

Issuing Date 25-Jun-2015

Revision Date 10-Jan-2019

Revision Number 1

This safety data sheet was created pursuant to the requirements of 29 CFR 1910.1200

**1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING****Product identifier**

**Product Name** Raman Spec Kit - Thermo  
**Product Number** TFCY01  
**Synonyms** None

**Recommended use of the chemical and restrictions on use**

**Recommended Use** For Research and Development purposes only. Must only be handled by technically qualified individuals  
**Uses advised against** No information available

**Details of the supplier of the safety data sheet**

**Supplier** ERA, A Waters Company  
**Supplier Address** 16341 Table Mountain Parkway, Golden, CO 80403 USA  
**Non-Emergency Telephone Number** +1-303-431-8454  
**E-mail address** sdsinfo@eraqc.com

**Emergency telephone number**

**Company Emergency Phone Number** In case of EMERGENCY call CHEMTREC Day or Night  
Within USA and Canada: 800-424-9300  
International Call Collect: +1-703-527-3887

**2. Hazard(s) identification****Classification**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Skin corrosion/irritation	Category 2
Specific target organ toxicity (single exposure)	Category 3
Aspiration toxicity	Category 1
Flammable liquids	Category 2

**GHS Label elements, including precautionary statements****Emergency Overview****Signal word** Danger**Hazard Statements**

Causes skin irritation  
May cause drowsiness or dizziness  
May be fatal if swallowed and enters airways  
Highly flammable liquid and vapor

**Appearance** No information available**Physical state** Liquid**Odor** Solvent**Precautionary Statements - Prevention**

Wash face, hands and any exposed skin thoroughly after handling  
Wear protective gloves/protective clothing/eye protection/face protection  
Avoid breathing dust/fume/gas/mist/vapors/spray  
Use only outdoors or in a well-ventilated area  
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking  
Keep container tightly closed  
Ground/bond container and receiving equipment  
Use explosion-proof electrical/ ventilating/ lighting/ equipment  
Use only non-sparking tools  
Take precautionary measures against static discharge  
Keep cool

**Precautionary Statements - Response**

Specific treatment (see supplemental first aid instructions on this label)

**Skin**

If skin irritation occurs: Get medical advice/attention  
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower  
Wash contaminated clothing before reuse

**Inhalation**

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
Call a POISON CENTER or doctor/physician if you feel unwell

**Ingestion**

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician  
Do NOT induce vomiting

**Fire**

In case of fire: Use CO2, dry chemical, or foam for extinction

**Precautionary Statements - Storage**

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

**Precautionary Statements - Disposal**

Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC)**

Not applicable

**Unknown Toxicity**

0 % of the mixture consists of ingredient(s) of unknown toxicity

**Other information**

Very toxic to aquatic life with long lasting effects  
PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION

**Interactions with Other Chemicals**

No information available.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Chemical name	CAS No.	Weight-%
Cyclohexane	110-82-7	100

**4. First-aid measures****First aid measures**

<b><u>General Advice</u></b>	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
<b>Eye contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists. Do not rub affected area.
<b>Skin contact</b>	Get medical attention if irritation develops and persists. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.
<b>Inhalation</b>	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, (trained personnel should) give oxygen.
<b>Ingestion</b>	Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Aspiration hazard if swallowed - can enter lungs and cause damage. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Call a physician or poison control center immediately.
<b>Self-protection of the first aider</b>	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

**Most important symptoms and effects, both acute and delayed**

<b>Most Important Symptoms and Effects</b>	Difficulty in breathing. Coughing and/ or wheezing. Dizziness. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.
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**Indication of any immediate medical attention and special treatment needed**

<b>Notes to Physician</b>	Treat symptomatically.
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## 5. FIRE-FIGHTING MEASURES

### Suitable Extinguishing Media

Dry chemical, CO<sub>2</sub>, water spray or regular foam. Use water spray or fog; do not use straight streams.

### Unsuitable extinguishing media

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

### Specific hazards arising from the chemical

Some may be transported hot.

#### **Uniform Fire Code**

Irritant: Liquid  
Flammable Liquid: I-B

### Hazardous Combustion Products

Carbon oxides.

