LPS

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

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

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 hazardsGases under pressureLiquefied gasHealth hazardsAcute toxicity, oralCategory 4Skin corrosion/irritationCategory 2

Serious eye damage/eye irritation

Category 2

Carcinogenicity

Category 2

Reproductive toxicity

Category 1

Category 1

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

exposure

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements



Signal word Danger

Hazard statement Contains gas under pressure; may explode if heated. Harmful if swallowed. Causes skin irritation.

Causes serious eye irritation. May cause respiratory irritation. May cause drowsiness or dizziness. Suspected of causing cancer. May damage fertility or the unborn child. May cause damage to

Category 2

organs 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. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective

gloves/protective clothing/eye protection/face protection.

Material name: LPS® NoFlash SDS US

Response If swallowed: Call a poison center/doctor if you feel unwell. Rinse mouth. If on skin: Wash with

plenty of water. If skin irritation occurs: Get medical advice/attention. 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

sunlight.

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

Chemical name	Common name and synonyms	CAS number	%
n-Propyl Bromide		106-94-5	60 - 70
ETHANE, 1,1,1,2-TETRAFLUORO-(HFC-134 a)	REFRIGERANT GAS R-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.

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.

protection and easy to do: Continuo mong. Got model attention in matter develope and personal

IngestionCall 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.

Most important symptoms/effects, acute and

Skin irritation. Defatting of the skin. May cause redness and pain. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

delayed
Indication of immediate Provide general sup

medical attention and special treatment needed

Provide general supportive measures and treat symptomatically.

General information

media

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

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

Specific methods

In case of fire: Stop leak if safe to do so. Do not move cargo or vehicle if cargo has been exposed to heat. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. 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.

Cool containers exposed to flames with water until well after the fire is out.

Material name: LPS® NoFlash

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. Use personal protection recommended in Section 8 of the SDS.

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. For waste disposal, see section 13 of the SDS.

Environmental precautions

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. Ground and bond containers when transferring material. 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. 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 original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Keep out of the reach of children.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air 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\A/A	100	
t-Butanol (CAS 75-65-0)	TWA	100 ppm	
US. NIOSH: Pocket Guide to Cher	nical Hazards		
Components	Туре	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** Components Value Type 1,2 Butylene Oxide (CAS TWA 5.9 mg/m3 106-88-7) 2 ppm 1000 ppm ETHANE. **TWA** 8 hour 1,1,1,2-TETRAFLUORO-(H

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

Exposure guidelines

FC-134a) (CAS 811-97-2)

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. Suitable gloves can be recommended by the Hand protection

glove supplier.

Other Wear suitable protective clothing. Wear protective gloves.

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

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

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

range

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

Evaporation rate 6 BuAc

Not applicable. Flammability (solid, gas) Upper/lower flammability or explosive limits

Flammability limit - lower

4 %

Flammability limit - upper

8 %

(%)

Explosive limit - lower (%) Not available.

Material name: LPS® NoFlash SDS US Explosive limit - upper (%) Not available.

> 100 mm Hg @20°C Vapor pressure

Vapor density \sim 4.3 (air = 1) Relative density Not available.

Solubility(ies)

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

(n-octanol/water)

> 914 °F (> 490 °C) **Auto-ignition temperature Decomposition temperature** Not established Not available. **Viscosity**

Other information

Heat of combustion 12 kJ/g Percent volatile 100 %

1.29 - 1.32 @20°C Specific gravity

VOC (Weight %) 70.1 % per US State and Federal Consumer Product Regulations

10. Stability and reactivity

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

Material is stable under normal conditions. **Chemical stability** 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.

Causes serious eye irritation. Eye contact

Ingestion Harmful if swallowed.

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

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

Rat LD50 500 mg/kg

1-Propanol (CAS 71-23-8)

Acute

Dermal

LD50 Rabbit 4032 mg/kg, 24 Hours

Material name: LPS® NoFlash SDS US

Components	Species	Test Results		
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		
n-Propyl Bromide (CAS 106-94	l-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		
t-Butanol (CAS 75-65-0)				
Acute				
Oral				
LD50	Rabbit	3.6 g/kg		
	Rat	3.5 g/kg		
Skin corrosion/irritation	Causes skin irritation.			
Serious eye damage/eye irritation	Causes serious eye irritation.			
Respiratory or skin sensitizat	tion			
Respiratory sensitization				
Skin sensitization	This product is not expected to cause skin sensitization.			

This product is not expected to cause skin sensitization.

Germ cell mutagenicity No 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

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.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

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 -May cause damage to organs (nervous system) through prolonged or repeated exposure.

repeated exposure

Material name: LPS® NoFlash SDS US **Aspiration hazard** Not an aspiration hazard.

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

repeated exposure.

12. Ecological information

Ecotoxicity Harmful to aquatic life with long lasting effects.

Components		Species	Test Results
1-Propanol (CAS 71-2	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
n-Propyl Bromide (CA	S 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

Not inherently biodegradable. Persistence and degradability

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

Consult authorities before disposal. Contents under pressure. Do not puncture, incinerate or crush. **Disposal instructions**

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

Local disposal regulations Dispose in accordance with all applicable regulations.

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

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 applicable.

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

Packaging exceptions 306 Packaging non bulk None Packaging bulk None

IATA

UN number UN1950

Material name: LPS® NoFlash SDS US 7/10 04016 Version #: 05 Revision date: 03-15-2015 Issue date: 05-26-2014

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, SDS and emergency procedures before handling.

Other information

Passenger and cargo Allowed.

aircraft

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

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

Not applicable.

Transport in bulk according to Annex II of MARPOL 73/78 and

the IBC Code

DOT



IATA; IMDG



15. Regulatory information

US federal regulationsThis 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.

Material name: LPS® NoFlash

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes

Delayed Hazard - Yes Fire Hazard - No Pressure Hazard - Yes Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous

Yes

chemical

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
1,2-BUTYLENE OXIDE	106-88-7	< 1

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)

US state regulations

US - California Candidate Chemicals: Listed

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

t-Butanol (CAS 75-65-0)

US - California Candidate Chemicals: Listed on initial list

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

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. Massachusetts RTK - Substance List

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)

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)

US. Pennsylvania Worker and Community Right-to-Know Law

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)

US. Rhode Island RTK

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

t-Butanol (CAS 75-65-0)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

US - California Proposition 65 - CRT: Listed date/Developmental toxin

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

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

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

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

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

Material name: LPS® NoFlash SDS US

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	Yes

(PICCS)

United States & Puerto Rico Toxic Substances Control Act (TSCA) Inventory

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

 Issue date
 05-26-2014

 Revision date
 03-15-2015

Version # 05

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 GHS: Classification

Material name: LPS® NoFlash sps us

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).