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1 Identification

- · Product identifier
- · Product Name: Volatile Calibration Standard
- · Part Name: ECS-A-045XP
- · Application of the substance / the mixture Certified Reference Material
- · 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



GHS02 Flame

Flammable Liquids 2 H225 Highly flammable liquid and vapor.



GHS06 Skull and crossbones

Acute Toxicity - Inhalation 3 H331 Toxic if inhaled.



Carcinogenicity 2 H351 Suspected of causing cancer.

Specific Target Organ Toxicity - Single Exposure 1 H370 Causes damage to the central nervous system and the visual organs.



Eye Damage 1 H318 Causes serious eye damage.



Acute Toxicity - Oral 4

H302 Harmful if swallowed.

Sensitization - Skin 1 H317 May cause an allergic skin reaction.

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











GHS02

GHS05

GHS06

GHS07

GHS08

- · Signal word Danger
- · Hazard-determining components of labeling:

methanol

2-methylpropan-1-ol methacrylonitrile

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methyl methacrylate

ethyl methacrylate

· Hazard statements

H225 Highly flammable liquid and vapor.

H302 Harmful if swallowed.

H331 Toxic if inhaled.

H318 Causes serious eye damage.

H317 May cause an allergic skin reaction.

H351 Suspected of causing cancer.

H370 Causes damage to the central nervous system and the visual organs.

· Precautionary statements

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ventilating/lighting/equipment.

P260 Do not breathe dust/fume/gas/mist/vapors/spray.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P301+P312 If swallowed: Call a poison center/doctor if you feel unwell.

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).

P330 Rinse mouth.

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)



Health = 3 Fire = 3 Reactivity = 0

· HMIS-ratings (scale 0 - 4)



Health = *3 Fire = 3Reactivity = 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:		
67-56-1	methanol	81.0%
64-17-5	ethanol	4.0%
78-83-1	2-methylpropan-1-ol	4.0%
123-91-1	1,4-dioxane	4.0%
75-05-8	acetonitrile	2.0%
107-12-0	propanenitrile	2.0%
	methacrylonitrile	2.0%
	methyl methacrylate	0.2%
97-63-2	ethyl methacrylate	0.2%
107-05-1	3-chloropropene	0.2%
Cl		

	of the substance/preparation

110-57-6 (2E		0.2%
1476-11-5 cis-	2,3-dichlorobut-2-ene	0.2%

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4 First-aid measures

· Description of first aid measures

· General information:

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

Remove breathing apparatus only after contaminated clothing have been completely removed.

In case of irregular breathing or respiratory arrest provide artificial respiration.

· After inhalation:

Supply fresh air or oxygen; call for doctor.

In case of unconsciousness place patient stably in side position for transportation.

- · After skin contact: Immediately wash with water and soap and rinse thoroughly.
- · After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.
- · After swallowing:

Immediately call a doctor.

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.

5 Fire-fighting measures

- · Extinguishing media
- · Suitable extinguishing agents: CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- · Special hazards arising from the substance or mixture During heating or in case of fire poisonous gases are produced.
- · Advice for firefighters
- · 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:		
67-56-1	methanol	530 ppm
64-17-5	ethanol	1,800 ppm
78-83-1	2-methylpropan-1-ol	150 ppm
123-91-1	1,4-dioxane	17 ppm
75-05-8	acetonitrile	13 ppm
107-12-0	propanenitrile	0.27 ppm
126-98-7	methacrylonitrile	0.091 ppm
80-62-6	methyl methacrylate	17 ppm
97-63-2	ethyl methacrylate	5.5 ppm
107-05-1	3-chloropropene	2.8 ppm
110-57-6	(2E)-1,4-dichloro-2-butene	0.078 ppm
· PAC-2:		
67-56-1	methanol	2,100 ppm
64-17-5	ethanol	3300* ppm
78-83-1	2-methylpropan-1-ol	1,300 ppm
123-91-1	1,4-dioxane	320 ppm
75-05-8	acetonitrile	50 ppm