### Explosion Data

**Sensitivity to Mechanical Impact** No.

**Sensitivity to Static Discharge** Yes.

### Protective equipment and precautions for firefighters

Move containers from fire area if you can do it without risk.

## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

#### **Personal precautions**

Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. See section 8 for more information. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material.

#### **Other Information**

Water spray may reduce vapor; but may not prevent ignition in closed spaces.

### Environmental precautions

#### **Environmental precautions**

Prevent entry into waterways, sewers, basements or confined areas.

### Methods and material for containment and cleaning up

#### **Methods for containment**

A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

#### **Methods for cleaning up**

Use clean non-sparking tools to collect absorbed material. Dike far ahead of liquid spill for later disposal. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

## 7. Handling and Storage

### Precautions for safe handling

#### **Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Use personal protection equipment. Avoid breathing vapors or mists. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use grounding and bonding connection when transferring this material to prevent static discharge, fire or explosion. Use with local exhaust ventilation. Use spark-proof tools and explosion-proof equipment. Keep in an area equipped with sprinklers. Use according to package label instructions.

### Conditions for safe storage, including any incompatibilities

#### **Storage**

Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labeled containers. Do not store near combustible materials. Keep in an area equipped with sprinklers. Store in accordance with the particular national regulations. Store in accordance with local regulations.

#### **Incompatible Products**

Strong acids. Strong oxidizing agents. Strong bases.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

#### **Exposure Guidelines**

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Cyclohexane 110-82-7	TWA: 100 ppm	TWA: 300 ppm TWA: 1050 mg/m <sup>3</sup> (vacated) TWA: 300 ppm (vacated) TWA: 1050 mg/m <sup>3</sup>	IDLH: 1300 ppm TWA: 300 ppm TWA: 1050 mg/m <sup>3</sup>

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits Immediately Dangerous to Life or Health

#### **Other Exposure Guidelines**

Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992)

### Appropriate engineering controls

#### **Engineering Measures**

Showers  
Eyewash stations  
Ventilation systems

### Individual protection measures, such as personal protective equipment

#### **Eye/face protection**

Tight sealing safety goggles.

#### **Skin and body protection**

Wear protective gloves and protective clothing. Long sleeved clothing. Impervious gloves. Chemical resistant apron. Antistatic boots.

#### **Respiratory protection**

No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Physical and Chemical Properties

<b>Physical state</b>	Liquid	<b>Odor</b>	Solvent
<b>Appearance</b>	No information available	<b>Odor Threshold</b>	No information available
<b>Color</b>	No information available		

<u>Property</u>	<u>Values</u>	<u>Remarks</u>	<u>Method</u>
<b>pH</b>	No data available	None known	
<b>Melting / freezing point</b>	No data available	None known	
<b>Boiling point / boiling range</b>	No data available	None known	
<b>Flash Point</b>	No data available	None known	
<b>Evaporation Rate</b>	No data available	None known	
<b>Flammability (solid, gas)</b>	No data available	None known	
<b>Flammability Limit in Air</b>			
<b>Upper flammability limit</b>	No data available		
<b>Lower flammability limit</b>	No data available		
<b>Vapor pressure</b>	No data available	None known	
<b>Vapor density</b>	No data available	None known	
<b>Specific Gravity</b>	0.779	None known	
<b>Water Solubility</b>	Immiscible in water	None known	
<b>Solubility in other solvents</b>	No data available	None known	
<b>Partition coefficient: n-octanol/water</b>	No data available	None known	
<b>Autoignition temperature</b>	No data available	None known	
<b>Decomposition temperature</b>	No data available	None known	
<b>Kinematic viscosity</b>	No data available	None known	
<b>Dynamic viscosity</b>	No data available	None known	
<b>Explosive properties</b>	No data available		
<b>Oxidizing properties</b>	No data available		

Other Information

<b>Softening Point</b>	No data available
<b>VOC Content (%)</b>	No data available
<b>Particle Size</b>	No data available
<b>Particle Size Distribution</b>	

## 10. STABILITY AND REACTIVITY

### **Reactivity**

No data available.

### **Chemical stability**

Stable under recommended storage conditions.

### **Possibility of Hazardous Reactions**

None under normal processing.

