

Collagen I, rat tail (3-5 mg/ml): sc-136157

BACKGROUND

The extensive family of COL gene products (collagens) is composed of several chain types, including fibril-forming interstitial collagens (types I, II, III and V) and basement membrane collagens (type IV), each type containing multiple isoforms. Collagens are fibrous, extracellular matrix proteins with high tensile strength and are the major components of connective tissue, such as tendons and cartilage. All collagens contain a triple helix domain and frequently show lateral self-association in order to form complex connective tissues.

PRODUCT

Collagen Type I is purified from rat tail tendon ($\geq 90\%$) by SDS-PAGE; supplied as 100 mg (measured by pyrochemiluminescence) in 0.02N acetic acid.

Collagen Type I may be used as a gel on coverslips or tissue culture dishes, or used as a thin coating for cell attachment. Cells may be cultured on top of the gel, within the gel, or between gel layers.

This product has been tested for its ability to promote the attachment and spreading of HT 1080 human fibrosarcoma cells. Collagen Type I has been successfully gelled over a wide range of dilutions and will form a firm gel up to a dilution of 1:10. Further dilution may decrease the rigidity of the gel, as will the time from manufacture. Recommended protocols are provided as guidelines only; each laboratory should empirically determine the optimal conditions for their unique applications.

Collagen Type I is a membrane-filtered (0.2 μm) preparation, and has been tested and found negative for the presence of bacteria, fungi and mycoplasma.

RECOMMENDED COATING PROTOCOL

- Dilute material to 50 $\mu\text{g/ml}$ using 0.02N acetic acid. Collagen is insoluble at neutral pH.
- Add sufficient diluted Collagen Type I to coat dishes with 5 $\mu\text{g/cm}^2$ (e.g. 1-2 ml of the above solution is sufficient to cover a 35 mm dish).
- Incubate at room temperature for one hour.
- Carefully aspirate remaining solution. Rinse well to remove acid, using PBS or serum-free medium.
- Plates may be used immediately or air dried, and may then be stored at 2-8° C for up to one week under sterile conditions.

RECOMMENDED GELLING PROTOCOL

- Collagen Type I will gel when its pH is brought to alkalinity using the procedure below.

AMMONIUM HYDROXIDE METHOD

- Prepare ammonia vapor chamber by taping a sterile 2 inch gauze sponge to the inside lid of a 150 mm petri dish. Saturate the gauze with ammonium hydroxide. Place lid on dish and set aside.
- Add sufficient volume of Collagen Type I (approximately 50-100 $\mu\text{l}/22$ mm coverslip, 6.0 ml/100 mm dish, 2.3 ml/60 mm dish, or 1.0 ml/35 mm dish) to sterile glass or polystyrene culture dishes, spreading with sterile pipette to evenly cover entire growth surface.

RECOMMENDED GELLING PROTOCOL *cont.*

- Transfer collagen coated coverslips or dishes with lids off to ammonia vapor chamber and expose for three minutes.
- Soak coated coverslips or dishes in sterile dH_2O for 30 minutes (use 5 ml/35 mm dishes, 10 ml/60 mm dishes, etc.). Aspirate and replace with 0.5 to 1 ml of sterile dH_2O and let sit overnight lidded in a laminar flow hood.
- Aspirate the dH_2O and replace with serum supplemented balanced salt solution; store at 2-8° C.

ALTERNATIVE GELATION METHOD

- Place following on ice:
 - Collagen I, rat tail (sc-136157)
 - Sterile 10X phosphate buffered saline (10X PBS)
 - Sterile dH_2O
 - Sterile 1N NaOH
- Determine the final volume of collagen solution to be used and the desired final collagen concentration.
- Place on ice a sterile tube of sufficient capacity to contain the final volume of collagen.
- Perform the following steps using aseptic technique in a class 100 hood.

