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Material Safety Data Sheet

0.1% Trifluoroacetic Acid (v/v) in Acetonitrile, LC-MS Grade

1. Product and company identification

Product name : 0.1% Trifluoroacetic Acid (v/v) in Acetonitrile, LC-MS Grade

Supplier : Thermo Fisher Scientific Manufacturer : Thermo Fisher Scientific Pierce Biotechnology Pierce Biotechnology

 Pierce Biotechnology
 Pierce Biotechnology

 P.O. Box 117
 P.O. Box 117

 Rockford, IL 61105
 Rockford, IL 61105

 United States
 United States

 \$15.968.0747 or
 \$15.968.0747 or

 800.874.3723
 \$800.874.3723

Code : 0085176 0085177

MSDS # 9016
Validation date : 10/24/2012.
Print date : 10/24/2012.

Responsible name MSDS (Regulatory Specialist)

CHEMTREC: Material uses Refer to the instruction booklet for proper and OUTSIDE US: intended use. Otherwise, contact supplier for specific

applications.

Product type : Liquid.

2. Hazards identification

Emergency overview

 Physical state
 : Liquid.

 Color
 : Clear.

 Odor
 : Pungent.

 Signal word
 : WARNING!

Hazard statements : FLAMMABLE LIQUID AND VAPOR. HARMFUL IF INHALED OR ABSORBED

THROUGH SKIN. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
MAY BE HARMFUL IF SWALLOWED. CONTAINS MATERIAL THAT CAN CAUSE

TARGET ORGAN DAMAGE.

Precautionary measures : Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Do

not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep away from heat, sparks and flame. Keep container tightly closed. Wash

thoroughly after handling.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard

(29 CFR 1910.1200).

Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

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2. Hazards identification

Inhalation : Toxic by inhalation. Irritating to respiratory system. Exposure to decomposition

products may cause a health hazard. Serious effects may be delayed following

exposure.

Ingestion : Harmful if swallowed.

Skin : Toxic in contact with skin. Irritating to skin.

Eyes : Irritating to eyes.

Potential chronic health effects

Chronic effects : Contains material that can cause target organ damage.

 Carcinogenicity
 : No known significant effects or critical hazards.

 Mutagenicity
 : No known significant effects or critical hazards.

 Teratogenicity
 : No known significant effects or critical hazards.

 Developmental effects
 : No known significant effects or critical hazards.

 Fertility effects
 : No known significant effects or critical hazards.

Target organs : Contains material which may cause damage to the following organs: blood, kidneys,

lungs, liver, mucous membranes, gastrointestinal tract, cardiovascular system, upper

respiratory tract, skin, eyes, central nervous system (CNS).

Over-exposure signs/symptoms

Inhalation : Adverse symptoms may include the following:

respiratory tract irritation

coughing

Ingestion : No specific data.

Skin : Adverse symptoms may include the following:

irritation redness

Eyes : Adverse symptoms may include the following:

pain or irritation watering redness

Medical conditions aggravated by over-

: Pre-existing disorders involving any target organs mentioned in this MSDS as being at

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risk may be aggravated by over-exposure to this product.

exposure

See toxicological information (Section 11)

3. Composition/information on ingredients

United States

Name	CAS number	%
acetonitrile	75-05-8	98 - 100

Canada

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Name	CAS number	%
acetonitrile	75-05-8	98 - 100

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

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4. First aid measures

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical

attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes

while removing contaminated clothing and shoes. Wash clothing before reuse. Clean

shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if

respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention

immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical

personnel. Never give anything by mouth to an unconscious person. Get medical

attention immediately.

: No action shall be taken involving any personal risk or without suitable training. If it is Protection of first-aiders

suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water

before removing it, or wear gloves.

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed.

The exposed person may need to be kept under medical surveillance for 48 hours.

5. Fire-fighting measures

Flammability of the product : Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air

and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer

may create fire or explosion hazard.

Extinguishing media

Suitable : Use dry chemical, CO2, water spray (fog) or foam.

Not suitable : Do not use water iet.

: Promptly isolate the scene by removing all persons from the vicinity of the incident if Special exposure hazards

there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water

spray to keep fire-exposed containers cool.

Hazardous thermal decomposition products : Decomposition products may include the following materials:

carbon dioxide carbon monoxide nitrogen oxides

Special protective equipment for fire-fighters

: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training.

Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put

on appropriate personal protective equipment (see Section 8).

Environmental precautions Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains

and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

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6. Accidental release measures

Methods for cleaning up

Small spill

: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosionproof equipment. Dispose of via a licensed waste disposal contractor.

Large spill

: Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7. Handling and storage

Handling

: Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking, Remove contaminated clothing and protective equipment before entering eating areas. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage

: Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers, Use appropriate containment to avoid environmental contamination.

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8. Exposure controls/personal protection

United States

Ingredient	Exposure limits
acetonitrile	ACGIH (United States). TWA: 40 ppm STEL: 60 ppm NIOSH (United States). TWA: 20 ppm MSHA (United States). TWA: 70 mg/m³ ACGIH TLV (United States). Absorbed through skin. : 20 ppm ACGIH TLV (United States, 3/2012). Absorbed through skin. TWA: 20 ppm 8 hours.

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8. Exposure controls/personal protection

NIOSH REL (United States, 6/2009).

TWA: 34 mg/m3 10 hours. TWA: 20 ppm 10 hours.

OSHA PEL (United States, 6/2010). TWA: 70 mg/m³ 8 hours.

TWA: 40 ppm 8 hours.

OSHA PEL 1989 (United States, 3/1989).

STEL: 105 mg/m3 15 minutes. STEL: 60 ppm 15 minutes. TWA: 70 mg/m³ 8 hours. TWA: 40 ppm 8 hours.

Canada

Occupational exposure limit	s	TWA	(8 hours)	STEL (15 mins	5)	Ceilin	g		
Ingredient	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
	US ACGIH 3/2012 AB 4/2009 BC 9/2011 ON 7/2010 QC 9/2011	20 20 20 20 20 40	- 34 - - 67	- - -	- - - - 60	- - - - 101	- - - -	- - - -	- - - -	ŀ	[1] [3] [1] [1]

[1]Absorbed through skin. [3]Skin sensitization

Consult local authorities for acceptable exposure limits.

procedures

Recommended monitoring : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Engineering measures

: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory

: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

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8. Exposure controls/personal protection

: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin

: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product

When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels

9. Physical and chemical properties

Physical state : Liquid.

Flash point : Closed cup: 6°C (42.8°F)

Auto-ignition temperature : 524°C (975.2°F) Flammable limits : Lower: 4.4%

Color : Clear Odor : Pungent. Boiling/condensation point : 82°C (179.6°F) Melting/freezing point : -50°C (-58°F) Vapor density : 1.42 [Air = 1]

10. Stability and reactivity

Chemical stability

: The product is stable.

Upper: 16%

Conditions to avoid

: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials

: Reactive or incompatible with the following materials:

oxidizing materials

Hazardous decomposition

products

: Under normal conditions of storage and use, hazardous decomposition products should

Possibility of hazardous

: Under normal conditions of storage and use, hazardous reactions will not occur.

reactions

11. Toxicological information

United States

10/24/2012.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
	LC50 Inhalation Vapor LD50 Dermal LD50 Oral	Rabbit	17100 ppm 980 mg/kg 2460 mg/kg	4 hours - -

Conclusion/Summary

: To the best of our knowledge, the toxicological properties of this product have not been thoroughly investigated

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11. Toxicological information

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
acetonitrile	Eyes - Moderate irritant	Rabbit	-	24 hours 100	-
	Skin - Mild irritant	Rabbit	-	microliters 500 milligrams	-

Conclusion/Summary

: Not available.

Sensitizer

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
acetonitrile	A4	-	D	None.	-	None.

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Canada

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
acetonitrile	LC50 Inhalation Vapor LD50 Dermal LD50 Oral	Rabbit	17100 ppm 980 mg/kg 2460 mg/kg	4 hours -

Conclusion/Summary

: To the best of our knowledge, the toxicological properties of this product have not been thoroughly investigated.

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
acetonitrile	Eyes - Moderate irritant	Rabbit	-	24 hours 100 microliters	-
	Skin - Mild irritant	Rabbit	-	500 milligrams	-

Conclusion/Summary

: Not available.

Sensitizer

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Classification

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11. Toxicological information

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
acetonitrile	A4	-	D	None.	-	None.

Mutagenicity

Conclusion/Summary

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

12. Ecological information

: No known significant effects or critical hazards. **Ecotoxicity**

: Not available.