### **Hazardous Polymerization**

Hazardous polymerization does not occur.

### **Conditions to avoid**

Heat, flames and sparks.

### **Incompatible materials**

Strong acids. Strong oxidizing agents. Strong bases.

### **Hazardous Decomposition Products**

Carbon oxides.

## 11. TOXICOLOGICAL INFORMATION

### **Information on likely routes of exposure**

#### **Product Information**

##### **Inhalation**

Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract. Aspiration into lungs can produce severe lung damage. May cause pulmonary edema. Pulmonary edema can be fatal. May cause drowsiness or dizziness.

##### **Eye contact**

Specific test data for the substance or mixture is not available. Irritating to eyes. (based on components). May cause redness, itching, and pain. May cause irritation.

##### **Skin contact**

Specific test data for the substance or mixture is not available. Causes skin irritation. (based on components). Repeated exposure may cause skin dryness or cracking.

##### **Ingestion**

Specific test data for the substance or mixture is not available. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Potential for aspiration if swallowed. May cause lung damage if swallowed. Aspiration may cause pulmonary edema and pneumonitis. May be fatal if swallowed and enters airways.

#### **Component Information**

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Cyclohexane 110-82-7	= 12705 mg/kg ( Rat )	> 2000 mg/kg ( Rabbit )	= 13.9 mg/L ( Rat ) 4 h

### **Information on toxicological effects**

#### **Symptoms**

Erythema (skin redness). May cause redness and tearing of the eyes. Difficulty in breathing. Coughing and/ or wheezing. Asthma-like and/ or skin allergy-like symptoms. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

<b>Sensitization</b>	No information available.
<b>Carcinogenicity</b>	Contains no ingredient listed as a carcinogen.
<b>Reproductive toxicity</b>	No information available.
<b>STOT - single exposure</b>	No information available.
<b>STOT - repeated exposure</b>	No information available.
<b>Chronic Toxicity</b>	No known effect based on information supplied. Aspiration may cause pulmonary edema and pneumonitis.
<b>Target Organ Effects</b>	Respiratory system. Eyes. Skin.
<b>Aspiration Hazard</b>	No information available.

**Numerical measures of toxicity Product Information**

The following values are calculated based on chapter 3.1 of the GHS document

Not applicable

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

Very toxic to aquatic life with long lasting effects.

Chemical name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Cyclohexane 110-82-7	72h EC50: > 500 mg/L (Desmodesmus subspicatus)	96h LC50: 3.96 - 5.18 mg/L (Pimephales promelas) 96h LC50: 23.03 - 42.07 mg/L (Pimephales promelas) 96h LC50: 24.99 - 44.69 mg/L (Lepomis macrochirus) 96h LC50: 48.87 - 68.76 mg/L (Poecilia reticulata)	EC50 = 85.5 mg/L 5 min EC50 = 93 mg/L 10 min	24h EC50: > 400 mg/L

**Persistence and Degradability**

No information available.

**Bioaccumulation**

Chemical name	Log Pow
Cyclohexane 110-82-7	3.44

**Other adverse effects**

No information available.



### 13. DISPOSAL CONSIDERATIONS

#### Waste treatment methods

<b>Disposal methods</b>	This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261).
<b>Contaminated Packaging</b>	Dispose of contents/containers in accordance with local regulations.
<b>US EPA Waste Number</b>	D001 U056

#### **California Hazardous Waste Codes** 331

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical name	California Hazardous Waste
Cyclohexane 110-82-7	Toxic Ignitable

### 14. TRANSPORT INFORMATION

Transportation classifications may vary depending on the quantity per package and may be influenced by regional or country variations in regulations.

