

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations Date of issue: 09/10/2016 Revision date: 09/10/2016 Version: 1.1

SECTION 1: Identifi	cation		
1.1. Identification			
Product form		: Mixture	
Name		 Standard Solution 4 components; AI 5000mg/l ; Ca 5000mg/l ; Mg 5000mg/l ; Fe 2000 HNO3 5% Equivalent to Agilent Ref: 190064800)mg/l in
Product code		: EQ0017	
.2. Relevant identi	fied uses of the substa	ance or mixture and uses advised against	
lse of the substance/mixt	ure	: Certified reference material for laboratory use	
.3. Details of the s	upplier of the safety da	ata sheet	
Spectracer UK Ltd. Second Floor, 27 Gloucester Place, London, W1U 8HU, Jnited Kingdom.			
Fel: +44 (0) 207 193 9114 Fax:+44 (0) 203 432 4686 Email: <u>contact@spectrace</u> Web: <u>www.spectracer.con</u>	r.co.uk		
1.4. Emergency tele	ephone number		
Emergency number		: Tel: +44(0)1933445260 Option 1. Language: English only. For Chemical Emergencies Only Llewellyn (Safety Advisors) Europe Ltd	
SECTION 2: Hazard	(s) identification		
	of the substance or mix	cture	
GHS-US classification			
Corrosive to metals	H290		
Category 1	11200		
kin corrosion/irritation	H314		
Category 1A Hazardous to the	H402		
quatic environment - Acute Hazard Category	11402		
Full text of H statements :	see section 16		
2.2. Label elements	×		
HS-US labeling	,		
Hazard pictograms (GHS-	US)	GHS05	
Signal word (GHS-US)		: Danger	
lazard statements (GHS-	US)	: H290 - May be corrosive to metals H314 - Causes severe skin burns and eye damage H402 - Harmful to aquatic life	
Precautionary statements	(GHS-US)	 P234 - Keep only in original container P260 - Do not breathe dust/fume/gas/mist/vapors/spray P273 - Avoid release to the environment P280 - Wear protective gloves/protective clothing/eye protection/face protection P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting 	
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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/...

P363 - Wash contaminated clothing before reuse

P390 - Absorb spillage to prevent material damage

- P405 Store locked up
- P501 Dispose of contents/container to ...

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	GHS-US classification
aluminium nitrate	(CAS No) 13473-90-0	5 - 15	Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Aquatic Acute 2, H401
nitric acid	(CAS No) 7697-37-2	5 - 15	Ox. Liq. 3, H272 Met. Corr. 1, H290 Skin Corr. 1A, H314
magnesium nitrate	(CAS No) 10377-60-3	1 - 5	Eye Irrit. 2A, H319
calcium nitrate	(CAS No) 10124-37-5	1 - 5	Eye Irrit. 2A, H319
iron(III) nitrate	(CAS No) 10421-48-4	0.1 - 1	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335

Full text of hazard classes and H-statements : see section 16

SECTION 4: First aid measures	
4.1. Description of first aid measures	
First-aid measures general :	Call a physician immediately.
First-aid measures after inhalation :	Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact	Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing. Call a physician immediately.
First-aid measures after eye contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.
First-aid measures after ingestion :	Rinse mouth. Do not induce vomiting. Call a physician immediately.
4.2. Most important symptoms and effects	, both acute and delayed
Symptoms/injuries after skin contact :	Burns.
Symptoms/injuries after eye contact :	Serious damage to eyes.
Symptoms/injuries after ingestion :	Burns.
4.3. Indication of any immediate medical a	ttention and special treatment needed
Treat symptomatically.	
SECTION 5: Firefighting measures	
5.1. Extinguishing media	
Suitable extinguishing media :	Water spray. Dry powder. Foam. Carbon dioxide.
5.2. Special hazards arising from the subs	tance or mixture
Reactivity :	The product is non-reactive under normal conditions of use, storage and transport.

