

M651_Tetrakis(hydroxymethyl)phosphonium Chloride_80%

Safety Data Sheet M651

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 11/24/2020

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Supersedes: 03/07/2019

SECTION 1: Identification

1.1. Identification

Product form	: Substance
Substance name	: M651_Tetrakis(hydroxymethyl)phosphonium_chloride_80%
Chemical name	: Tetrakis(hydroxymethyl)phosphonium chloride
CAS-No.	: 124-64-1
Product code	: M651
Formula	: C4H12ClO4P
Synonyms	: phosphonium, tetrakis(hydroxymethyl)-, chloride / tetrahydroxymethylphosphonium chloride, conc=80%, aqueous solution / tetrakis(hydroxymethyl)phosphochloride, conc=80%, aqueous solution / tetrakis(hydroxymethyl)phosphonium chloride / THPC (=tetrakis(hydroxymethyl)phosphonium chloride), conc=80%, aqueous solution

1.2. Recommended use and restrictions on use

Recommended use	: Industrial use
Restrictions on use	: No additional information available

1.3. Supplier

Special Materials Company
70 West 40th Street, 2nd Floor
New York, NY 10018
Ph: (646) 366-0400
Fax: (646) 366-0595

1.4. Emergency telephone number

Emergency number : CHEMTREC - (800) 424-9300 | Outside the US: 011 (703) 527-3887

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Acute toxicity (oral) Category 3	H301 Toxic if swallowed
Acute toxicity (dermal) Category 4	H312 Harmful in contact with skin
Skin corrosion/irritation Category 2	H315 Causes skin irritation
Serious eye damage/eye irritation Category 1	H318 Causes serious eye damage
Skin sensitization Category 1	H317 May cause an allergic skin reaction
Carcinogenicity Category 1A	H350 May cause cancer
Hazardous to the aquatic environment - Chronic Hazard Category 2	H411 Toxic to aquatic life with long lasting effects

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) :

Danger

Hazard statements (GHS-US) :

H301 - Toxic if swallowed
H312 - Harmful in contact with skin
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H350 - May cause cancer
H411 - Toxic to aquatic life with long lasting effects

Precautionary statements (GHS-US) :

P202 - Do not handle until all safety precautions have been read and understood
P270 - Do not eat, drink or smoke when using this product

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P273 - Avoid release to the environment
P280 - Wear face protection, eye protection, protective clothing
P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
P302+P352 - If on skin: Wash with plenty of water
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 or doctor/physician
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention
P362+P364 - Take off contaminated clothing and wash it before reuse
P391 - Collect spillage
P405 - Store locked up
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Name : M651_Tetrakis(hydroxymethyl)phosphonium_chloride_80%
CAS-No. : 124-64-1

Name	Product identifier	%	GHS US classification
tetrakis(hydroxymethyl)phosphonium chloride, conc=80%, aqueous solution	(CAS-No.) 124-64-1	~ 80	Acute Tox. 3 (Oral), H301
Formaldehyde	(CAS-No.) 50-00-0	0.1 – 0.5	Acute Tox. 3 (Oral), H301 Acute Tox. 3 (Dermal), H311 Acute Tox. 3 (Inhalation:dust,mist), H331 Skin Corr. 1B, H314 Skin Sens. 1, H317 Muta. 2, H341 Carc. 1A, H350

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

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : IF exposed or concerned: Get medical advice/attention. Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Never give anything by mouth to an unconscious person.

First-aid measures after inhalation : If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen. If breathing stops, give artificial respiration. Get medical advice/attention.

First-aid measures after skin contact : Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Take off contaminated clothes, wash skin with plenty of water or have a shower (during minimum 15 minutes) and if necessary take medical advice. Rinse skin with water/shower. Get medical advice/attention. Wash contaminated clothing before reuse.

First-aid measures after eye contact : In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain emergency medical attention.

First-aid measures after ingestion : IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Immediately call a poison center or doctor/physician.

4.2. Most important symptoms and effects (acute and delayed)

Potential Adverse human health effects and symptoms : Toxic if swallowed.