#### DOT

<b>Proper Shipping Name</b>	CYCLOHEXANE
<b>Hazard Class</b>	3
<b>Packing Group</b>	II
<b>Reportable Quantity (RQ) (RQ/% in mixture)</b>	CYCLOHEXANE: RQ KG= 454.00
<b>Description</b>	UN1145, CYCLOHEXANE, 3, II, RQ
<b>Emergency Response Guide Number</b>	128

#### TDG

<b>UN Number</b>	UN1145
<b>Proper Shipping Name</b>	CYCLOHEXANE
<b>Hazard Class</b>	3
<b>Packing Group</b>	II
<b>Description</b>	UN1145, CYCLOHEXANE, 3, II

#### MEX

<b>UN-No.</b>	UN1145
<b>Proper Shipping Name</b>	CYCLOHEXANE
<b>Hazard Class</b>	3
<b>Packing Group</b>	II
<b>Description</b>	UN1145, CYCLOHEXANE, 3, II

#### ICAO

<b>UN-No.</b>	UN1145
<b>Proper Shipping Name</b>	CYCLOHEXANE
<b>Hazard Class</b>	3
<b>Packing Group</b>	II
<b>Description</b>	UN1145, CYCLOHEXANE, 3, II

#### IATA

<b>UN-No.</b>	UN1145
<b>Proper Shipping Name</b>	CYCLOHEXANE

**Hazard Class** 3  
**Packing Group** II  
**Description** UN1145, CYCLOHEXANE, 3, II

**IMDG/IMO**

**UN-No.** UN1145  
**Proper Shipping Name** CYCLOHEXANE  
**Hazard Class** 3  
**Packing Group** II  
**EmS-No.** F-E, S-D  
**Marine Pollutant** Product is a marine pollutant according to the criteria set by IMDG/IMO  
**Description** UN1145, CYCLOHEXANE, 3, II, (22°C C.C.)

**RID**

**UN-No.** UN1145  
**Proper Shipping Name** CYCLOHEXANE  
**Hazard Class** 3  
**Packing Group** II  
**Classification code** F1  
**Description** UN1145, CYCLOHEXANE, ENVIRONMENTALLY HAZARDOUS, 3, II

**ADR**

**UN-No.** UN1145  
**Proper Shipping Name** CYCLOHEXANE  
**Hazard Class** 3  
**Packing Group** II  
**Classification code** F1  
**Tunnel restriction code** (D/E)  
**Description** UN1145, CYCLOHEXANE, ENVIRONMENTALLY HAZARDOUS, 3, II

**ADN**

**UN-No.** UN1145  
**Proper Shipping Name** CYCLOHEXANE  
**Hazard Class** 3  
**Packing Group** II  
**Classification code** F1  
**Description** UN1145, CYCLOHEXANE, ENVIRONMENTALLY HAZARDOUS, 3, II  
**Hazard Labels** 3  
**Limited Quantity** 1 L  
**Ventilation** VE01

## 15. REGULATORY INFORMATION

**International Inventories**

**TSCA** Contact supplier for inventory compliance status  
**DSL** Contact supplier for inventory compliance status

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory  
**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List

**US Federal Regulations****SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	CAS No.	Weight-%	SARA 313 - Threshold Values %
Cyclohexane - 110-82-7	110-82-7	100	1.0

**SARA 311/312 Hazard Categories**

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications

**CWA (Clean Water Act)**

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Cyclohexane 110-82-7	1000 lb			X

**CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Cyclohexane 110-82-7	1000 lb		RQ 1000 lb final RQ RQ 454 kg final RQ

**US State Regulations****California Proposition 65**

This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know Regulations**

Chemical name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Cyclohexane 110-82-7	X	X	X	X	

**International Regulations**

Component	Carcinogen Status	Exposure Limits
Cyclohexane 110-82-7 ( 100 )		Mexico: TWA 300 ppm Mexico: TWA 1050 mg/m <sup>3</sup> Mexico: STEL 375 ppm Mexico: STEL 1300 mg/m <sup>3</sup>

**Canada****WHMIS Hazard Class**

Not determined

**16. OTHER INFORMATION**

<b>NFPA</b>	<b>Health Hazards 2</b>	<b>Flammability 3</b>	<b>Instability 0</b>	<b>Physical and Chemical Hazards - Personal Protection</b> X
<b>HMIS</b>	<b>Health Hazards 2</b>	<b>Flammability 3</b>	<b>Physical Hazard 0</b>	

<b>Prepared By</b>	Product Stewardship 23 British American Blvd. Latham, NY 12110 1-800-572-6501
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<b>Revision Note</b>	No information available

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The

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**End of Safety Data Sheet**