1. Add to the tube the following volume of 10X PBS:

$$\frac{\text{final volume}}{10} = \text{ml 10X PBS}$$

2. Calculate the volume of collagen to be used (do not add to the tube until step 6)

$$\frac{\text{final volume} \times \text{final collagen concentration in mg/ml}}{\text{concentration in bottle (see product vial)}} = \text{volume collagen to be added}$$

3. Add to the 10X PBS the following volume of sterile ice cold 1N NaOH:

$$(\text{volume collagen to be added}) \times 0.023 \text{ ml} = \text{volume 1N NaOH}$$

4. Add to the 10X PBS/1N NaOH the following volume of sterile ice cold dH_2O :

$$(\text{final volume}) - (\text{volume collagen}) - (\text{volume 10X PBS}) - (\text{volume 1N NaOH}) = \text{volume } \text{dH}_2\text{O} \text{ to add}$$

5. Mix the contents of the tube and hold in ice.
6. Add the calculated volume of collagen and mix-leave on ice until ready to use.

- The collagen solution can be used immediately or held on ice for 2-3 hours.
- When ready to use, aseptically deliver the solution into the cell culture device and allow to gel at 37° C for 30 minutes.

STORAGE AND RESEARCH USE

Stable for a minimum of 3 months from day of shipment when stored at 2-8° C.

For research use only, not for use in diagnostic procedures. Not for resale.



The Power to Question

SAFETY DATA SHEET

Santa Cruz Biotechnology, Inc.

Revision date 17-May-2021

Version 1.2

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product Identifier

Product Name Collagen I, rat tail (3-4 mg/ml)
Product Code SC-136157
Pure substance/mixture mixture

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

For research use only. Not intended for diagnostic or therapeutic use.

1.3. Details of the supplier of the safety data sheet

Santa Cruz Biotechnology, Inc.
10410 Finnell Street
Dallas, TX 75220
831.457.3800
800.457.3801
scbt@scbt.com

Santa Cruz Biotechnology, Inc.
Bergheimer Str. 89-2
69115 Heidelberg, Germany
+49.6221.4503 0
+1.800.457.3801
europe@scbt.com

1.4. Emergency telephone number

Chemtrec
1.800.424.9300 (Within USA)
+1.703.527.3887 (Outside USA)

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [GHS]
Carcinogenicity Category 1A - (H350)

2.2. Label Elements

This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [GHS]

Signal word Danger

Symbols/Pictograms



Hazard statements H350 - May cause cancer

Precautionary Statements - EU (§28, 1272/2008)

P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P281 - Use personal protective equipment as required
P308 + P313 - IF exposed or concerned: Get medical advice/attention
P405 - Store locked up
P501 - Dispose of contents/ container to an approved waste disposal plant



2.3. Other Hazards

General Hazards

Not applicable

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Molecular Weight No information available
Formula No information available

3.2 mixtures

Chemical name	EC No	CAS No.	Weight-%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Water	Present	7732-18-5	98.8	-
Collagen I, rat tail	-	-	1	-
Hydrochloric Acid	Present	7647-01-0	0.1	Acute Tox. 3 (H331) Skin Corr. 1A (H314) Press. Gas
Acetic acid	Present	64-19-7	0.1	Flam. Liq. 3 (H226) Acute Tox. 5 (H303) Acute Tox. 3 (H331) Acute Tox. 4 (H312) Skin Corr. 1A (H314) Eye Dam. 1 (H318) Skin Sens. 1 (H317) Aquatic Acute 3 (H402)

Full text of H- and EUH-phrases: see section 16

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

General advice Consult a physician if necessary.
Inhalation Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration.
Skin Contact Wash skin with soap and water.
Eye contact Wash with plenty of water.
Ingestion Never give anything by mouth to an unconscious person. Clean mouth with water.

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

Symptoms No information available.

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

Note to physicians Treat symptomatically.

Section 5: FIRE FIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical No information available
Hazardous combustion products No information available.

5.3. Advice for firefighters

Special protective equipment for fire-fighters As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.



Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation, especially in confined areas.
For emergency responders Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions See Section 12 for additional Ecological Information.

6.3. Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.
Methods for cleaning up Pick up and transfer to properly labeled containers.

6.4. Reference to other sections

See Section 12: ECOLOGICAL INFORMATION.

Section 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice.
General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed in a dry and well-ventilated place.

