TERT-BUTANOL (CAS 75-65-0)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	4607 - 6577 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	6130 - 6700 mg/l, 96 hours

Ecotoxicity Harmful to aquatic life with long lasting effects.

Environmental effects Harmful to aquatic organisms.

Aquatic toxicity May cause long-term adverse effects in the aquatic environment.

Persistence and degradability Not inherently biodegradable.

Partition coefficient

LPS® NoFlash NU	> 1
ETHANE, 1,1,1,2-TETRAFLUORO-(HFC-134a)	1.06
n-Propyl Bromide	2.1
PROPYL ALCOHOL	0.25
TERT-BUTANOL	0.35

Mobility in environmental media Readily absorbed into soil.

Other adverse effects None known.

13. Disposal Considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Contents under pressure. Do not puncture, incinerate or crush. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Do not re-use empty containers.

14. Transport Information

TDG

UN number UN1950

UN proper shipping name AEROSOLS, non-flammable

Transport hazard class(es)

Class 2.2

Subsidiary risk -

Packing group Not applicable.

Environmental hazards Not available.

Special precautions for user Read safety instructions, MSDS and emergency procedures before handling.

IATA

UN number UN1950

UN proper shipping name Aerosols, non-flammable

Transport hazard class(es)

Class 2.2

Subsidiary risk -

Packing group Not applicable.

Environmental hazards No.

ERG Code 2L

Special precautions for user Read safety instructions, MSDS and emergency procedures before handling.

Other information

Passenger and cargo aircraft	Allowed.
Cargo aircraft only	Allowed.

IMDG

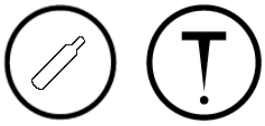
UN number	UN1950
UN proper shipping name	AEROSOLS, non-flammable
Transport hazard class(es)	
Class	2.2
Subsidiary risk	-
Label(s)	2.2
Packing group	Not applicable.
Environmental hazards	
Marine pollutant	No.
EmS	F-D, S-U
Special precautions for user	Read safety instructions, MSDS and emergency procedures before handling.

IATA; IMDG; TDG

15. Regulatory Information

Canadian regulations	This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.
WHMIS status	Controlled
WHMIS classification	A - Compressed Gas D2A - Other Toxic Effects-VERY TOXIC D2B - Other Toxic Effects-TOXIC

WHMIS labeling



International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Prepared by

Not available.

This data sheet contains changes from the previous version in section(s):

GHS: Classification