

Reviewed on 07/12/2024

1 Identification

- · Product identifier
- · Product Name: LFS Solution 1
- · Part Number:
- LFS-1-100
- LFS-1-100N LFS-1-500
- LFS-1-500N
- · Application of the substance / the mixture For Laboratory Use Only
- · Uses advised against Not for Human or Animal Use
- Details of the supplier of the safety data sheet
 Manufacturer/Supplier:
 Spex CertiPrep, LLC.
 203 Norcross Ave, Metuchen,
 NJ 08840 USA
- 732-549-7144 USMet-CRMSales@antylia.com

· Information department: product safety department

- Emergency telephone number: Emergency Phone Number (24 hours)
- CHEMTREC (800-424-9300) Outside US: 703-527-3887

2 Hazard(s) identification

· Classification of the substance or mixture



Skin Corrosion 1B H314 Causes severe skin burns and eye damage.

- *Eye Damage 1* H318 Causes serious eye damage.
- · Label elements
- GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).
- Hazard pictograms



· Signal word Danger

- · Hazard-determining components of labeling:
- nitric acid
- · Hazard statements
- H314 Causes severe skin burns and eye damage.
- · Precautionary statements
- P260 Do not breathe dusts or mists.
- P264 Wash thoroughly after handling.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.
- P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 Immediately call a poison center/doctor.
- P321 Specific treatment (see on this label).
- P363 Wash contaminated clothing before reuse.
- P405 Store locked up.
- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
- · Classification system:
- · NFPA ratings (scale 0 4)





Product Name: LFS Solution 1

· HMIS-ratings (scale 0 - 4)

HEALTH	3	Health = 3
FIRE		Fire = 0
REACTIVITY	0	Reactivity = 0

· Other hazards

- · Results of PBT and vPvB assessment
- **PBT:** Not applicable.
- · vPvB: Not applicable.

3 Composition/information on ingredients

· Chemical characterization: Mixtures

• Description: Mixture of the substances listed below with nonhazardous additions.

·Dangerous	components:	
7697-37-2	nitric acid	5.0%
7664-39-3	hydrofluoric acid	0.2%
· Chemical i	dentification of the substance/preparation	
7732-18-5	water, distilled, conductivity or of similar purity	94.7317%
87-69-4	(+)-tartaric acid	0.015%
7723-14-0	phosphorus	0.005%
7429-90-5	aluminium	0.0025%
7439-89-6	iron	0.0025%
7439-92-1	lead	0.0025%
7439-93-2	lithium	0.0025%
7439-96-5	manganese	0.0025%
7440-02-0	nickel	0.0025%
7440-24-6	strontium	0.0025%
7440-28-0	thallium	0.0025%
7440-36-0	antimony	0.0025%
7440-38-2	arsenic	0.0025%
7440-39-3	barium	0.0025%
7440-42-8	Boron from Ammonium tetraborate tetrahydrate	0.0025%
7440-47-3	chromium	0.0025%
7440-50-8	copper	0.0025%
7440-66-6	zinc	0.0025%
7631-86-9	Silica	0.0025%
7782-49-2	selenium	0.0025%
7439-98-7	molybdenum	0.001%
7440-31-5	tin	0.001%
7440-43-9	cadmium	0.001%
7440-48-4	cobalt	0.001%
7440-62-2	vanadium	0.001%
7440-41-7	Beryllium from Beryllium Acetate	0.0005%
7440-22-4	silver	0.0003%

Safety Data Sheet

acc. to OSHA HCS

4 First-aid measures

- · Description of first aid measures
- · General information: Immediately remove any clothing soiled by the product.
- · After inhalation: Supply fresh air; consult doctor in case of complaints.
- · After skin contact: Immediately rinse with water.
- After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.
- · After swallowing: Do not give anything to eat or drink Do not induce vomitting
- · Information for Doctor:
- · Most important symptoms and effects, both acute and delayed No further relevant information available.
- Indication of any immediate medical attention and special treatment needed No further relevant information available.