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		Contd. of page 3)
107-12-0	propanenitrile	3.0 ppm
126-98-7	methacrylonitrile	1.0 ppm
80-62-6	methyl methacrylate	120 ppm
	ethyl methacrylate	61 ppm
107-05-1	3-chloropropene	54 ppm
110-57-6	(2E)-1,4-dichloro-2-butene	0.86 ppm
· PAC-3:		
67-56-1	methanol	7200* ppm
64-17-5	ethanol	15000* ppm
78-83-1	2-methylpropan-1-ol	8000* ppm
123-91-1	1,4-dioxane	760 ppm
75-05-8	acetonitrile	150 ppm
107-12-0	propanenitrile	9.1 ppm
126-98-7	methacrylonitrile	3.1 ppm
80-62-6	methyl methacrylate	570 ppm
97-63-2	ethyl methacrylate	370 ppm
107-05-1	3-chloropropene	140 ppm
110-57-6	(2E)-1,4-dichloro-2-butene	3.8 ppm

7 Handling and storage

- · Handling:
- · Precautions for safe handling

Ensure good ventilation/exhaustion at the workplace.

Open and handle receptacle with care.

Prevent formation of aerosols.

· Information about protection against explosions and fires:

Keep ignition sources away - Do not smoke.

Protect against electrostatic charges.

Keep respiratory protective device available.

- · Conditions for safe storage, including any incompatibilities
- · Storage:
- · Requirements to be met by storerooms and receptacles: Store in a cool location.
- · Information about storage in one common storage facility: Not required.
- $\cdot \textit{Further information about storage conditions:} \\$

Keep receptacle tightly sealed.

Store in cool, dry conditions in well sealed receptacles.

Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

- $\cdot \textbf{\textit{Additional information about design of technical systems:}} \ \textit{No further data; see section 7.}$
- · Control parameters
- · Components with limit values that require monitoring at the workplace:

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.

At this time, the remaining constituent has no known exposure limits.

711 1111	At this time, the remaining constituent has no known exposure timus.		
67-50	67-56-1 methanol		
PEL	Long-term value: 260 mg/m³, 200 ppm		
REL	Short-term value: 325 mg/m³, 250 ppm Long-term value: 260 mg/m³, 200 ppm Skin		
	Short-term value: 250 ppm Long-term value: 200 ppm Skin; BEI		
64-17	7-5 ethanol		
PEL	Long-term value: 1900 mg/m³, 1000 ppm		
REL	Long-term value: 1900 mg/m³, 1000 ppm		
TLV	Short-term value: 1000 ppm A3		
78-83	3-1 2-methylpropan-1-ol		
PEL	Long-term value: 300 mg/m³, 100 ppm		

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	(Contd. of page 4
REL	Long-term value: 150 mg/m³, 50 ppm
TLV	Long-term value: 50 ppm
	91-1 1,4-dioxane
PEL	Long-term value: 360 mg/m³, 100 ppm Skin
REL	Ceiling limit value: 3.6* mg/m³, 1* ppm *30-min; See Pocket Guide App. A
TLV	Long-term value: 20 ppm Skin, A3
75-0	5-8 acetonitrile
PEL	Long-term value: 70 mg/m³, 40 ppm
REL	Long-term value: 34 mg/m³, 20 ppm
TLV	Long-term value: 20 ppm Skin, A4
107-	12-0 propanenitrile
PEL	Long-term value: 5 mg/m³ as CN; Skin
REL	Long-term value: 14 mg/m³, 6 ppm
126-	98-7 methacrylonitrile
REL	Long-term value: 3 mg/m³, 1 ppm Skin
TLV	Long-term value: 1 ppm Skin, A4
80-6	2-6 methyl methacrylate
	Long-term value: 410 mg/m³, 100 ppm
REL	Long-term value: 410 mg/m³, 100 ppm
TLV	Short-term value: 100 ppm
	Long-term value: 50 ppm DSEN, A4
	05-1 3-chloropropene
	Long-term value: 3 mg/m³, 1 ppm
	Short-term value: 6 mg/m³, 2 ppm Long-term value: 3 mg/m³, 1 ppm
TLV	Short-term value: 2 ppm Long-term value: 1 ppm Skin, A3
· Ingr	edients with biological limit values:
67-5	6-1 methanol

67-56-1 methanol

BEI 15 mg/L

Medium: urine Time: end of shift

Parameter: Methanol (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.

Store protective clothing separately.

Avoid contact with the eyes.

Avoid contact with the eyes and skin.

· Respiratory protection:

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.

· Protection of hands:



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.

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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
- 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.
- · Eye protection:



9 Physical and chemical properties		
· 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:	64.7 °C (148.5 °F)	
· Flash point:	< 23 °C (< 73.4 °F)	
· Flammability (solid, gaseous):	Highly flammable.	
· Auto igniting:	455 °C (851 °F)	
· Decomposition temperature:	Not applicable.	
· Ignition temperature:	Product is not selfigniting.	
· Danger of explosion:	Product is not explosive. However, formation of explosive air/vapor mixtures are possible.	
· Explosion limits:		
Lower:	5.5 Vol %	
Upper:	44 Vol %	
· Vapor pressure at 20 °C (68 °F):	128 hPa (96 mm Hg)	
· Density at 20 °C (68 °F)	0.80252 g/cm³ (6.69703 lbs/gal)	
· 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:		
Organic solvents:	93.0 %	
VOC content:	93.00 %	
Solids content:	0.0 %	
· 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.
- $\cdot \textit{Possibility of hazardous reactions} \ \textit{No dangerous reactions known}.$
- · Conditions to avoid No further relevant information available.
- · Incompatible materials: No further relevant information available.

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· Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

- · Information on toxicological effects
- · Acute toxicity:

· LD/LC5	· LD/LC50 values that are relevant for classification:		
67-56-1	67-56-1 methanol		
Oral	LD50	5,628 mg/kg (rat)	
Dermal	LD50	15,800 mg/kg (rabbit)	

- · Primary irritant effect:
- · on the skin: Caustic effect on skin and mucous membranes.
- · on the eye: Strong irritant with the danger of severe eye injury.
- · Sensitization: Sensitization possible through skin contact.
- $\cdot \textit{Additional toxicological information:}$

The product shows the following dangers according to internally approved calculation methods for preparations:

Toxic

Harmful

Irritant

· Carcinogenic categories

· Carcinogenic categories			
· IARC (In	· IARC (International Agency for Research on Cancer)		
64-17-5	ethanol	1	
123-91-1	1,4-dioxane	2 <i>B</i>	
80-62-6	methyl methacrylate	3	
107-05-1	3-chloropropene	3	
110-57-6	(2E)-1,4-dichloro-2-butene	3	
· NTP (Nat	· NTP (National Toxicology Program)		
123-91-1	123-91-1 1,4-dioxane R		
· OSHA-Ca (Occupational Safety & Health Administration)			
None of the ingredients is listed.			

12 Ecological information

- · Toxicity
- · Aquatic toxicity: No further relevant information available.
- · Persistence and degradability No further relevant information available.
- · Behavior in environmental systems:
- $\cdot \textit{Bioaccumulative potential No further relevant information available}.$
- · Mobility in soil No further relevant information available.
- $\cdot \textit{Additional ecological information:}$
- · 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
- $\cdot \textbf{\textit{Recommendation:}} \ \textit{Must not be disposed of together with household garbage.} \ \textit{Do not allow product to reach sewage system.}$
- · 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

UN1230



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	(Conta. or page 1
· UN proper shipping name · DOT	Methanol
· ADR · IMDG, IATA	1230 METHANOL METHANOL
· Transport hazard class(es)	
· DOT	
RAMMAKE (2010) TOXIC	
· Class · Label	3 Flammable liquids 3, 6.1
\cdot ADR	
· Class · Label	3 Flammable liquids 3+6.1
·IMDG	
· Class · Label	3 Flammable liquids 3/6.1
·IATA	
· Class · Label	3 Flammable liquids 3 (6.1)
· Packing group · DOT, ADR, IMDG, IATA	II