: Not available.

United States

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
acetonitrile	Acute EC50 3600 mg/l Acute EC50 5838 mg/l Acute IC50 7300 mg/l Acute IC50 3685000 µg/l Fresh water Acute LC50 1000 mg/l Chronic NOEC 1000000 µg/l Fresh water Chronic NOEC 160000 µg/l Fresh water	Daphnia Daphnia - Daphnia pulex Algae Aquatic plants - Lemna minor Fish Aquatic plants - Lemna minor Daphnia - Daphnia magna	48 hours 18 hours 72 hours 96 hours 96 hours 96 hours 21 days

Conclusion/Summary

Persistence/degradability

Conclusion/Summary : Not available.

Canada

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
acetonitrile	Acute EC50 3600 mg/l Acute EC50 5838 mg/l Acute IC50 7300 mg/l Acute IC50 3685000 µg/l Fresh water Acute LC50 1000 mg/l Chronic NOEC 1000000 µg/l Fresh water Chronic NOEC 160000 µg/l Fresh water	Daphnia Daphnia - Daphnia pulex Algae Aquatic plants - Lemna minor Fish Aquatic plants - Lemna minor Daphnia - Daphnia magna	48 hours 18 hours 72 hours 96 hours 96 hours 96 hours 21 days

Conclusion/Summary

: Not available. Persistence/degradability

Conclusion/Summary : Not available.

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13. Disposal considerations

Waste disposal

: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*		
DOT Classification	UN1648	Acetonitrile Solution RQ(Acetonitrile)	3	II		
IATA-DGR Class	UN1648	Acetonitrile Solution	3	II		

PG* : Packing group

15. Regulatory information

United States

HCS Classification : Flammable liquid

Toxic material Irritating material Target organ effects

U.S. Federal regulations

: TSCA 8(a) PAIR: acetonitrile

TSCA 8(a) IUR Exempt/Partial exemption: Not determined

United States inventory (TSCA 8b): All components are listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found. SARA 302/304 emergency planning and notification; No products were found.

SARA 302/304/311/312 hazardous chemicals; acetonitrile

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: acetonitrile: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health

Clean Water Act (CWA) 307: acetonitrile

Clean Air Act Section 112 : Listed

(b) Hazardous Air Pollutants (HAPs)

Clean Air Act Section 602 : Not listed

Class I Substances

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15. Regulatory information

Clean Air Act Section 602 : Not listed

Class II Substances

DEA List I Chemicals

(Precursor Chemicals)

DEA List II Chemicals (Essential Chemicals) : Not listed : Not listed

SARA 313

	Product name	CAS number	Concentration		
Form R - Reporting requirements	acetonitrile	75-05-8	98 - 100		
Supplier notification	acetonitrile	75-05-8	98 - 100		

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: ACETONITRILE

New York : The following components are listed: Acetonitrile; Ethanenitrile

: The following components are listed: ACETONITRILE: CYANOMETHANE **New Jersey**

: The following components are listed: ACETONITRILE Pennsylvania

United States inventory : All components are listed or exempted.

(TSCA 8b) Canada

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WHMIS (Canada) : Class B-2: Flammable liquid

Class D-1A: Material causing immediate and serious toxic effects (Very toxic).

Class D-2B: Material causing other toxic effects (Toxic).

Canadian lists

Canadian NPRI : The following components are listed: Acetonitrile

CEPA Toxic substances : None of the components are listed. Canada inventory : All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

International regulations

International lists : Australia inventory (AICS): All components are listed or exempted.

China inventory (IECSC): All components are listed or exempted. Japan inventory: All components are listed or exempted. Korea inventory: All components are listed or exempted. Malaysia Inventory (EHS Register): Not determined.

New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.

Philippines inventory (PICCS): All components are listed or exempted.

Taiwan inventory (CSNN): Not determined.

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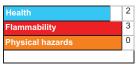
16. Other information

Label requirements

: FLAMMABLE LIQUID AND VAPOR. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY BE HARMFUL IF SWALLOWED. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.

Hazardous Material

Information System (U.S.A.)



The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)



Date of printing : 10/24/2012. : 10/24/2012. Date of issue

Date of previous issue : No previous validation.

Version

Prepared by : MSDS (Regulatory Specialist)

▼Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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