SAFETY DATA SHEET

1. Identification

Product identifier LPS® NoFlash

Other means of identification

Part Number 04016

Recommended 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.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer Manufacturer

> ITW Pro Brands Company name 4647 Hugh Howell Rd. **Address**

> > Tucker, GA 30084

Country (U.S.A.)

Tel: +1 770-243-8800

In Case of Emergency 1-800-424-9300 (inside U.S.)

+001 703-527-3887 (outside U.S.)

Website www.lpslabs.com

E-mail lpssds@itwprobrands.com

2. Hazard(s) identification

Physical hazards Gases under pressure Liquefied gas Health hazards Skin corrosion/irritation Category 2

Category 2A Serious eye damage/eye irritation Carcinogenicity Category 2 Reproductive toxicity Category 1B

Specific target organ toxicity, single exposure Category 3 respiratory tract irritation

Specific target organ toxicity, single exposure Category 3 narcotic effects

Specific target organ toxicity, repeated Category 2 (Liver, Central Nervous System)

exposure

Environmental hazards Not classified. **OSHA** defined hazards Not classified.

Label elements



Signal word Danger

Contains gas under pressure; may explode if heated. Causes skin irritation. Causes serious eye **Hazard statement**

irritation. Suspected of causing cancer. May damage fertility or the unborn child. May cause respiratory irritation. May cause drowsiness or dizziness. May cause damage to organs (Liver,

Central Nervous System) through prolonged or repeated exposure.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read

and understood. Do not breathe gas. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.

Material name: LPS® NoFlash SDS US

If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Response

Specific treatment (see this label). Take off contaminated clothing and wash before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get

medical advice/attention. If exposed or concerned: Get medical advice/attention.

Storage Store in a well-ventilated place. Keep container tightly closed. Store locked up. Protect from

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)

None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Ingestion

| Chemical name | Common name and synonyms | CAS number | % |
|---|--------------------------|------------|---------|
| n-Propyl Bromide | | 106-94-5 | 60 - 70 |
| Ethane, 1,1,1,2-tetrafluoro-(hfc-134a) | | 811-97-2 | 30 - 40 |
| 1-Propanol | | 71-23-8 | 1 - 5 |
| 1,2 Butylene Oxide | | 106-88-7 | < 1 |
| t-Butanol | | 75-65-0 | < 1 |

4. First-aid measures

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.

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

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

Call a physician or poison control center immediately. Only induce vomiting at the instruction of

experience eye tearing, redness, and discomfort. Symptoms of overexposure may be headache,

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.

Skin irritation. Defatting of the skin. May cause redness and pain. Exposed individuals may

Most important symptoms/effects, acute and

delayed

Indication of immediate medical attention and special treatment needed

dizziness, tiredness, nausea and vomiting. Provide general supportive measures and treat symptomatically.

General information 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

Suitable extinguishing media

Unsuitable extinguishing media

Powder. Alcohol resistant foam. Water spray. Carbon dioxide (CO2). Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical

Contents under pressure.

Special protective equipment and precautions for firefighters

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

Fire fighting equipment/instructions In case of fire: Stop leak if safe to do so. Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Cool containers exposed to flames with water until well after the fire is out. In the event of fire and/or explosion do not breathe fumes.

General fire hazards

Pressurized container may explode when exposed to heat or flame.

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6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Avoid breathing gas. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up

Refer to attached safety data sheets and/or instructions for use. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Stop leak if you can do so without risk. Move the cylinder to a safe and open area if the leak is irreparable. Isolate area until gas has dispersed. Use water spray to reduce vapors or divert vapor cloud drift. Scoop up used absorbent into drums or other appropriate container. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.

Environmental precautions

Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. 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. Do not re-use empty containers. Do not breathe gas. Avoid contact with eyes, skin, and clothing. Avoid contact during pregnancy/while nursing. Avoid prolonged exposure. Do not taste or swallow. When using, do not eat, drink or smoke. Use only in well-ventilated areas. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Level 1 Aerosol.

Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122°F. Store locked up. 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 original tightly closed container. Store in a well-ventilated place. Keep out of the reach of children.

8. Exposure controls/personal protection

Occupational exposure limits

| Components | Туре | Value | |
|--|---------------|-----------|--|
| 1-Propanol (CAS 71-23-8) | PEL | 500 mg/m3 | |
| | | 200 ppm | |
| t-Butanol (CAS 75-65-0) | PEL | 300 mg/m3 | |
| | | 100 ppm | |
| US. ACGIH Threshold Limit Value | s | | |
| Components | Туре | Value | |
| 1-Propanol (CAS 71-23-8) | TWA | 100 ppm | |
| n-Propyl Bromide (CAS | TWA | 0.1 ppm | |
| 106-94-5) | | | |
| t-Butanol (CAS 75-65-0) | TWA | 100 ppm | |
| US. NIOSH: Pocket Guide to Cher | nical Hazards | | |
| Components | Type | Value | |
| 1-Propanol (CAS 71-23-8) | STEL | 625 mg/m3 | |
| | | 250 ppm | |
| | TWA | 500 mg/m3 | |
| | | 200 ppm | |
| t-Butanol (CAS 75-65-0) | STEL | 450 mg/m3 | |
| , | | 150 ppm | |
| | TWA | 300 mg/m3 | |
| | | 100 ppm | |