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5 Fire-fighting measures

- · Extinguishing media
- Suitable extinguishing agents: Use fire fighting measures that suit the environment.
- Special hazards arising from the substance or mixture During heating or in case of fire poisonous gases are produced.
- · Advice for firefighters

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· Protective equipment: Mouth respiratory protective device.

6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures
Mount respiratory protective device.
Wear protective equipment. Keep unprotected persons away.
· Environmental precautions:
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
· Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.
· Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
Protective Action Criteria for Chemicals

· PAC-1:	Action Crueria for Chemicais	
		0.16
7697-37-2		0.16 ppm
	hydrofluoric acid	1.0 ppm
	(+)-tartaric acid	1.6 mg/m ³
	phosphorus	$0.27 mg/m^3$
7439-89-6		3.2 mg/m ³
7439-92-1		0.15 mg/m ³
7439-93-2		3.3 mg/m ³
	manganese	3 mg/m ³
7440-02-0		$4.5 mg/m^3$
7440-24-6	strontium	30 mg/m ³
7440-28-0		0.06 mg/m ³
7440-36-0	antimony	1.5 mg/m ³
7440-38-2	arsenic	1.5 mg/m ³
7440-39-3	barium	1.5 mg/m ³
7440-42-8	Boron from Ammonium tetraborate tetrahydrate	1.9 mg/m ³
7440-47-3	chromium	1.5 mg/m ³
7440-50-8	copper	3 mg/m ³
7440-66-6	zinc	$6 mg/m^3$
7631-86-9	Silica	18 mg/m ³
7782-49-2	selenium	$0.6 mg/m^3$
7439-98-7	molybdenum	30 mg/m ³
7440-31-5	tin	6 mg/m ³
7440-43-9	cadmium	0.10 mg/m^3
7440-48-4	cobalt	0.18 mg/m^3
7440-62-2	vanadium	3 mg/m ³
7440-41-7	Beryllium from Beryllium Acetate	0.0023 mg/m ³
7440-22-4		$0.3 mg/m^3$
· PAC-2:		L
7697-37-2	nitric acid	24 ppm
7664-39-3	hydrofluoric acid	24 ppm
	(+)-tartaric acid	17 mg/m ³
	phosphorus	3 mg/m ³
7439-89-6		35 mg/m ³
		(Contd. on page 4

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	(C	ontd. of page 3)
7439-92-1		120 mg/m ³
7439-93-2		36 mg/m ³
7439-96-5	manganese	$5 mg/m^3$
7440-02-0	nickel	50 mg/m ³
7440-24-6	strontium	330 mg/m ³
7440-28-0	thallium	3.3 mg/m ³
7440-36-0	antimony	13 mg/m ³
7440-38-2	arsenic	17 mg/m ³
7440-39-3	barium	180 mg/m ³
7440-42-8	Boron from Ammonium tetraborate tetrahydrate	21 mg/m ³
7440-47-3		17 mg/m ³
7440-50-8	copper	33 mg/m ³
7440-66-6	zinc	21 mg/m ³
7631-86-9	Silica	740 mg/m ³
7782-49-2		6.6 mg/m ³
7439-98-7	molybdenum	330 mg/m ³
7440-31-5		67 mg/m ³
7440-43-9	cadmium	0.76 mg/m ³
7440-48-4		2 mg/m ³
7440-62-2		5.8 mg/m ³
	Beryllium from Beryllium Acetate	0.025 mg/m ³
7440-22-4	silver	170 mg/m ³
· PAC-3:		
7697-37-2		92 ppm
	hydrofluoric acid	44 ppm
87-69-4	(+)-tartaric acid	100 mg/m ³
	phosphorus	18 mg/m ³
7439-89-6	iron	150 mg/m ³
7439-92-1	lead	700 mg/m ³
7439-93-2		220 mg/m ³
	manganese	1,800 mg/m ³
7440-02-0		99 mg/m ³
7440-24-6	strontium	2,000 mg/m ³
7440-28-0		20 mg/m ³
7440-36-0		80 mg/m ³
7440-38-2		100 mg/m ³
7440-39-3		1,100 mg/m ³
	Boron from Ammonium tetraborate tetrahydrate	130 mg/m ³
7440-47-3		99 mg/m ³
7440-50-8		200 mg/m ³
7110 66 6		120

7 Handling and storage

7440-66-6 zinc

7440-31-5 tin

7631-86-9 Silica

7782-49-2 selenium

7440-43-9 cadmium

7440-62-2 vanadium

7440-48-4 cobalt

7440-22-4 silver

7439-98-7 molybdenum

· Handling:

· Precautions for safe handling

Ensure good ventilation/exhaustion at the workplace. Prevent formation of aerosols.

