

### 1. PRODUCT AND COMPANY IDENTIFICATION

#### 1.1 Product identifiers

Product Name : ASTM D4815 Standard

Synonyms : ASTM D4815 Calibration Standard; ASTM D4815 Retention Time (RT) Standard

Product Number : SD-ASTM-D4815-KIT; SS-1-5-A; SS-1-5-B; SS-1-5-C; SD-ASTM-D4815-A; SD-ASTM-D4815-B; SD-ASTM-D4815-C; SD-ASTM-D4815-RT

Brand : Separation Systems

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

#### 1.3 Details of the supplier of the safety data sheet

Company : Separation Systems  
100 Nightingale Ln  
Gulf Breeze FL 32561 USA

Telephone : 1 850-932-1433

#### 1.4 Emergency telephone number

Emergency Phone # : 1-703-527-3887(CHEMTREC)

### 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

##### GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 2), H225  
Acute toxicity, Oral (Category 3), H301  
Acute toxicity, Inhalation (Category 3), H331  
Acute toxicity, Dermal (Category 3), H311  
Aspiration hazard (Category 1), H304  
Skin irritation (Category 2), H315  
Serious eye damage (Category 1), H318  
Germ cell mutagenicity (Category 1B), H340  
Carcinogenicity (Category 1A), H350  
Reproductive toxicity (Category 1B), H360  
Specific target organ toxicity - single exposure (Category 1), H370  
Specific target organ toxicity - single exposure (Category 3), Respiratory system, Central nervous system, H335, H336  
Specific target organ toxicity - repeated exposure (Category 1), H372  
Acute aquatic toxicity (Category 1), H400  
Chronic aquatic toxicity (Category 1), H410

#### 2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H225 Highly flammable liquid and vapor.  
H301 + H311 + H331 Toxic if swallowed, in contact with skin or if inhaled.  
H304 May be fatal if swallowed and enters airways.  
H315 Causes skin irritation.  
H318 Causes serious eye damage.

H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H340	May cause genetic defects.
H350	May cause cancer.
H360	May damage fertility or the unborn child.
H370	Causes damage to organs.
H372	Causes damage to organs through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth.
P331	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 + P311	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P307 + P311	IF exposed: Call a POISON CENTER or doctor/ physician.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P391	Collect spillage.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

**2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none**

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

**3.2 Mixtures**

**Hazardous components**

Component	Classification	Concentration
<b>2,2,4-Trimethylpentane</b>		
CAS-No. 540-84-1	Flam. Liq. 2; Skin Irrit. 2; STOT SE 3; Asp. Tox. 1; Aquatic Acute 1; Aquatic Chronic 1; H225, H304, H315, H336, H410	0 - 50 %
EC-No. 208-759-1		
Index-No. 601-009-00-8		
<b>m-Xylene</b>		