7.3. Specific end use(s)

Risk Management Methods (RMM) The information required is contained in this Material Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure Limits This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Chemical name	European Union	United Kingdom	France	Spain	Germany
Hydrochloric Acid 7647-01-0	TWA 5 ppm TWA 8 mg/m ³ STEL 10 ppm STEL 15 mg/m ³	STEL: 5 ppm STEL: 8 mg/m ³ TWA: 1 ppm TWA: 2 mg/m ³	STEL: 5 ppm STEL: 7.6 mg/m ³	STEL: 10 ppm STEL: 15 mg/m ³ TWA: 5 ppm TWA: 7.6 mg/m ³	TWA: 2 ppm TWA: 3.0 mg/m ³ Ceiling / Peak: 4 ppm Ceiling / Peak: 6 mg/m ³ TWA: 3 mg/m ³
Acetic acid 64-19-7	TWA 10 ppm deleted with effect from August 21, 2018 TWA 25 mg/m ³ deleted with effect from August 21, 2018	STEL: 20 ppm STEL: 50 mg/m ³ TWA: 10 ppm TWA: 25 mg/m ³	STEL: 10 ppm STEL: 25 mg/m ³	STEL: 20 ppm STEL: 50 mg/m ³ TWA: 10 ppm TWA: 25 mg/m ³	TWA: 10 ppm TWA: 25 mg/m ³ Ceiling / Peak: 20 ppm Ceiling / Peak: 50 mg/m ³
Component	Italy	Portugal	Netherlands	Finland	Denmark
Hydrochloric Acid 7647-01-0 (0.1)	TWA: 5 ppm TWA: 8 mg/m ³ STEL: 10 ppm STEL: 15 mg/m ³	STEL: 10 ppm STEL: 15 mg/m ³ Ceiling: 2 ppm TWA: 5 ppm TWA: 8 mg/m ³	STEL: 15 mg/m ³ TWA: 8 mg/m ³	STEL: 5 ppm STEL: 7.6 mg/m ³	Ceiling: 5 ppm Ceiling: 8 mg/m ³
Acetic acid 64-19-7 (0.1)		STEL: 15 ppm TWA: 10 ppm TWA: 25 mg/m ³	STEL: 50 mg/m ³ TWA: 25 mg/m ³	TWA: 5 ppm TWA: 13 mg/m ³ STEL: 10 ppm STEL: 25 mg/m ³	TWA: 10 ppm TWA: 25 mg/m ³
Chemical name	Austria	Switzerland	Poland	Norway	Ireland
Hydrochloric Acid 7647-01-0	STEL 10 ppm STEL 15 mg/m ³ TWA: 5 ppm TWA: 8 mg/m ³	STEL: 4 ppm STEL: 6 mg/m ³ TWA: 2 ppm TWA: 3 mg/m ³	STEL: 10 mg/m ³ TWA: 5 mg/m ³	Ceiling: 5 ppm Ceiling: 7 mg/m ³	TWA: 8 mg/m ³ TWA: 5 ppm STEL: 10 ppm STEL: 15 mg/m ³



Acetic acid 64-19-7	STEL 20 ppm STEL 50 mg/m ³ TWA: 10 ppm TWA: 25 mg/m ³	STEL: 20 ppm STEL: 50 mg/m ³ TWA: 10 ppm TWA: 25 mg/m ³	STEL: 50 mg/m ³ TWA: 25 mg/m ³	TWA: 10 ppm TWA: 25 mg/m ³ STEL: 15 ppm STEL: 37.5 mg/m ³	TWA: 10 ppm TWA: 25 mg/m ³ STEL: 20 ppm STEL: 37 mg/m ³
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Derived No Effect Level (DNEL) No information available
 Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Engineering Controls Showers
 Eyewash stations
 Ventilation systems
 Eye/face protection Wear safety glasses with side shields (or goggles).
 Skin and Body Protection Wear protective gloves and protective clothing.
 Respiratory protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
 Environmental exposure controls No information available.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State liquid
 Appearance No information available
 Odor Pungent

<u>Property</u>	<u>Values</u>
pH	No information available
Melting point/freezing point	No information available
Boiling point	No information available
Flash point	No information available
Liquid Density	No information available
Evaporation rate	No information available
Upper flammability limits	No information available
Lower flammability limit	No information available
Vapor pressure	No information available
Vapor density	No information available
Specific gravity	No information available
Water solubility	No information available
Solubility in other solvents	No information available
Partition coefficient	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Kinematic viscosity	No information available
Explosive properties	No information available
Oxidizing properties	No information available

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity
 Reactivity Not applicable

10.2. Chemical stability
 Stability Stable under recommended storage conditions.
 Sensitivity to Mechanical Impact No information available.
 Sensitivity to Static Discharge No information available.