7440-41-7 Beryllium from Beryllium Acetate

120 mg/m³

40 mg/m³

4,500 mg/m³

2,000 mg/m³

400 mg/m³

 $4.7 mg/m^3$

20 mg/m³

35 mg/m³

 $0.1 \, mg/m^3$

990 mg/m³



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• Information about protection against explosions and fires: Keep respiratory protective device av
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- · Conditions for safe storage, including any incompatibilities
- · Storage:
- Requirements to be met by storerooms and receptacles: No special requirements.
- · Information about storage in one common storage facility: Not required.
- · Further information about storage conditions: Keep receptacle tightly sealed.
- · Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

· Additional information about design of technical systems: No further data; see section 7.

- · Control parameters
- · Components with limit values that require monitoring at the workplace:

The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit. At this time, the remaining constituent has no known exposure limits.

7664-39-3 hydrofluoric acid

- PEL Long-term value: 1* mg/m³, 3 ppm as F, *sulfuric acid REL Long-term value: 2.5 mg/m³, 3 ppm Ceiling limit value: 5* mg/m³, 6* ppm *15-min, as F
- TLV Long-term value: 0.5 ppm Ceiling limit value: 2 ppm as F; Skin, BEI

· Ingredients with biological limit values:

7664-39-3 hydrofluoric acid BEI 3 mg/g creatinine

Medium: urine Time: prior to shift Parameter: Fluorides (background, nonspecific) 10 mg/g creatinine Medium: urine Time: end of shift

Parameter: Fluorides (background, nonspecific)

· Additional information: The lists that were valid during the creation were used as basis.

· Exposure controls

· Personal protective equipment:

· General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work. Avoid contact with the eyes.

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

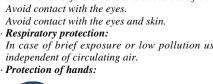
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

• Penetration time of glove material The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

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Product Name: LFS Solution 1

· Eye protection:



🖒 🔰 Tightly sealed goggles

9 Physical and chemical propertie	S S	
· Information on basic physical and chemical properties		
· General Information		
· Appearance:		
Form:	Liquid	
Color:	According to product specification	
· Odor:	Characteristic	
· Odour Threshold:	Not applicable.	
· pH-value:	Not applicable.	
· Change in condition		
Melting point/Melting range:	Undetermined.	
Boiling point/Boiling range:	83 °C (181.4 °F)	
· Flash point:	Not applicable.	
· Flammability (solid, gaseous):	Not applicable.	
• Decomposition temperature:	Not applicable.	
· Ignition temperature:	Product is not selfigniting.	
• Danger of explosion:	Product does not present an explosion hazard.	
· Explosion limits:		
Lower:	Not applicable.	
Upper:	Not applicable.	
· Vapor pressure at 20 °C (68 °F):	23 hPa (17.3 mm Hg)	
· Density	Not applicable.	
· Relative density	Not applicable.	
· Vapor density	Not applicable.	
· Evaporation rate	Not applicable.	
· Solubility in / Miscibility with		
Water:	Fully miscible.	
· Partition coefficient (n-octanol/water): Not applicable.		
Viscosity:		
Dynamic:	Not applicable.	
Kinematic:	Not applicable.	
· Solvent content:		
Water:	94.7 %	
VOC content:	0.00 %	
Solids content:	0.1 %	
· Other information	No further relevant information available.	

10 Stability and reactivity

• *Reactivity* No further relevant information available.

· Chemical stability

• Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

· Possibility of hazardous reactions No dangerous reactions known.

• Conditions to avoid No further relevant information available.

· Incompatible materials: No further relevant information available.

· Hazardous decomposition products: No dangerous decomposition products known.

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Safety Data Sheet acc. to OSHA HCS

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11 Toxicological information	
· Information on toxicological effects	
· Acute toxicity:	
· LD/LC50 values that are relevant for classification:	
7697-37-2 nitric acid	
Inhalative LC50/4 h 2.65 mg/l (ATE)	
Primary irritant effect:	
• on the skin: Caustic effect on skin and mucous membranes.	
• on the eye:	
Strong caustic effect. Strong irritant with the danger of severe eye injury.	
• Sensitization: No sensitizing effects known.	
· Additional toxicological information:	
The product shows the following dangers according to internally approved calculation methods for preparations:	
Corrosive	
Irritant	
· Carcinogenic categories	
· IARC (International Agency for Research on Cancer)	
7439-92-1 lead	28
7440-02-0 nickel	28
7440-38-2 arsenic	1
7440-47-3 chromium	3
7631-86-9 Silica	3
7782-49-2 selenium	3
7440-43-9 cadmium	1
7440-48-4 cobalt	28
7440-41-7 Beryllium from Beryllium Acetate	1
·NTP (National Toxicology Program)	
7439-92-1 lead	R
7440-02-0 nickel	R
7440-38-2 arsenic	K
7440-43-9 cadmium	K
7440-48-4 cobalt	R
7440-41-7 Beryllium from Beryllium Acetate	K
• OSHA-Ca (Occupational Safety & Health Administration)	
7440-38-2 arsenic	
7440-43-9 cadmium	

12 Ecological information

· Toxicity

- · Aquatic toxicity: No further relevant information available.
- Persistence and degradability No further relevant information available.
- · Behavior in environmental systems:
- \cdot **Bioaccumulative potential** No further relevant information available.
- · Mobility in soil No further relevant information available.
- Additional ecological information:
- · General notes:
- Water hazard class 2 (Self-assessment): hazardous for water Do not allow product to reach ground water, water course or sewage system. Must not reach bodies of water or drainage ditch undiluted or unneutralized. Danger to drinking water if even small quantities leak into the ground.
- · Results of PBT and vPvB assessment
- · PBT: Not applicable.
- · vPvB: Not applicable.
- · Other adverse effects No further relevant information available.

13 Disposal considerations

· Waste treatment methods

• Recommendation: Must not be disposed of together with household garbage. Do not allow product to reach sewage system.



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· Uncleaned packagings:

- Recommendation: Disposal must be made according to official regulations.
- · Recommended cleansing agent: Water, if necessary with cleansing agents.

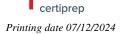
14 Transport information	
· UN-Number · DOT, ADR, IMDG, IATA	UN3264
 UN proper shipping name DOT ADR IMDG, IATA 	Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid) 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID) CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)
· Transport hazard class(es)	
- DOT	8 Corrosive substances
· Label	8
· ADR, IMDG, IATA	
· Class · Label	8 Corrosive substances 8
· Packing group · DOT, ADR, IMDG, IATA	111
· Environmental hazards:	Not applicable.
 Special precautions for user Hazard identification number (Kemler code): EMS Number: Segregation groups Stowage Category Stowage Code Segregation Code 	Warning: Corrosive substances 80 F-A,S-B (SGG1) Acids A SW2 Clear of living quarters. SG36 Stow "separated from" SGG18-alkalis. SG49 Stow "separated from" SGG6-cyanides
· Transport in bulk according to Annex II of MARPOL73/78 and the	
· Transport/Additional information:	
· ADR · Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· IMDG · Limited quantities (LQ) · Excepted quantities (EQ)	5L Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· UN "Model Regulation":	UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID), 8, III

15 Regulatory information

· Safety, health and environmental regulations/legislation specific for the substance or mixture No further relevant information available. · Sara

· Section 313 (Specific toxic chemical listings):	
7697-37-2 nitric acid	
7664-39-3 hydrofluoric acid	
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7722 14 0		(Contd. of page 8
7429-90-5	phosphorus	
7429-90-3		
7439-93-2		
	manganese	
7440-02-0		
7440-28-0		
7440-36-0		
7440-38-2		
7440-39-3		
7440-47-3		
7440-50-8		
7440-66-6		
7782-49-2	selenium	
7440-43-9	cadmium	
7440-48-4	cobalt	
7440-62-2	vanadium	
7440-41-7	Beryllium from Beryllium Acetate	
7440-22-4		
	ic Substances Control Act):	
	ents have the value ACTIVE.	
_		
-	Air Pollutants	
	hydrofluoric acid	
	phosphorus	
7439-92-1		
	manganese	
7440-48-4		
· Propositio		
	known to cause cancer:	
7439-92-1		
7440-02-0	nickel	
7440-38-2		
7440-43-9	cadmium	
7440-48-4	cobalt	
7440-41-7	Beryllium from Beryllium Acetate	
	known to cause reproductive toxicity for females:	
	ingredients is listed.	
	known to cause reproductive toxicity for males:	
7440-43-9		
	known to cause developmental toxicity:	
7439-93-2		
7440-43-9	cadmium	
	ic categories	
	ronmental Protection Agency)	
7439-92-1		B2
7439-96-5	manganese	D
7440-38-2		A
7440-39-3	barium	D, CBD(inh), NL(oral)

7440-38-2	arsenic	Α
7440-39-3	barium	D, CBD(inh), NL(oral)
7440-42-8	Boron from Ammonium tetraborate tetrahydrate	I (oral)
7440-50-8	copper	D
7440-66-6	zinc	D, I, II
7782-49-2	selenium	D
7440-43-9		B1
7440-41-7	Beryllium from Beryllium Acetate	B1, K/L(inh), CBD(oral)
7440-22-4	silver	D
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· TLV (Threshold Limit Value)	
7429-90-5 aluminium	A4
7439-92-1 lead	A3
7440-02-0 nickel	A5
7440-38-2 arsenic	Al
7440-39-3 barium	A4
7439-98-7 molybdenum	A3
7440-43-9 cadmium	A2
7440-48-4 cobalt	A3
• NIOSH-Ca (National Institute for Occupational Safety and Health)	
7440-02-0 nickel	
7440-38-2 arsenic	
7440-43-9 cadmium	

GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS). · Hazard pictograms



· Signal word Danger

- · Hazard-determining components of labeling: nitric acid
- · Hazard statements
- H314 Causes severe skin burns and eye damage.

Precautionary state	ements	
P260	Do not breathe dusts or mists.	
P264	Wash thoroughly after handling.	
P280	Wear protective gloves/protective clothing/eye protection/face protection.	
P301+P330+P331	If swallowed: Rinse mouth. Do NOT induce vomiting.	
P303+P361+P353	If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.	
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.	
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	
P310	Immediately call a poison center/doctor.	
P321	Specific treatment (see on this label).	
P363	Wash contaminated clothing before reuse.	
P405	Store locked up.	
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.	
· Chemical safety assessment: A Chemical Safety Assessment has not been carried out.		

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship

- · Department issuing SDS: product safety department
- · Contact:
- Spex CertiPrep, LLC.
- 1-732-549-7144
- · Date of preparation / last revision 07/12/2024
- · Abbreviations and acronyms:
- ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
- IMDG: International Maritime Code for Dangerous Goods DOT: US Department of Transportation
- LATA: International Air Transport Association EINECS: European Inventory of Existing Commercial Chemical Substances ELINCS: European List of Notified Chemical Substances
- CAS: Chemical Abstracts Service (division of the American Chemical Society) NFPA: National Fire Protection Association (USA)
- HATS: Hazardous Materials Identification System (USA) VOC: Volatile Organic Compounds (USA, EU) LC50: Lethal concentration, 50 percent
- LD50: Lethal dose, 50 percent
- PBT: Persistent, Bioaccumulative and Toxic
- vPvB: very Persistent and very Bioaccumulative NIOSH: National Institute for Occupational Safety
- OSHA: Occupational Safety & Health TLV: Threshold Limit Value
- PEL: Permissible Exposure Limit
- REL: Recommended Exposure Limit BEI: Biological Exposure Limit



Skin Corrosion 1B: Skin corrosion/irritation – Category 1B Eye Damage 1: Serious eye damage/eye irritation – Category 1 Reviewed on 07/12/2024

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