CAS-No.	108-38-3	Flam. Liq. 3; Acute Tox. 4;	0 - 27 %
EC-No.	203-576-3	Skin Irrit. 2; Eye Irrit. 2A;	
Index-No.	601-022-00-9	STOT SE 3; Asp. Tox. 1; Aquatic Acute 3; Aquatic Chronic 3; H226, H304, H312, H315, H319, H335, H412	
<b>2-Methoxy-2-methylbutane</b>			
CAS-No.	994-05-8	Flam. Liq. 2; Acute Tox. 4;	0.1 - 20 %
EC-No.	213-611-4	STOT SE 3; H225, H302,	
Index-No.	603-213-00-2	H336	
<b>Butan-2-ol</b>			
CAS-No.	78-92-2	Flam. Liq. 3; Eye Irrit. 2A;	0.1 - 15 %
EC-No.	201-158-5	STOT SE 3; H226, H319,	
Index-No.	603-127-00-5	H335, H336	
<b>tert-Pentanol</b>			
CAS-No.	75-85-4	Flam. Liq. 2; Acute Tox. 4;	0.1 - 15 %
EC-No.	200-908-9	Skin Irrit. 2; Eye Dam. 1;	
Index-No.	603-007-00-2	STOT SE 3; H225, H312 + H332, H315, H318, H335	
<b>n-Propanol</b>			
CAS-No.	71-23-8	Flam. Liq. 2; Eye Dam. 1;	0.1 - 15 %
EC-No.	200-746-9	STOT SE 3; H225, H318,	
Index-No.	603-003-00-0	H336	
<b>iso-Butanol</b>			
CAS-No.	78-83-1	Flam. Liq. 3; Skin Irrit. 2; Eye	0.1 - 15 %
EC-No.	201-148-0	Dam. 1; STOT SE 3; H226,	
Index-No.	603-108-00-1	H315, H318, H335, H336	
<b>tert-Butyl alcohol</b>			
CAS-No.	75-65-0	Flam. Liq. 2; Acute Tox. 4; Eye	0.1 - 15 %
EC-No.	200-889-7	Irrit. 2A; STOT SE 3; H225,	
Index-No.	603-005-00-1	H319, H332, H335, H336	
<b>n-Butanol</b>			
CAS-No.	71-36-3	Flam. Liq. 3; Acute Tox. 4;	0.1 - 15 %
EC-No.	200-751-6	Skin Irrit. 2; Eye Dam. 1;	
Index-No.	603-004-00-6	STOT SE 3; H226, H302, H315, H318, H335, H336	
<b>2-Propanol</b>			
CAS-No.	67-63-0	Flam. Liq. 2; Eye Irrit. 2A;	0.1 - 15 %
EC-No.	200-661-7	STOT SE 3; H225, H319,	
Index-No.	603-117-00-0	H336	
<b>Ethanol</b>			
CAS-No.	64-17-5	Flam. Liq. 2; Eye Irrit. 2A;	0.1 - 15 %
EC-No.	200-578-6	H225, H319	
Index-No.	603-002-00-5		
<b>Methanol</b>			

CAS-No.	67-56-1	Flam. Liq. 2; Acute Tox. 3; STOT SE 1; H225, H301 + H311 + H331, H370	0.1 - 15 %
EC-No.	200-659-6		
Index-No.	603-001-00-X		
Registration number	01-2119433307-44-XXXX		
<b>Ethylene glycol dimethyl ether</b> Included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH)			
CAS-No.	110-71-4	Flam. Liq. 2; Acute Tox. 4; Repr. 1B; H225, H332, H360	5 - 7 %
EC-No.	203-794-9		
Index-No.	603-031-00-3		
Registration number	01-2119485981-24-XXXX		
<b>Benzene</b>			
CAS-No.	71-43-2	Flam. Liq. 2; Skin Irrit. 2; Eye Irrit. 2A; Muta. 1B; Carc. 1A; STOT RE 1; Asp. Tox. 1; Aquatic Acute 3; Aquatic Chronic 3; H225, H304, H315, H319, H340, H350, H372, H412	0 - 7 %
EC-No.	200-753-7		
Index-No.	601-020-00-8		
Registration number	01-2119447106-44-XXXX		
<b>Diisopropyl ether</b>			
CAS-No.	108-20-3	Flam. Liq. 2; STOT SE 3; H225, H336	0.1 - 20 %
EC-No.	203-560-6		
Index-No.	603-045-00-X		
<b>2-Ethoxy-2-methylpropane</b>			
CAS-No.	637-92-3	Flam. Liq. 2; STOT SE 3; H225, H336	0.1 - 20 %
EC-No.	211-309-7		
<b>tert-Butyl methyl ether</b>			
CAS-No.	1634-04-4	Flam. Liq. 2; Skin Irrit. 2; H225, H315	0.1 - 20 %
EC-No.	216-653-1		
Index-No.	603-181-00-X		

#### 4. FIRST AID MEASURES

##### 4.1 Description of first aid measures

###### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

###### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

###### In case of skin contact

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

###### In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

###### If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

##### 4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

##### 4.3 Indication of any immediate medical attention and special treatment needed

No data available

#### 5. FIREFIGHTING MEASURES

- 5.1 Extinguishing media**
- 5.2 Suitable extinguishing media**  
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- 5.3 Special hazards arising from the substance or mixture**  
No data available
- 5.4 Advice for firefighters**  
Wear self-contained breathing apparatus for firefighting if necessary.
- 5.5 Further information**  
Use water spray to cool unopened containers.