10.3. Possibility of hazardous reactions
 Hazardous polymerization No information available.
 Possibility of Hazardous Reactions None under normal processing.



10.4. Conditions to avoid

Conditions to avoid Extremes of temperature and direct sunlight.

10.5. Incompatible materials

Incompatible materials Strong oxidizing agents.

10.6. Hazardous decomposition products

Hazardous Decomposition Products None known based on information supplied.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity

Product Information Product does not present an acute toxicity hazard based on known or supplied information.
Unknown acute toxicity 1% of the mixture consists of ingredient(s) of unknown toxicity.

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

ATEmix (inhalation-dust/mist) 45.55 mg/l

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Water	> 90 mL/kg (Rat)		
Hydrochloric Acid	238 - 277 mg/kg (Rat)	> 5010 mg/kg (Rabbit)	= 1.68 mg/L (Rat) 1 h
Acetic acid	= 3310 mg/kg (Rat)	= 1060 mg/kg (Rabbit)	= 11.4 mg/L (Rat) 4 h

Chemical name	ACGIH	IARC	NTP	OSHA
Hydrochloric Acid 7647-01-0	-	Group 1 Group 3	-	X

IARC (International Agency for Research on Cancer) Group 1 - Carcinogenic to Humans

Not classifiable as a human carcinogen

OSHA (Occupational Safety and Health Administration of the US Department of Labor) X - Present

Section 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity May cause long lasting harmful effects to aquatic life.
Unknown aquatic toxicity 1% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

Chemical name	Algae/aquatic plants	Fish	Crustacea
Hydrochloric Acid		282: 96 h Gambusia affinis mg/L LC50 static	
Acetic acid		75: 96 h Lepomis macrochirus mg/L LC50 static 79: 96 h Pimephales promelas mg/L LC50 static	65: 48 h Daphnia magna mg/L EC50 Static 47: 24 h Daphnia magna mg/L EC50

12.2. Persistence and degradability

Persistence and degradability No information available.

12.3. Bioaccumulative potential

Bioaccumulation No information available.

Chemical name	Partition coefficient
Acetic acid	-0.31

12.4. Mobility in soil

Mobility No information available.

**12.5. Results of PBT and vPvB assessment**

PBT and vPvB assessment No information available.

12.6. Other adverse effects

Other adverse effects No information available

Section 13: DISPOSAL CONSIDERATIONS**13.1. Waste treatment methods**

Waste from residues/unused products Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging Do not reuse container.

Section 14: TRANSPORT INFORMATION

	<u>RID / ADR</u>	<u>IMDG</u>	<u>ICAO (air) / IATA</u>
	Not regulated	Not regulated	Not regulated
14.1 UN/ID no	-	-	-
14.2 Proper shipping name	-	-	-
14.3 Hazard Class	-	-	-
Subsidiary hazard class / Labels	-	-	-
14.4 Packing Group	-	-	-
14.5 14.5 Environmental Hazard	-	-	-
14.6 14.6 Special Provisions	-	-	-

Section 15: REGULATORY INFORMATION**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****National Regulations****European Union**

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

International Inventories**All of the components in the product are on the following Inventory lists**

No information available

Chemical name	TSCA	DSL	NDSL	EINECS	ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Water	X	X	-	X	-	-	X	X	X	X
Hydrochloric Acid	X	X	-	X	-	X	X	X	X	X
Acetic acid	X	X	-	X	-	X	X	X	X	X

X - Listed

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

15.2. Chemical safety assessment



Chemical Safety Report

No information available

Section 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3

H226 - Flammable liquid and vapor
H303 - May be harmful if swallowed
H312 - Harmful in contact with skin
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H331 - Toxic if inhaled
H402 - Harmful to aquatic life
No information available.

Revision note

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006**Disclaimer**

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet