Safety Data Sheet

Revision Date: 05/30/18
www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name:	**30044 / 502.2 Calibration Mix #3**
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	9
Intended use:	For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:

GHS Classification:	Germ Cell Mutagenicity Category 1B Carcinogenicity Category 1B Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 1 Hazardous for the ozone layer Flammable Liquid Category 2 Acute Toxicity - Inhalation Dust / Mist Category 3 Acute Toxicity - Dermal Category 3 Acute Toxicity - Oral Category 3
GHS Signal Word:	Danger
GHS Hazard:	Highly flammable liquid and vapour. Toxic if swallowed, in contact with skin or if inhaled. May cause genetic defects. May cause cancer. Causes damage to organs. Harms public health and the environment by destroying ozone in the upper atmosphere.
GHS Precautions:	
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilation and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/fume/gas/mist/vapours/spray. Wash hands and skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF SWALLOWED: Immediately call a POISON CENTER/doctor/.... IF ON SKIN: Wash with plenty of soap and water.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Specific treatment see section 4.
Rinse mouth.
Take off immediately all contaminated clothing and wash it before reuse.
In case of fire: Use extinguishing media in section 5 for extinction.

Storage: Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.
Refer to manufacturer/supplier for information on recovery/recycling.

Single Exposure Target Organs: Specific target organ toxicity - Single exposure - STOT SE 1: H370 Causes damage to organs. (C >= 10 %; No information to prove exclusion of certain routes of exposure); Specific target organ toxicity - Single exposure - STOT SE 2: H371 May cause damage to organs. (3 % <= C <10 %; Concentration limits for acute toxicity cannot be translated into GHS from the DSD especially when minimum classifications are given)

Repeated Exposure Target Organs: Specific target organ toxicity - Repeated exposure - STOT RE 2: H373 May cause damage to organs through prolonged or repeated exposure. (Minimum classification, No information to prove exclusion of certain routes of exposure)

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
methanol	67-56-1	200-659-6	97.2
1,2-dibromo-3-chloropropane	96-12-8	202-479-3	0.2
dibromomethane	74-95-3	200-824-2	0.2
bromochloromethane	74-97-5	200-826-3	0.2
Tetrachloroethylene	127-18-4	204-825-9	0.2
1,1,2-trichloroethane	79-00-5	201-166-9	0.2
1,2-dibromoethane	106-93-4	203-444-5	0.2
1,2-dichloropropane	78-87-5	201-152-2	0.2
1,2-dichloroethane	107-06-2	203-458-1	0.2
1,1,1,2-tetrachloroethane	630-20-6	211-135-1	0.2
cis-1,2-dichloroethylene	156-59-2	205-859-7	0.2
1,2,3-trichloropropane	96-18-4	202-486-1	0.2
1,1,2,2-tetrachloroethane	79-34-5	201-197-8	0.2
chlorodibromomethane	124-48-1	204-704-0	0.2
1,1-dichloropropene	563-58-6	209-253-3	0.2

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eyes: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention. Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye daily as advised by your physician. Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye daily as advised by your physician.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water may be ineffective but water spray can be used extinguish a fire if swept across the base of the flames. Water can absorb heat and keep exposed material from being damaged by fire. Not combustible. Use extinguishing media appropriate for surrounding fire. Use alcohol resistant foam, carbon dioxide, dry chemical, or water spray when fighting fires. Water or foam may cause frothing if liquid is burning but it still may be a useful extinguishing agent if carefully applied to the fire. Do not direct a water stream directly into the hot burning liquid.

Fire and/or Explosion Hazards: Vapors may be ignited by sparks, flames or other sources of ignition if material is above the flash point giving rise to a fire (Class B). Vapors are heavier than air and may travel to a source of ignition and flash back.

Fire Fighting Methods and Protection: Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.

Methods for Clean-up: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions: Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment

Storage Technical Measures and Conditions: Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
methanol	67-56-1	6000 ppm IDLH	250 ppm STEL	200 ppm TWA	200 ppm TWA; 260 mg/m3 TWA
1,2-dibromo-3-chloropropane	96-12-8	Not established	None Known	Not established	1 ppb TWA
Tetrachloroethylene	127-18-4	150 ppm IDLH	100 ppm STEL; 685 mg/m3 STEL	25 ppm TWA; 170 mg/m3 TWA	100 ppm TWA; C 200 ppm
1,2-dibromoethane	106-93-4	100 ppm IDLH	None Known	Not established	20 ppm TWA
1,2-dichloroethane	107-06-2	50 ppm IDLH	None Known	10 ppm TWA	50 ppm TWA
1,2,3-trichloropropane	96-18-4	100 ppm IDLH	None Known	0.005 ppm TWA	50 ppm TWA; 300 mg/m3 TWA

Personal Protection:

Engineering Measures: Local exhaust ventilation or other engineering controls are normally required when handling or using this product to avoid overexposure.