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US. Workplace Environmental Exposure Level (WEEL) Guides **Form** Value Components Type 1,2 Butylene Oxide (CAS TWA 5.9 mg/m3 106-88-7) 2 ppm Ethane, **TWA** 1000 ppm 8 hour 1,1,1,2-tetrafluoro-(hfc-134a) (CAS 811-97-2)

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

Exposure guidelines

US - California OELs: Skin designation

1-Propanol (CAS 71-23-8) Can be absorbed through the skin. n-Propyl Bromide (CAS 106-94-5) Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

1-Propanol (CAS 71-23-8) Skin designation applies.

US NIOSH Pocket Guide to Chemical Hazards: Skin designation

1-Propanol (CAS 71-23-8) Can be absorbed through the skin.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

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

are recommended.

Skin protection

Viton or nitrile rubber gloves are recommended. Hand protection Wear appropriate chemical resistant clothing. Other

Respiratory protection When workers are facing concentrations above the exposure limit they must use appropriate

certified respirators. Chemical respirator with organic vapor cartridge.

Thermal hazards Not applicable.

General hygiene considerations

When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely

wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Gas. Physical state Aerosol. **Form** Color Clear Odor Strong.

Odor threshold Not established Not applicable Melting point/freezing point Not established 158 °F (70 °C) Initial boiling point and boiling

range

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

Evaporation rate 6 BuAc Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits Flammability limit - lower 4 %

(%)

Flammability limit - upper

8 %

(%)

Explosive limit - lower (%) Not available. Not available. Explosive limit - upper (%)

Material name: LPS® NoFlash SDS US Vapor pressure > 100 mm Hg @20°C

Vapor density ~4.3 (air = 1)

Relative density Not available.

Solubility(ies)

Solubility (water) 3 - 5 %Partition coefficient > 1

(n-octanol/water)

Auto-ignition temperature> 914 °F (> 490 °C)Decomposition temperatureNot establishedViscosityNot available.

Other information

Specific gravity 1.29 - 1.32 @20°C

VOC 70.1 % per US State and Federal Consumer Product Regulations

10. Stability and reactivity

ReactivityThe product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability Material is stable under normal conditions.

Possibility of hazardous Hazardous polymerization does not occur.

reactions

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.

11. Toxicological information

Information on likely routes of exposure

Inhalation Irritating to respiratory system. Vapors have a narcotic effect and may cause headache, fatigue,

dizziness and nausea.

Skin contact Causes skin irritation.

Eye contact Causes serious eye irritation.

Ingestion May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of

occupational exposure.

Symptoms related to the physical, chemical and toxicological characteristics

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.

Information on toxicological effects

Acute toxicity Narcotic effects. May cause respiratory irritation.

| Components | Species | Test Results |
|-------------|---------|--------------|
| | | |

1,2 Butylene Oxide (CAS 106-88-7)

| <u>Acute</u> | | |
|--------------|--------|-----------------------------|
| Dermal | | |
| LD50 | Rabbit | 1500 - 2950 mg/kg, 24 Hours |
| Inhalation | | |
| Vapor | | |
| LC50 | Rat | > 6.3 mg/l, 4 Hours |
| Oral | | |
| LD50 | Rat | 1 - 1.58 mg/kg |

Material name: LPS® NoFlash SDS US

Components Species Test Results

1-Propanol (CAS 71-23-8)

Acute Dermal

LD50 Rabbit 4032 mg/kg, 24 Hours

Oral

LD50 Rat 1870 mg/kg

n-Propyl Bromide (CAS 106-94-5)

Acute Dermal

LD50 Rat > 2000 mg/kg, 24 Hours

Oral

LD50 Rat > 2000 mg/kg

t-Butanol (CAS 75-65-0)

<u>Acute</u>

Oral

LD50 Rat 3.5 g/kg

Skin corrosion/irritationCauses skin irritation.

Serious eye damage/eye

Causes serious eye irritation.

irritation

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicityNo data available to indicate product or any components present at greater than 0.1% are

mutagenic or genotoxic.

Carcinogenicity Suspected of causing cancer.

ACGIH Carcinogens

1-Propanol (CAS 71-23-8) A4 Not classifiable as a human carcinogen.

n-Propyl Bromide (CAS 106-94-5)

A3 Confirmed animal carcinogen with unknown relevance to

humans.

t-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.n-Propyl Bromide (CAS 106-94-5)2B Possibly carcinogenic to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

n-Propyl Bromide (CAS 106-94-5)

Reasonably Anticipated to be a Human Carcinogen.

Reproductive toxicity May damage fertility or the unborn child.

Specific target organ toxicity -

single exposure

May cause respiratory irritation. May cause drowsiness or dizziness.