· Packing group · DOT, ADR, IMDG, IATA	H	
· Environmental hazards:	Not applicable.	
· Special precautions for user	Warning: Flammable liquids	
Hazard identification number (Kemler code):	336 F-E,S-D B SW2 Clear of living quarters.	
EMS Number:		
· Stowage Category		
· Stowage Code		
· Transport in bulk according to Annex II of MARPOL73/78 a	nd the IBC Code Not applicable.	
· Transport/Additional information:		
· ADR		
· Excepted quantities (EQ)	Code: E2	
	Maximum net quantity per inner packaging: 30 ml	
	Maximum net quantity per outer packaging: 500 ml	

Maximum net quantity per outer packaging: 500 ml

 \cdot IMDG · Limited quantities (LQ)

1L· Excepted quantities (\widetilde{EQ}) Code: E2

Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml

 $\cdot \textit{UN "Model Regulation":}$ UN 1230 METHANOL, 3 (6.1), II

15 Regulatory information

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

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· Sara

· Section 313 (Specific toxic chemical listings):			
67-56-1	methanol		
123-91-1	1,4-dioxane		
75-05-8	acetonitrile		
126-98-7	methacrylonitrile		
	methyl methacrylate		
107-05-1	3-chloropropene		
110-57-6	(2E)-1,4-dichloro-2-butene		
· TSCA (Toxic Substances Control Act):			
All components have the value ACTIVE.			
· Hazardous Air Pollutants			
67-56-1	methanol		
123-91-1	1,4-dioxane		
75-05-8	acetonitrile		
80-62-6	methyl methycrylate		

Proposition 65

· Chemicals known to cause cancer:

107-05-1 3-chloropropene

123-91-1 | 1,4-dioxane

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed.

Chemicals known to cause developmental toxicity:

67-56-1 methanol

64-17-5 ethanol

· Carcinogenic categories

· EPA (Environmental Protection Agency)				
123-91-1	1,4-dioxane	L		
75-05-8	acetonitrile	CBD, D		
80-62-6	methyl methacrylate	E, NL		
107-05-1	3-chloropropene	C		
TLV (Threshold Limit Value)				
64-17-5 ethanol				

· TLV (Threshold Limit Value)				
	64-17-5	ethanol	A3	
	123-91-1	1,4-dioxane	A3	
	75-05-8	acetonitrile	A4	
	80-62-6	methyl methacrylate	A4	
	107-05-1	3-chloropropene	<i>A3</i>	

· NIOSH-Ca (National Institute for Occupational Safety and Health)

123-91-1 1,4-dioxane

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











GHS02

GHS05

GHS06

GHS07

· Signal word Danger

· Hazard-determining components of labeling:

methanol2-methylpropan-1-ol methacry lonitrilepropanenitrile $methyl\ methacrylate$ ethyl methacrylate

· Hazard statements

H225 Highly flammable liquid and vapor.

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H302 Harmful if swallowed.

H331 Toxic if inhaled.

H318 Causes serious eye damage.

H317 May cause an allergic skin reaction.

H351 Suspected of causing cancer.

H370 Causes damage to the central nervous system and the visual organs.

· Precautionary statements

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P240 Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting/equipment. P241

P260 Do not breathe dust/fume/gas/mist/vapors/spray.

Wear protective gloves/protective clothing/eye protection/face protection. P280

P301+P312 If swallowed: Call a poison center/doctor if you feel unwell.

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304 + P340IF 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). P330 Rinse mouth.

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 08/11/2023

Abbreviations and acronyms:

onal des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road) ADR: Accord relatif au transport internat

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: 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)

HMIS: 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

BEI: Bollogical Exposure Linn
Flammable Liquids 2: Flammable liquids – Category 2
Acute Toxicity - Oral 4: Acute toxicity – Category 4
Acute Toxicity - Inhalation 3: Acute toxicity – Category 3
Eye Damage 1: Serious eye damage/eye irritation – Category 1
Sensitization - Skin 1: Skin sensitisation – Category 1

Carcinogenicity 2: Carcinogenicity – Category 2
Specific Target Organ Toxicity - Single Exposure 1: Specific target organ toxicity (single exposure) – Category 1

us -