**6. ACCIDENTAL RELEASE MEASURES**

- 6.1 Personal precautions, protective equipment and emergency procedures**  
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.  
For personal protection see section 8.
- 6.2 Environmental precautions**  
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
- 6.3 Methods and materials for containment and cleaning up**  
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).
- 6.4 Reference to other sections**  
For disposal see section 13.

**7. HANDLING AND STORAGE**

- 7.1 Precautions for safe handling**  
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.  
Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.  
For precautions see section 2.2.
- 7.2 Conditions for safe storage, including any incompatibilities**  
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
- 7.3 Specific end use(s)**  
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1 Control parameters**

**Components with workplace control parameters**

Component	CAS-No.	Value	Control parameters	Basis
2,2,4-Trimethylpentane	540-84-1	TWA	300.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Upper Respiratory Tract irritation		
m-Xylene	108-38-3	TWA	100.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Eye & Upper Respiratory Tract irritation Central Nervous System impairment Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		

		STEL	150.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Eye & Upper Respiratory Tract irritation Central Nervous System impairment Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		TWA	100.000000 ppm 435.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	150.000000 ppm 655.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	100.000000 ppm 435.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	100.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		STEL	150.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		TWA	100 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		STEL	150 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		TWA	100 ppm 435 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
Butan-2-ol	78-92-2	TWA	100 ppm	USA. ACGIH Threshold Limit Values (TLV)

	Remarks	Central Nervous System impairment Upper Respiratory Tract irritation		
		TWA	100.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation		
		TWA	150.000000 ppm 450.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	100.000000 ppm 305.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	150.000000 ppm 455.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	150 ppm 455 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	100 ppm 305 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	150 ppm 450 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		PEL	100 ppm 305 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
n-Propanol	71-23-8	TWA	100 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Eye irritation Not classifiable as a human carcinogen		
		TWA	100.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Eye irritation Not classifiable as a human carcinogen		
		TWA	200.000000 ppm 500.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	200.000000 ppm 500.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		ST	250.000000 ppm 625.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		PEL	200 ppm 500 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		

		STEL	250 ppm 625 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
iso-Butanol	78-83-1	TWA	50 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Eye irritation Skin irritation		
		TWA	50.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Eye irritation		
		Skin irritation		
		TWA	100.000000 ppm 300.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	50.000000 ppm 150.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	50 ppm 150 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	100 ppm 300 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	50 ppm 150 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		PEL	50 ppm 150 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
tert-Butyl alcohol	75-65-0	TWA	100.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Not classifiable as a human carcinogen		
		TWA	100.000000 ppm 300.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	150.000000 ppm 450.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	100.000000 ppm 300.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		PEL	100 ppm 300 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		STEL	150 ppm 450 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
n-Butanol	71-36-3	TWA	20.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Eye irritation		
		TWA	20 ppm	USA. ACGIH Threshold Limit Values (TLV)



		Upper Respiratory Tract irritation Eye irritation		
		TWA	100.000000 ppm 300.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		C	50.000000 ppm 150.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		C	50 ppm 150 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
2-Propanol	67-63-0	TWA	200.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		TWA	200 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		STEL	400 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		STEL	400.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		TWA	400.000000 ppm 980.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	400.000000 ppm 980.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	500.000000 ppm 1,225.000000 mg/m3	USA. NIOSH Recommended Exposure Limits

		PEL	400 ppm 980 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		STEL	500 ppm 1,225 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
Ethanol	64-17-5	TWA	1,000.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Confirmed animal carcinogen with unknown relevance to humans		
		TWA	1,000 ppm 1,900 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	1,000 ppm 1,900 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	1,000.000000 ppm 1,900.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	1,000.000000 ppm 1,900.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		STEL	1,000.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Confirmed animal carcinogen with unknown relevance to humans		
Methanol	67-56-1	TWA	200.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Headache Nausea Dizziness Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption		
		STEL	250.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Headache Nausea Dizziness Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption		
		TWA	200.000000 ppm 260.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		ST	250.000000 ppm 325.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		

		TWA	200.000000 ppm 260.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	200 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Headache Nausea Dizziness Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption		
		STEL	250 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Headache Nausea Dizziness Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption		
		TWA	200 ppm 260 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		ST	250 ppm 325 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		TWA	200 ppm 260 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		STEL	250 ppm 325 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		Skin notation		
		TWA	200 ppm 260 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		Skin notation		
		C	1,000 ppm	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
		PEL	200 ppm 260 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
		STEL	250 ppm 325 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
Ethylene glycol dimethyl ether	110-71-4	PEL	1 ppm 3.7 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
		STEL	5 ppm 18 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
Benzene	71-43-2	TWA	0.5 ppm	USA. ACGIH Threshold Limit Values (TLV)

		Leukemia Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Confirmed human carcinogen Danger of cutaneous absorption		
		STEL	2.5 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Leukemia Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Confirmed human carcinogen Danger of cutaneous absorption		
		TWA	10 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
		Z37.40-1969		
		CEIL	25 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
		Z37.40-1969		
		Peak	50 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
		Z37.40-1969		
		See 1910.1028. See Table Z-2 for the limits applicable in the operations or sectors excluded in 1910.1028 The final benzene standard in 1910.1028 applies to all occupational exposures to benzene except some subsegments of industry where exposures are consistently under the action level (i.e., distribution and sale of fuels, sealed containers and pipelines, coke production, oil and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures); for the excepted subsegments, the benzene limits in Table Z-2 apply.		
		TWA	0.1 ppm	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen See Appendix A		
		ST	1 ppm	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen See Appendix A		
tert-Butyl methyl ether	1634-04-4	TWA	50.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Kidney damage Confirmed animal carcinogen with unknown relevance to humans		
		PEL	40 ppm 144 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
Diisopropyl ether	108-20-3	TWA	250 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Eye irritation		
		TWA	250.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Eye irritation		
		STEL	310 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Eye irritation		

		STEL	310.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Eye irritation		
		TWA	500.000000 ppm 2,100.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	500.000000 ppm 2,100.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		PEL	250 ppm 1,050 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
2-Ethoxy-2-methylpropane	637-92-3	PEL	5 ppm 21 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

Hazardous components without workplace control parameters

### Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
2-Propanol	67-63-0	Acetone	40.0000 mg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift at end of workweek			
Methanol	67-56-1	Methanol	15.0000 mg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift (As soon as possible after exposure ceases)			
		Methanol	15 mg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift (As soon as possible after exposure ceases)			
Benzene	71-43-2	S-Phenylmercapturic acid	0.0300 mg/g	In urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift (As soon as possible after exposure ceases)			
		t,t-Muconic acid	0.5000 mg/g	In urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift (As soon as possible after exposure ceases)			
m-Xylene	108-38-3	Methylhippuric acids	1.5g/g creatinine	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift (As soon as possible after exposure ceases)			
		Methylhippuric acids	1,500.000 0 mg/g	Urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift (As soon as possible after exposure ceases)			

## 8.2 Exposure controls

### Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### Personal protective equipment

**Eye/face protection**

Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin protection**

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Body Protection**

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of environmental exposure**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

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**9. PHYSICAL AND CHEMICAL PROPERTIES****9.1 Information on basic physical and chemical properties**

a) Appearance	Form: liquid
b) Odour	No data available
c) Odour Threshold	No data available
d) pH	No data available
e) Melting point/freezing point	No data available
f) Initial boiling point and boiling range	No data available
g) Flash point	10 °C (50 °F)
h) Evaporation rate	No data available
i) Flammability (solid, gas)	No data available
j) Upper/lower flammability or explosive limits	No data available
k) Vapour pressure	No data available
l) Vapour density	No data available
m) Relative density	No data available
n) Water solubility	No data available
o) Partition coefficient: n- octanol/water	No data available
p) Auto-ignition temperature	No data available
q) Decomposition temperature	No data available
r) Viscosity	No data available
s) Explosive properties	No data available
t) Oxidizing properties	No data available

**9.2 Other safety information**

No data available

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**10. STABILITY AND REACTIVITY****10.1 Reactivity**

No data available

**10.2 Chemical stability**

Stable under recommended storage conditions.