Respiratory Protection: Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection.

	Use a respirator if general room ventilation is not available or sufficient to eliminate symptoms.If an exposure limit is exceeded or if an operator is experiencing symptoms of inhalation overexposure as explained in Section 3, provide respiratory protection.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.
Skin Protection:	Avoid skin contact by wearing chemically resistant gloves, an apron and other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work. Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	No data available
Odor:	Mild
Physical State:	Liquid
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	1.1 (air = 1)
Boiling Point (°C):	131 °C 85.3 °C (HSDB) 196 °C 155 - 156 °C 64.7 °C at 760 mmHg (HSDB)
Melting Point (°C):	-98 °C
Flash Point (°F):	52
Flammability:	Highly Flammable
Upper Flammable/Explosive Limit, % in air:	36
Lower Flammable/Explosive Limit, % in air:	6
Autoignition Temperature (°C):	464 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	0.791 - 0.792 g/cm3 at 20 °C
Evaporation Rate:	No data available
Odor Threshold:	No data available
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	0
Molecular Weight:	32.04

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.
Materials to Avoid / Chemical Incompatiability:	Strong oxidizing agents
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation, Skin Contact, Eye Contact, Ingestion
Target Organs Potentially Affected By Exposure:	Eyes, Central nervous system stimulation, Skin, GI Tract, Respiratory Tract
Chemical Interactions That Change Toxicity:	None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation:	Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.
Inhalation Toxicity:	Harmful! Can cause systemic damage (see "Target Organs)Methanol can cause central nervous system depression and overexposure can cause damage to the optic nerve resulting in visual impairment or blindness.
Skin Contact:	Can cause moderate skin irritation, defatting, and dermatitis. Not likely to cause permanent damage.
Eye Contact:	Can cause moderate irritation, tearing and reddening, but not likely to permanently injure eye tissue.
Ingestion Irritation:	Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.Highly toxic and may be fatal if swallowed.
Ingestion Toxicity:	Toxic if swallowed. May cause target organ failure and/or death.May be fatal if swallowed.

Long-Term (Chronic) Health Effects:

Carcinogenicity:	Contains a probable or known human carcinogen.
Reproductive and Developmental Toxicity:	Contains a known human reproductive and/or developmental hazard.
Inhalation:	Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.Toxic! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs). Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs)
Skin Contact:	Upon prolonged or repeated contact can cause severe irritation, defatting, and dermatitis. May cause lingering affects but not likely to result in permanent damage if the exposure is eliminated.
Skin Absorption:	Upon prolonged or repeated exposure, no hazard in normal industrial use.
Ingestion:	Toxic if swallowed. May cause target organ failure and/or death.

Component Toxicological Data:
NIOSH:

Chemical Name	CAS No.	LD50/LC50
1,2-Dibromo-3-chloropropane	96-12-8	Dermal LD50 Rabbit 1400 mg/kg
Ethylene, tetrachloro-	127-18-4	Inhalation LC50 Rat : 34200 mg/m3/8H; Inhalation LC50 Mouse : 5200 ppm/4H; Oral LD50 Rat : 2629 mg/kg; Oral LD50 Mouse : 8100 mg/kg
Ethane, 1,2-dibromo-	106-93-4	Dermal LD50 Rabbit 300 mg/kg; Inhalation LC50 Rat 3.08 mg/L 2 h; Oral LD50 Rat 117 mg/kg
Ethane, 1,2-dichloro-	107-06-2	Dermal LD50 Rabbit 4890 mg/kg
Propane, 1,2,3-trichloro-	96-18-4	Dermal LD50 Rabbit 250 mg/kg
Methanol	67-56-1	Inhalation LC50 Rat 22500 ppm 8 h

Component Carcinogenic Data:
OSHA:

Chemical Name	CAS No.	
1,2-Dibromo-3-chloropropane	96-12-8	Present
Tetrachloroethylene	127-18-4	Present
1,2-Dibromoethane	106-93-4	Present
1,2-Dichloroethane	107-06-2	Present
1,2,3-Trichloropropane	96-18-4	Present

ACGIH:

Chemical Name	CAS No.	
Tetrachloroethylene	127-18-4	A3-animal carcinogen
Ethylene dibromide	106-93-4	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans
Ethylene dichloride	107-06-2	A4 - Not Classifiable as a Human Carcinogen
1,2,3-Trichloropropane	96-18-4	A2 - Suspected Human Carcinogen

NIOSH:

Chemical Name	CAS No.	
1,2-Dibromo-3-chloropropane	96-12-8	potential occupational carcinogen
Tetrachloroethylene	127-18-4	potential occupational carcinogen
Ethylene dibromide	106-93-4	potential occupational carcinogen
Ethylene dichloride	107-06-2	potential occupational carcinogen
1,2,3-Trichloropropane	96-18-4	potential occupational carcinogen

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 110 [in preparation]; Monograph 71 [1999];	78-87-5	Group 1

Monograph 41 [1986]		
Monograph 63; 1995	127-18-4	Group 2A
Monograph 71 [1999]; Supplement 7 [1987]; Monograph 15 [1977] (overall evaluation upgraded from 2B to 2A with supporting evidence from other relevant data)	106-93-4	Group 2A
Monograph 63 [1995]	96-18-4	Group 2A
Monograph 71 [1999]; Supplement 7 [1987]; Monograph 20 [1979]	96-12-8	Group 2B
Monograph 71 [1999]; Supplement 7 [1987]; Monograph 20 [1979]	107-06-2	Group 2B
Monograph 106 [in preparation]; Monograph 71 [1999]; Supplement 7 [1986]; Monograph 41 [1986]	630-20-6	Group 2B
Monograph 106 [in preparation]; Monograph 71 [1999]; Supplement 7 [1987]; Monograph 20 [1979]	79-34-5	Group 2B

12. ECOLOGICAL INFORMATION

Overview: Moderate ecological hazard. This product may be dangerous to plants and/or wildlife.
Mobility: No data
Persistence: No data
Bioaccumulation: No data
Degradability: Biodegrades slowly.
Ecological Toxicity Data: No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.
Disposal Methods: Dispose of by incineration following Federal, State, Local, or Provincial regulations.
Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:
DOT Proper Shipping Name: Flammable liquids, toxic, n.o.s. (Methanol, Tetrachloroethylene)
UN Number: UN1992
Hazard Class: 3(6.1)
Packing Group: II

International:
IATA Proper Shipping Name: Flammable liquids, toxic, n.o.s. (Methanol, Tetrachloroethylene)
UN Number: UN1992
Hazard Class: 3(6.1)
Packing Group: II

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
methanol	67-56-1	X	X	-	X
1,2-dibromo-3-chloropropane	96-12-8	X	X	-	X
Tetrachloroethylene	127-18-4	X	X	-	X
1,2-dibromoethane	106-93-4	X	X	-	X
1,2-dichloroethane	107-06-2	X	X	-	X
1,2,3-trichloropropane	96-18-4	-	X	-	X

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
1,2-Dibromo-3-chloropropane	96-12-8	Prop 65 Cancer
Tetrachloroethylene Tetrachloroethylene (Perchloroethylene)	127-18-4	Prop 65 Cancer
Vinyl trichloride	79-00-5	Prop 65 Cancer
Ethylene dibromide	106-93-4	Prop 65 Cancer
1,2-Dichloropropane	78-87-5	Prop 65 Cancer
Ethylene dichloride	107-06-2	Prop 65 Cancer
1,1,1,2-Tetrachloroethane	630-20-6	Prop 65 Cancer
1,2,3-Trichloropropane	96-18-4	Prop 65 Cancer
1,1,2,2-Tetrachloroethane	79-34-5	Prop 65 Cancer
Ethylene dibromide	106-93-4	Prop 65 Devolop Tox
Methanol	67-56-1	Prop 65 Devolop Tox
1,2-Dibromo-3-chloropropane	96-12-8	Prop 65 Rep Male
Ethylene dibromide	106-93-4	Prop 65 Rep Male

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
methanol	67-56-1	X	X	X	X
1,2-dibromo-3-chloropropane	96-12-8	X	X	X	X
dibromomethane	74-95-3	X	X	X	-
bromochloromethane	74-97-5	X	X	X	X
Tetrachloroethylene	127-18-4	X	X	X	X
1,1,2-trichloroethane	79-00-5	X	X	X	X
1,2-dibromoethane	106-93-4	X	X	X	X
1,2-dichloropropane	78-87-5	X	X	X	X
1,2-dichloroethane	107-06-2	X	X	X	X
1,1,1,2-tetrachloroethane	630-20-6	X	X	X	X
cis-1,2-dichloroethylene	156-59-2	-	X	X	-
1,2,3-trichloropropane	96-18-4	X	X	X	X
1,1,2,2-tetrachloroethane	79-34-5	X	X	X	X
chlorodibromomethane	124-48-1	X	X	X	X
1,1-dichloropropene	563-58-6	-	X	-	-

16. OTHER INFORMATION

Prior Version Date: 10/04/16

Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.

References: No data available

Disclaimer: Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions,

data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.