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5.3. Advice for firefighters Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing. SECTION 6: Accidental release measures 6.1. Personal precautions, protective equipment and emergency procedures 6.1.1. For non-emergency personnel Emergency procedures : Ventilate spillage area. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapors/sprav. 6.1.2. For emergency responders Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection". 6.2. **Environmental precautions** Avoid release to the environment. Methods and material for containment and cleaning up 6.3. Methods for cleaning up : Take up liquid spill into absorbent material. Other information : Dispose of materials or solid residues at an authorized site. 6.4. **Reference to other sections** For further information refer to section 13. SECTION 7: Handling and storage Precautions for safe handling 7.1. Precautions for safe handling Ensure good ventilation of the work station. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapors/spray. Wear personal protective equipment. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Hygiene measures Always wash hands after handling the product. 7.2. Conditions for safe storage, including any incompatibilities Store in corrosive resistant container with a resistant inner liner. Keep only in original container. Storage conditions Store locked up. Store in a well-ventilated place. Keep cool. Incompatible materials : Metals.

SECTION 8: Exposure of	controls/personal protection		
8.1. Control parameters			
nitric acid (7697-37-2)			
ACGIH	ACGIH TWA (ppm)	2 ppm	
ACGIH	ACGIH STEL (ppm)	4 ppm	
ACGIH	Remark (ACGIH)	URT & eye irr; dental erosion	
OSHA	OSHA PEL (TWA) (mg/m³)	5 mg/m³	
OSHA	OSHA PEL (TWA) (ppm)	2 ppm	
aluminium nitrate (13473-90	aluminium nitrate (13473-90-0)		
Not applicable			
calcium nitrate (10124-37-5)			
Not applicable			
magnesium nitrate (10377-60-3)			
Not applicable			

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	•	· •		
iron(III) nitrate (10421-48-4)				
ACGIH	ACGIH TWA (mg	/m³)		1 mg/m ³ (Iron salts, soluble, as Fe; USA; Time- weighted average exposure limit 8 h; TLV - Adopted Value)
Not applicable				
8.2. Exposure controls				
Appropriate engineering controls		Ensure good ventilation of t	he work st	tation
Personal protective equipment	:	Avoid all unnecessary exposure. Gloves. Safety glasses. Protective clothing.		
Hand protection	:	Protective gloves.		
Eye protection	:	Safety glasses.		
Skin and body protection	:	Wear suitable protective clo	othing.	
Respiratory protection	:	In case of insufficient ventile	ation, wea	r suitable respiratory equipment.
Environmental exposure controls	:	Avoid release to the enviror	nment.	
SECTION 9: Physical and	chemical pro	operties		
9.1. Information on basic p				
Physical state		Liquid		
Color	:			nent(s) which have the following colour(s): ht: red-brown White Colorless Colourless to white Light
Odor	:	There may be no odour war overexposure.	re compor	erties, odour is subjective and inadequate to warn of nent(s) which have the following odour(s): dor Odorless Mild odour
Odor threshold	:	No data available		
рH	:	No data available		
Melting point	:	Not applicable		
Freezing point	:	No data available		
Boiling point	:	No data available		
Flash point	:	No data available		
Relative evaporation rate (butyl ac	etate=1) :	No data available		
Flammability (solid, gas)	:	Not applicable.		
Vapor pressure	:	No data available		
Relative vapor density at 20 °C	:	No data available		
Relative density	:	1.06		
Solubility	:	Miscible with water.		
Log Pow	:	No data available		
Auto-ignition temperature	:	No data available		
Decomposition temperature	:	No data available		
Viscosity, kinematic	:	No data available		
Viscosity, dynamic	:	No data available		
Explosion limits	:	No data available		
Explosive properties	:	No data available		
Oxidizing properties	:	No data available		

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9.2. Other information	
No additional information available	
SECTION 10: Stability and reactivity	
10.1. Reactivity	
The product is non-reactive under normal condition	ns of use, storage and transport.
10.2. Chemical stability	
Stable under normal conditions.	
10.3. Possibility of hazardous reactions	
No dangerous reactions known under normal cond	litions of use.
10.4. Conditions to avoid	
None under recommended storage and handling c	onditions (see section 7).
10.5. Incompatible materials	
metals.	
10.6. Hazardous decomposition products	
Under normal conditions of storage and use, hazar	rdous decomposition products should not be produced.
SECTION 11: Toxicological information	on
11.1. Information on toxicological effects	
Acute toxicity :	Not classified
aluminium nitrate (13473-90-0)	
ATE US (oral)	500.000 mg/kg body weight
magnesium nitrate (10377-60-3)	
LD50 oral rat	> 2000 mg/kg body weight (Rat; OECD 423: Acute Oral Toxicity – Acute Toxic Class Method; Experimental value)
LD50 dermal rat	> 5000 mg/kg body weight (Rat; Read-across; OECD 402: Acute Dermal Toxicity)
Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/irritation	Not classified
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Poproductivo tovicity	· Not classified
,	Not classified
Specific target organ toxicity (repeated exposure)	Not classified
Aspiration hazard	Not classified
Symptoms/injuries after skin contact	: Burns.
Symptoms/injuries after eye contact	: Serious damage to eyes.
Symptoms/injuries after ingestion	: Burns.
SECTION 12: Ecological information	

SECHC	IN 12: Ecological information	
12.1.	Toxicity	
Ecology -	general	: Harmful to aquatic life.