Specific target organ toxicity -

repeated exposure

May cause damage to organs (Liver, Central Nervous System) through prolonged or repeated

exposure.

Aspiration hazard Not an aspiration hazard.

Chronic effects May cause damage to organs through prolonged or repeated exposure.

Further information Symptoms may be delayed.

12. Ecological information

Ecotoxicity Harmful to aquatic life with long lasting effects.

Components Species Test Results

1-Propanol (CAS 71-23-8)

Aquatic

Crustacea EC50 Water flea (Daphnia magna) 3339 - 3977 mg/l, 48 hours

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Components Species Test Results

Fish LC50 Bleak (Alburnus alburnus) 3000 - 4000 mg/l, 96 hours

n-Propyl Bromide (CAS 106-94-5)

Aquatic

Fish LC50 Fathead minnow (Pimephales promelas) 67.3 mg/l, 96 hours

t-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

Persistence and degradability Not inherently biodegradable.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)

 LPS® NoFlash
 > 1

 1-Propanol
 0.25

 Ethane, 1,1,1,2-tetrafluoro-(hfc-134a)
 1.06

 n-Propyl Bromide
 2.1

 t-Butanol
 0.35

Mobility in soil Readily absorbed into soil.

Other adverse effects None known.

13. Disposal considerations

Disposal instructionsConsult authorities before disposal. Contents under pressure. Do not puncture, incinerate or crush.

Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code D001: Waste Flammable material with a flash point <140 F

D003: Waste Reactive material

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

DOT

UN number UN1950

UN proper shipping name Aerosols, non-flammable, (each not exceeding 1 L capacity)

Transport hazard class(es)

Class 2.2 Subsidiary risk -Label(s) 2.2

Packing group Not available. Special precautions for user Not available.

Packaging exceptions 306
Packaging non bulk None
Packaging bulk None

IATA

UN number UN1950

UN proper shipping name Aerosols, non-flammable

Transport hazard class(es)

Class 2.2 Subsidiary risk -

Packing group Not available.

Environmental hazards No. **ERG Code** 2L

Special precautions for user Not available.

Material name: LPS® NoFlash sps us

Other information

Passenger and cargo

aircraft

Allowed with restrictions.

Cargo aircraft only

Allowed with restrictions.

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 available.

Environmental hazards

Marine pollutant No.

EmS F-D, S-U

Special precautions for user Not available.

Transport in bulk according to Not applicable.

Annex II of MARPOL 73/78 and

the IBC Code

DOT



IATA; IMDG



15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication

Standard, 29 CFR 1910.1200.

All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

1,2 Butylene Oxide (CAS 106-88-7) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous Yes

chemical

Material name: LPS® NoFlash

SARA 313 (TRI reporting)

| Chemical name | CAS number | % by wt. | |
|--------------------|------------|----------|--|
| 1,2-BUTYLENE OXIDE | 106-88-7 | < 1 | |
| 1-BROMOPROPANE | 106-94-5 | 60 - 70 | |

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

1,2 Butylene Oxide (CAS 106-88-7)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act

Not regulated.

(SDWA)

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace

1-Propanol (CAS 71-23-8) Low priority

US state regulations

US. New Jersey Worker and Community Right-to-Know Act

1,2 Butylene Oxide (CAS 106-88-7)

1-Propanol (CAS 71-23-8)

n-Propyl Bromide (CAS 106-94-5)

t-Butanol (CAS 75-65-0)

California Proposition 65



WARNING: WARNING: This product contains a chemical known to the State of California to cause birth

defects or other reproductive harm.

California Proposition 65 - CRT: Listed date/Carcinogenic substance

n-Propyl Bromide (CAS 106-94-5) Listed: August 5, 2016

California Proposition 65 - CRT: Listed date/Developmental toxin

n-Propyl Bromide (CAS 106-94-5) Listed: December 7, 2004

California Proposition 65 - CRT: Listed date/Female reproductive toxin

n-Propyl Bromide (CAS 106-94-5) Listed: December 7, 2004

California Proposition 65 - CRT: Listed date/Male reproductive toxin

n-Propyl Bromide (CAS 106-94-5) Listed: December 7, 2004

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

1,2 Butylene Oxide (CAS 106-88-7)

n-Propyl Bromide (CAS 106-94-5)

t-Butanol (CAS 75-65-0)

International Inventories

| Country(s) or region | Inventory name On inve | ntory (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 |
| Taiwan | Taiwan Toxic Chemical Substances (TCS) | Yes |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes |
| ## H3 (H) 1 | | |

^{*}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).

Material name: LPS® NoFlash SDS US

04016 Version #: 02 Revision date: 02-13-2018 Issue date: 05-26-2016

16. Other information, including date of preparation or last revision

 Issue date
 05-26-2016

 Revision date
 02-13-2018

Version # 02

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.

Revision information Composition / Information on Ingredients: Disclosure Overrides

Physical and chemical properties: Appearance

GHS: Qualifiers

Material name: LPS® NoFlash sps us