Symptoms/injuries : No data available.

Symptoms/injuries after ingestion : Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard.

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

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SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media : Dry powder. Carbon dioxide. Water spray. foam.
Unsuitable extinguishing media : None to our knowledge. If there is a fire close by, use suitable extinguishing agents.

5.2. Specific hazards arising from the chemical

- Fire hazard : Not flammable.
Explosion hazard : None known.

5.3. Special protective equipment and precautions for fire-fighters

- Precautionary measures fire : Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.
Firefighting instructions : Fight fire with normal precautions from a reasonable distance. Use water spray or fog for cooling exposed containers. Prevent fire-fighting water from entering environment.
Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Evacuate area.

6.1.1. For non-emergency personnel

- Protective equipment : Use chemically protective clothing. Chemical resistant gloves (according to European standard NF EN 374 or equivalent). Wear respiratory protection.
Emergency procedures : Mark the danger area. Evacuate unnecessary personnel. Keep upwind. Remove all sources of ignition. Do not breathe vapors. Avoid contact with skin, eyes and clothing.
Measures in case of dust release : In case of dust production: keep upwind. In case of dust production: consider evacuation. Dust production: have neighbourhood close doors and windows.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
Emergency procedures : Stop leak if safe to do so. Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- For containment : Stop leak if safe to do so. Dike for recovery or absorb with appropriate material. Collect spillage. Use suitable disposal containers.
Methods for cleaning up : Notify authorities if product enters sewers or public waters. Absorb spillage to prevent material damage. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Use suitable disposal containers. This material and its container must be disposed of in a safe way, and as per local legislation.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Do not handle until all safety precautions have been read and understood. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Use personal protective equipment as required. Provide good ventilation in process area to prevent formation of vapor. Do not eat, drink or smoke when using this product. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Hygiene measures : Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep only in original container. Store in a well-ventilated place. Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Incompatible products : Strong bases. Strong acids. Oxidizing agent.
Heat-ignition : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Information on mixed storage : Incompatible materials. (strong) acids. (strong) bases. Strong oxidizers.

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Storage area : Keep container tightly closed and in a well-ventilated place.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

M651_Tetrakis(hydroxymethyl)phosphonium_chloride_80% (124-64-1)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH TWA (mg/m ³)	2 mg/m ³
tetrakis(hydroxymethyl)phosphonium chloride, conc=80%, aqueous solution (124-64-1)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH TWA (mg/m ³)	2 mg/m ³
Formaldehyde (50-00-0)	
No additional information available	

8.2. Appropriate engineering controls

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Avoid all unnecessary exposure.

Materials for protective clothing:

No data available

Hand protection:

Wear protective gloves

Eye protection:

Chemical goggles or safety glasses

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

In case of inadequate ventilation wear respiratory protection

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Clear, light brown.
Color	: No data available on colour
Odor	: Pungent
Odor threshold	: No data available
pH	: No data available
pH solution	: 3 – 5
Melting point	: No data available
Freezing point	: ≈ 0 °C
Boiling point	: ≈ 239 °F
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Non flammable.
Vapor pressure	: Not determined

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Relative vapor density at 20 °C	: > 1
Relative density	: No data available
Specific gravity / density	: 1.34
Molecular mass	: 190.57 g/mol
Solubility	: Soluble in water. Water: 4 g/100ml
Partition coefficient n-octanol/water (Log Pow)	: -9.77 (QSAR)
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

9.2. Other information

VOC content	: 0 %
Other properties	: Hygroscopic.

SECTION 10: Stability and reactivity

10.1. Reactivity

When heated to decomposition, emits toxic fumes. Phosphorous oxide. Chlorine. Carbon oxides (CO, CO₂). Corrosive vapors.

10.2. Chemical stability

Stable at ambient temperature and under normal conditions of use.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Extremely high or low temperatures.

10.5. Incompatible materials

Strong acids. Strong bases. Strong oxidizers.

10.6. Hazardous decomposition products

Carbon monoxide. Carbon dioxide. Chlorine. Corrosive vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Toxic if swallowed.
Acute toxicity (dermal)	: Harmful in contact with skin.
Acute toxicity (inhalation)	: Not classified

M651_Tetrakis(hydroxymethyl)phosphonium_chloride_80% (124-64-1)	
LD50 oral rat	161 – 185 mg/kg (Equivalent or similar to OECD 401, Rat, Male / female, Experimental value, Active element, Oral, 14 day(s))
ATE US (oral)	161 mg/kg body weight
ATE US (dermal)	1100 mg/kg body weight
tetrakis(hydroxymethyl)phosphonium chloride, conc=80%, aqueous solution (124-64-1)	
LD50 oral rat	161 – 185 mg/kg (Equivalent or similar to OECD 401, Rat, Male / female, Experimental value, Active element, Oral, 14 day(s))
ATE US (oral)	161 mg/kg body weight
Formaldehyde (50-00-0)	
ATE US (oral)	100 mg/kg body weight
ATE US (dermal)	300 mg/kg body weight
ATE US (dust, mist)	0.5 mg/l/4h

Skin corrosion/irritation : Causes skin irritation.

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Serious eye damage/irritation	: Causes serious eye damage.
Respiratory or skin sensitization	: May cause an allergic skin reaction.
Germ cell mutagenicity	: Not classified
Carcinogenicity	: May cause cancer.

Formaldehyde (50-00-0)	
IARC group	1 - Carcinogenic to humans
National Toxicology Program (NTP) Status	Known Human Carcinogens

Reproductive toxicity : Not classified

Specific target organ toxicity – single exposure : Not classified

Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified

Viscosity, kinematic : No data available

Likely routes of exposure : Inhalation. Skin and eye contact. Ingestion.

Potential Adverse human health effects and symptoms : Toxic if swallowed.

Symptoms/injuries : No data available.

Symptoms/injuries after ingestion : Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - air	: Not classified.
Ecology - water	: No data available on ecotoxicity.

M651_Tetrakis(hydroxymethyl)phosphonium_chloride_80% (124-64-1)	
LC50 fish 1	2.9 mg/l Oncorhynchus mykiss (Rainbow trout)
EC50 Daphnia 1	8.7 mg/l

12.2. Persistence and degradability

M651_Tetrakis(hydroxymethyl)phosphonium_chloride_80% (124-64-1)	
Persistence and degradability	Not established.

tetrakis(hydroxymethyl)phosphonium chloride, conc=80%, aqueous solution (124-64-1)	
Persistence and degradability	Biodegradability in water: no data available. Not established.

12.3. Bioaccumulative potential

M651_Tetrakis(hydroxymethyl)phosphonium_chloride_80% (124-64-1)	
Partition coefficient n-octanol/water (Log Pow)	-9.77 (QSAR)
Bioaccumulative potential	Not established.

tetrakis(hydroxymethyl)phosphonium chloride, conc=80%, aqueous solution (124-64-1)	
Partition coefficient n-octanol/water (Log Pow)	-9.77 (QSAR)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4). Not established.

12.4. Mobility in soil

tetrakis(hydroxymethyl)phosphonium chloride, conc=80%, aqueous solution (124-64-1)	
Ecology - soil	Low potential for adsorption in soil.

12.5. Other adverse effects

Other information : Avoid release to the environment.

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SECTION 13: Disposal considerations

13.1. Disposal methods

- Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.
Ecology - waste materials : Avoid release to the environment. Hazardous waste due to toxicity.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

- Transport document description : UN2922 Corrosive liquids, toxic, n.o.s. (Tetrakis(hydroxymethyl)phosphonium chloride), 8 (6.1), III
UN-No.(DOT) : UN2922
Proper Shipping Name (DOT) : Corrosive liquids, toxic, n.o.s.
Tetrakis(hydroxymethyl)phosphonium chloride
Class (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136
Packing group (DOT) : III - Minor Danger
Subsidiary risk (DOT) : 6.1 - Class 6.1 - Poisonous materials 49 CFR 173.132
Hazard labels (DOT) : 8 - Corrosive
6.1 - Poison



- Dangerous for the environment : Yes
Marine pollutant : Yes



- DOT Packaging Non Bulk (49 CFR 173.xxx) : 203
DOT Packaging Bulk (49 CFR 173.xxx) : 241
DOT Symbols : G - Identifies PSN requiring a technical name
DOT Special Provisions (49 CFR 172.102) : IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). 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, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672).
T7 - 4 178.274(d)(2) Normal..... 178.275(d)(3)
TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.
TP28 - A portable tank having a minimum test pressure of 2.65 bar (265 kPa) may be used provided the calculated test pressure is 2.65 bar or less based on the MAWP of the hazardous 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) : 5 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 60 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.

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Transportation of Dangerous Goods

Transport by sea

Transport document description (IMDG)	: UN 2922 CORROSIVE LIQUID, TOXIC, N.O.S. (Tetrakis(hydroxymethyl)phosphonium chloride), 8 (6.1), III, MARINE POLLUTANT/ENVIRONMENTALLY HAZARDOUS
UN-No. (IMDG)	: 2922
Proper Shipping Name (IMDG)	: CORROSIVE LIQUID, TOXIC, N.O.S.
Class (IMDG)	: 8 - Corrosive substances
Packing group (IMDG)	: III - substances presenting low danger
Subsidiary risks (IMDG)	: 6.1 - Toxic substances
Limited quantities (IMDG)	: 5 L
EmS-No. (1)	: F-A
EmS-No. (2)	: S-A
Marine pollutant	: Yes



Air transport

Transport document description (IATA)	: UN 2922 Corrosive liquid, toxic, n.o.s. (Tetrakis(hydroxymethyl)phosphonium chloride), 8 (6.1), III, ENVIRONMENTALLY HAZARDOUS
UN-No. (IATA)	: 2922
Proper Shipping Name (IATA)	: Corrosive liquid, toxic, n.o.s.
Class (IATA)	: 8 - Corrosives
Packing group (IATA)	: III - Minor Danger
Subsidiary risks (IATA)	: 6.1 - Toxic substances

SECTION 15: Regulatory information

15.1. US Federal regulations

M651_Tetrakis(hydroxymethyl)phosphonium_chloride_80% (124-64-1)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

CERCLA RQ	100 lb Formaldehyde
SARA Section 302 Threshold Planning Quantity (TPQ)	500 lb Formaldehyde
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

tetrakis(hydroxymethyl)phosphonium chloride, conc=80%, aqueous solution (124-64-1)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Formaldehyde (50-00-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory
Subject to reporting requirements of United States SARA Section 313

CERCLA RQ	100 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	500 lb

15.2. International regulations

CANADA

No additional information available

EU-Regulations

M651_Tetrakis(hydroxymethyl)phosphonium_chloride_80% (124-64-1)

Listed on ELINCS (European List of Notified Chemical Substances)

National regulations

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Formaldehyde (50-00-0)

Listed on IARC (International Agency for Research on Cancer)
Listed as carcinogen on NTP (National Toxicology Program)

15.3. US State regulations

M651_Tetrakis(hydroxymethyl)phosphonium_chloride_80% (124-64-1)

State or local regulations U.S. - New Jersey - Right to Know Hazardous Substance List

Formaldehyde (50-00-0)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)	Maximum allowable dose level (MADL)
Yes	No	No	No		

Component	State or local regulations
tetrakis(hydroxymethyl)phosphonium chloride, conc=80%, aqueous solution(124-64-1)	U.S. - New Jersey - Right to Know Hazardous Substance List
Formaldehyde(50-00-0)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

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Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information : None.

Full text of H-phrases:

H301	Toxic if swallowed
H311	Toxic in contact with skin
H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H331	Toxic if inhaled
H341	Suspected of causing genetic defects
H350	May cause cancer
H411	Toxic to aquatic life with long lasting effects

SDS US (GHS HazCom 2012)

The information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of need that information is current, applicable and suited to the circumstances of use. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, vendor assumes no responsibility for injury caused by abnormal use of this material even if reasonable safety procedures are followed. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.