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nitric acid (7697-37-2)	
EC50 Daphnia 1	180 mg/l (EC50; 48 h)
LC50 fish 2	72 ppm (LC50; 96 h)
Threshold limit algae 1	> 19 mg/l (EC0)
aluminium nitrate (13473-90-0)	
LC50 fish 1	4.25 mg/l (LC50; 96 h)
calcium nitrate (10124-37-5)	
EC50 Daphnia 1	2355 mg/l (LC50; 120 h)
LC50 fish 2	10000 mg/l (LC50; 96 h; Lepomis macrochirus)
magnesium nitrate (10377-60-3)	
LC50 fish 1	1378 mg/l (LC50; Equivalent or similar to OECD 203; 96 h; Poecilia reticulata; Static system; Fresh water; Read-across)
EC50 Daphnia 1	490 mg/l (EC50; 48 h; Daphnia magna)
Threshold limit algae 1	> 1700 mg/l (EC50; 10 days; Nitzschia closterium)

12.2. Persistence and degradability

nitric acid (7697-37-2)	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
aluminium nitrate (13473-90-0)	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
calcium nitrate (10124-37-5)	
Persistence and degradability	Biodegradable in soil.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
magnesium nitrate (10377-60-3)	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
iron(III) nitrate (10421-48-4)	
Persistence and degradability	Biodegradability: Not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
12.3. Bioaccumulative potential	
nitric acid (7697-37-2)	
BCF fish 1	

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nitric acid (7697-37-2)		
Log Pow	-2.3 (OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method)	
Bioaccumulative potential	Bioaccumulation: Not applicable.	
aluminium nitrate (13473-90-0)		
Bioaccumulative potential	Not bioaccumulative.	
calcium nitrate (10124-37-5)		
Bioaccumulative potential	Not bioaccumulative.	
magnesium nitrate (10377-60-3)		
Log Pow	-0.61 (Estimated value)	
Bioaccumulative potential	Bioaccumulation: Not applicable.	
iron(III) nitrate (10421-48-4)		
Bioaccumulative potential	Not bioaccumulative.	
12.4 Mobility in soil		

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects	
Effect on the global warming	. No known offects from this product
Effect on the global warming	: No known effects from this product.
GWPmix comment	: No known effects from this product.

SECTION 13: Disposal consider	ations
13.1. Waste treatment methods	
Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Waste disposal recommendations	: Dispose in a safe manner in accordance with local/national regulations.
SECTION 14: Transport informa	tion
Department of Transportation (DOT)	

: UN3264 Corrosive liquid, acidic, inorganic, n.o.s. (CONTAINS ; nitric acid), 8, II
: UN3264
: Corrosive liquid, acidic, inorganic, n.o.s.
CONTAINS ; nitric acid
: 8 - Class 8 - Corrosive material 49 CFR 173.136
: II - Medium Danger
: 8 - Corrosive
8
: 202

- : 242
- : G Identifies PSN requiring a technical name

DOT Symbols

DOT Packaging Bulk (49 CFR 173.xxx)