**10.3 Possibility of hazardous reactions**

Vapours may form explosive mixture with air.

#### 10.4 Conditions to avoid

Heat, flames and sparks.

#### 10.5 Incompatible materials

Aluminium, Acids, Bases, Oxidizing agents, Alkali metals, Strong oxidizing agents, Halogenated compounds, Copper, Ammonia, Strong acids, Acid chlorides, Acid anhydrides, Reducing agents, Peroxides, acids, Halogens, Aluminum, Metallic salts

#### 10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides Other decomposition products - No data available

In the event of fire: see section 5

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### 11. TOXICOLOGICAL INFORMATION

#### 11.1 Information on toxicological effects

##### Acute toxicity

No data available

Inhalation: No data available

Dermal: No data available

##### Skin corrosion/irritation

No data available

##### Serious eye damage/eye irritation

No data available

##### Respiratory or skin sensitisation

No data available

##### Germ cell mutagenicity

No data available

##### Carcinogenicity

IARC: 1 - Group 1: Carcinogenic to humans (Benzene)

NTP: Known to be human carcinogen (Benzene)

OSHA: OSHA specifically regulated carcinogen (Benzene)

##### Reproductive toxicity

No data available

##### Specific target organ toxicity - single exposure

No data available

##### Specific target organ toxicity - repeated exposure

No data available

##### Aspiration hazard

No data available

##### Additional Information

RTECS: Not available

Effects due to ingestion may include:, Headache, Dizziness, Drowsiness, metabolic acidosis, Coma, Seizures., Methyl alcohol may be fatal or cause blindness if swallowed.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Stomach -

Irregularities - Based on Human Evidence

Kidney - Irregularities - Based on Human Evidence Liver

- Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence (Methanol) Stomach - Irregularities - Based on Human Evidence

(Ethanol) Kidney - Irregularities - Based on Human Evidence (2-Propanol) Stomach - Irregularities - Based on Human

Evidence (n-Butanol) Liver - Irregularities - Based on Human Evidence (tert-Butyl alcohol) Stomach - Irregularities - Based

on Human Evidence (n-Propanol) Stomach - Irregularities - Based on Human Evidence (tert-Pentanol) Stomach -

Irregularities - Based on Human Evidence (Benzene) Central nervous system - (tert-Butyl methyl ether)

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## 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

No data available

### 12.2 Persistence and degradability

No data available

### 12.3 Bioaccumulative potential

No data available

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### 12.6 Other adverse effects

No data available

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## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

#### Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

#### Contaminated packaging

Dispose of as unused product.

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## 14. TRANSPORT INFORMATION

#### DOT (US)

UN number: 1992                      Class: 3 (6.1)                      Packing group: II  
Proper shipping name: Flammable liquids, toxic, n.o.s. (Isooctane, Methanol, Benzene, n-Propanol)

#### IMDG

UN number: 1992                      Class: 3 (6.1)                      Packing group: II  
Proper shipping name: FLAMMABLE LIQUID, TOXIC, N.O.S. (Isooctane, Methanol, Benzene, n-Propanol)

#### IATA

UN number: 1992                      Class: 3 (6.1)                      Packing group: II  
Proper shipping name: Flammable liquid, toxic, n.o.s. (Isooctane, Methanol, Benzene, n-Propanol)

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## 15. REGULATORY INFORMATION

### SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Xylene	108-38-3	2007-07-01
Methanol	67-56-1	2007-07-01
Benzene	71-43-2	2007-07-01
tert-Butyl methyl ether	1634-04-4	2007-07-01
2-Propanol	67-63-0	1987-01-01
Ethylene glycol dimethyl ether	110-71-4	1993-04-24
n-Butanol	71-36-3	2007-07-01
tert-Butyl alcohol	75-65-0	2007-07-01
Butan-2-ol	78-92-2	1993-04-24

### SARA 311/312 Hazards

Fire Hazard, Acute Health Hazard, Chronic Health Hazard



**Massachusetts Right To Know Components**

	CAS-No.	Revision Date
2,2,4-Trimethylpentane	540-84-1	2007-03-01
Xylene	108-38-3	2007-07-01
Methanol	67-56-1	2007-07-01
Ethanol	64-17-5	2007-03-01
2-Propanol	67-63-0	1987-01-01
n-Butanol	71-36-3	2007-07-01
tert-Butyl alcohol	75-65-0	2007-07-01
iso-Butanol	78-83-1	1993-04-24
n-Propanol	71-23-8	1993-04-24
tert-Pentanol	75-85-4	1993-04-24
Butan-2-ol	78-92-2	1993-04-24
Ethylene glycol dimethyl ether	110-71-4	1993-04-24
Benzene	71-43-2	2007-07-01
tert-Butyl methyl ether	1634-04-4	2007-07-01
Diisopropyl ether	108-20-3	1993-04-24

**Pennsylvania Right To Know Components**

	CAS-No.	Revision Date
2,2,4-Trimethylpentane	540-84-1	2007-03-01
Xylene	108-38-3	2007-07-01
Methanol	67-56-1	2007-07-01
Ethanol	64-17-5	2007-03-01
2-Propanol	67-63-0	1987-01-01
n-Butanol	71-36-3	2007-07-01
tert-Butyl alcohol	75-65-0	2007-07-01
iso-Butanol	78-83-1	1993-04-24
n-Propanol	71-23-8	1993-04-24
tert-Pentanol	75-85-4	1993-04-24
Butan-2-ol	78-92-2	1993-04-24
2-Methoxy-2-methylbutane	994-05-8	2007-03-01
Ethylene glycol dimethyl ether	110-71-4	1993-04-24
Benzene	71-43-2	2007-07-01
tert-Butyl methyl ether	1634-04-4	2007-07-01
Diisopropyl ether	108-20-3	1993-04-24
2-Ethoxy-2-methylpropane	637-92-3	

**New Jersey Right To Know Components**

	CAS-No.	Revision Date
2,2,4-Trimethylpentane	540-84-1	2007-03-01
Xylene	108-38-3	2007-07-01
Methanol	67-56-1	2007-07-01
Ethanol	64-17-5	2007-03-01
2-Propanol	67-63-0	1987-01-01
n-Butanol	71-36-3	2007-07-01
tert-Butyl alcohol	75-65-0	2007-07-01
iso-Butanol	78-83-1	1993-04-24
n-Propanol	71-23-8	1993-04-24
tert-Pentanol	75-85-4	1993-04-24
Butan-2-ol	78-92-2	1993-04-24
2-Methoxy-2-methylbutane	994-05-8	2007-03-01
Ethylene glycol dimethyl ether	110-71-4	1993-04-24
Benzene	71-43-2	2007-07-01
tert-Butyl methyl ether	1634-04-4	2007-07-01
Diisopropyl ether	108-20-3	1993-04-24

**California Prop. 65 Components**

WARNING! This product contains a chemical known to the State of California to cause cancer.

	CAS-No.	Revision Date
Benzene	71-43-2	2009-02-01

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

Methanol  
Benzene

67-56-1  
71-43-2

2012-03-16  
2009-02-01

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## 16. OTHER INFORMATION

### HMIS Rating

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	3
Physical Hazard	0

### NFPA Rating

Health hazard:	2
Fire Hazard:	3
Reactivity Hazard:	0

### Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Separation Systems shall not be held liable for any damage resulting from handling or from contact with the above product.