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DOT Special Provisions (49 CFR 172.102)	:	B2 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks are not authorized IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized T11 - 6 178.274(d)(2) Normal
		temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively TP27 - A portable tank having a minimum test pressure of 4 bar (400 kPa) may be used provided the calculated test pressure is 4 bar or less based on the MAWP of the hazardous protection and the maximum in 40.075 of this authorized the calculated test pressure is 4 bar or less based on the MAWP of the hazardous protection.
		material, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP
DOT Packaging Exceptions (49 CFR 173.xxx)	:	154
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	1L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	30 L
DOT Vessel Stowage Location	:	B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded
DOT Vessel Stowage Other	:	40 - Stow "clear of living quarters"
Emergency Response Guide (ERG) Number	:	154
Other information	:	No supplementary information available.
TDG		
Transport document description	:	UN3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (CONTAINS ; nitric acid), 8, II
UN-No. (TDG)	:	UN3264
Proper Shipping Name (TDG)	:	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
TDG Primary Hazard Classes	:	8 - Class 8 - Corrosives
Packing group	:	II - Medium Danger
TDG Special Provisions	:	16 - (1) The technical name of at least one of the most dangerous substances that predominantly contributes to the hazard or hazards posed by the dangerous goods must be shown, in parentheses, on the shipping document following the shipping name in accordance with clause 3.5(1)(c)(ii)(A) of Part 3 (Documentation). The technical name must also be shown, in parentheses, on a small means of containment or on a tag following the shipping name in accordance with subsections 4.11(2) and (3) of Part 4 (Dangerous Goods Safety Marks). (2) Despite subsection (1), the technical name for the following dangerous goods is not required to be shown on a shipping document or on a small means of containment when Canadian law for domestic transport or an international convention for international transport prohibits the disclosure of the technical name: (a)UN1544, ALKALOID SALTS, SOLID, N.O.S. or ALKALOIDS, SOLID, N.O.S; (b)UN1851, MEDICINE, LIQUID, TOXIC, N.O.S; (c)UN3140, ALKALOID SALTS, LIQUID, N.O.S. or ALKALOIDS, LIQUID, N.O.S; (d)UN3248, MEDICINE, LIQUID, FLAMMABLE, TOXIC, N.O.S; or (e)UN3249, MEDICINE, SOLID, TOXIC, N.O.S. An example in Canada is the "Food and Drugs Act". (3) Despite subsection (1), the technical name for the following dangerous goods is not required to be shown on a small means of containment: (a)UN2814, INFECTIOUS SUBSTANCE, AFFECTING HUMANS; or (b)UN2900, INFECTIOUS S
Explosive Limit and Limited Quantity Index	:	1L
Passenger Carrying Road Vehicle or Passenger		
_ · _ · · · · · · · ·		

Passenger Carrying Road Vehicle or Passenger : 1 L Carrying Railway Vehicle Index

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Transport by sea	
UN-No. (IMDG)	: 3264
Proper Shipping Name (IMDG)	: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
Class (IMDG)	: 8 - Corrosive substances
Packing group (IMDG)	: II - substances presenting medium danger
Limited quantities (IMDG)	: 1L
Air transport	

3264
Corrosive liquid, acidic, inorganic, n.o.s.
8 - Corrosives
II - Medium Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

nitric acid (7697-37-2)					
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313					
CERCLA RQ	1000 lb				
SARA Section 302 Threshold Planning Quantity (TPQ)	1000 lb				
aluminium nitrate (13473-90-0)					
Listed on the United States TSCA (Toxic Substances Control Act) inventory					
calcium nitrate (10124-37-5)					
Listed on the United States TSCA (Toxic Substances Control Act) inventory					
magnesium nitrate (10377-60-3)					
Listed on the United States TSCA (Toxic Substances Control Act) inventory					
iron(III) nitrate (10421-48-4)					
Listed on the United States TSCA (Toxic Substances Control Act) inventory Not subject to reporing requirements of the United States SARA Section 313					
CERCLA RQ	1000 lb				

15.2. International regulations CANADA

No additional information available

EU-Regulations No additional information available

National regulations

No additional information available

15.3. US State regulations

No additional information available

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SECTION 1	6: Other information	
Revision date		: 09/10/2016
Full text of H-p	hrases:	
H272		May intensify fire; oxidizer
H290		May be corrosive to metals
H302		Harmful if swallowed
H314		Causes severe skin burns and eye damage
H315		Causes skin irritation
H319		Causes serious eye irritation
H335		May cause respiratory irritation
H401		Toxic to aquatic life
H402		Harmful to aquatic life
NFPA health h	azard	: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.
NFPA fire haza	ard	: 0 - Materials that will not burn.
NFPA reactivit	y	: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.
HMIS III Rating)	
Health		: 2 Moderate Hazard - Temporary or minor injury may occur
Flammability		: 0 Minimal Hazard - Materials that will not burn
Physical		: 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.
Personal prote	ction	: C C - Safety glasses, Gloves, Synthetic apron

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.