## **Material Safety Data Sheet**

# SANTA CRUZ

## Towbin, without SDS, 10X: sc-24955

#### CHEMICAL IDENTIFICATION

Synonyms: Towbin, without SDS, 10X

**Description:** Supplied as 10 x concentrate (0.25 M Tris and 1.92 M Glycine in aqueous solution). Dilute 100 ml of concentrate in 800 ml water and 100 ml methanol to make 1 L of working

solution; For Western Blotting. Amount: 1000 ml 10X Storage: Store at 4° C

#### COMPOSITION/INFORMATION ON INGREDIENTS

CAS #: 56-40-6 Glycin

CAS #: 77-86-1 Tris (hydroxymethyl) aminomethane

CAS #: 7732-18-5 Water

#### **HAZARDS IDENTIFICATION**

Caution! May cause respiratory and digestive tract irritation. May cause eye and skin irritation.

Target Organs: No data found.

Potential Health Effects Eye: May cause eye irritation. Skin: May cause skin irritation.

**Ingestion:** May cause irritation of the digestive tract. **Inhalation:** May cause respiratory tract irritation.

Chronic: No information found.

#### FIRST-AID MEASURES

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

#### FIRE EXTINGUISHING MEASURES

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use extinguishing media appropriate to the surrounding fire. Substance is noncombustible.

Extinguishing Media: Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.

Flash Point: Not available.

Autoignition Temperature: Not available.

Explosion Limits; Lower: Not available. Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 0;

Instability: 0

#### ACCIDENTAL RELEASE MEASURES

Person-related safety precautions: cordon off area of spill; wear self-contained breathing apparatus, protective clothing and heavy rubber gloves.

#### HANDLING AND STORAGE

Observe all federal, state and local regulations when storing this substance. Store away from incompatible substances. Store in a cool, dry place; keep container tightly closed when not in use.

#### EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment as follows:

Breathing equipment: NIOSH/MSHA-approved respirator.

Protection of hands: chemical-resistant rubber gloves.

Eye protection: chemical safety goggles.

#### PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid. Appearance: clear.

#### STABILITY AND REACTIVITY

Chemical Stability: Stable.

Conditions to Avoid: Incompatible materials.

Incompatibilities with Other Materials: Strong oxidizing agents, strong bases.

Hazardous Decomposition Products: Nitrogen oxides, oxides of sulfur.

Hazardous Polymerization: Will not occur.

#### TOXICOLOGICAL INFORMATION

CAS# 56-40-6: MB7600000 CAS# 77-86-1: TY2900000 CAS# 7732-18-5: ZC0110000

 $LD_{50}/LC_{50}$ :

CAS# 56-40-6:

Oral, mouse:  $LD_{50} = 4920 \text{ mg/kg}$ ; Oral, rat:  $LD_{50} = 7930 \text{ mg/kg}$ ;

CAS# 77-86-1:

Oral, rat:  $LD_{50} = 5900 \text{ mg/kg}$ ;

CAS# 7732-18-5:

Oral, rat: LD50 = >90 mL/kg;

Carcinogenicity:

CAS# 56-40-6: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA. CAS# 77-86-1: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA. CAS# 7732-18-5: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

Epidemiology: No data available. Teratogenicity: No data available. Reproductive Effects: No data available. Neurotoxicity: No data available.

Mutagenicity: No data available. Other Studies: No data available.

## Towbin, without SDS, 10X: sc-24955



#### **ECOLOGICAL INFORMATION**

Data not yet available.

#### **DISPOSAL CONSIDERATIONS**

Observe all federal, state and local environmental regulations.

#### TRANSPORT INFORMATION

No classification currently assigned.

#### REGULATORY INFORMATION

**US FEDERAL** 

#### **TSCA**

CAS# 56-40-6 is listed on the TSCA inventory. CAS# 77-86-1 is listed on the TSCA inventory. CAS# 7732-18-5 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List. Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA. **SARA** 

#### CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 77-86-1: acute.

Section 313

No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.

#### Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

#### OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

#### **STATE**

CAS# 56-40-6 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 77-86-1 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

**Hazard Symbols:** 

Not available.

Risk Phrases:

Safety Phrases:

WGK (Water Danger/Protection)

CAS# 56-40-6: 0

CAS# 77-86-1: 1

CAS# 7732-18-5: No information available.

Canada - DSL/NDSL

CAS# 56-40-6 is listed on Canada's DSL List.

CAS# 77-86-1 is listed on Canada's DSL List.

CAS# 7732-18-5 is listed on Canada's DSL List.

Canada - WHMIS

WHMIS: Not available.

Canadian Ingredient Disclosure List

**Exposure Limits** 

CAS# 56-40-6: OEL-RUSSIA:STEL 5 mg/m3

#### OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Santa Cruz Biotechnology shall not be held liable for any damage resulting from handling or from contact with the product.



# Material Safety Data Sheet

## Towbin, without SDS, 10X

(contains Tris(hydroxymethyl)aminomethane)

Section 1 - Chemical Product and Company Identification

**MSDS Name:** Tris(hydroxymethyl)aminomethane

Catalog Numbers: sc-24955

Synonyms: THAM; Tris; Trisaminol; Trismethylolaminomethane; 2-amino-2-(hydroxymethyl) propane-

1,3-diol; Trizma; Tromethane; Tromethamine; Tris buffer.

**Company Identification:** 

Santa Cruz Biotechnology, Inc.

2145 Delaware Avenue Santa Cruz, CA 95060

For information, call: 800.457.3801 / 831.457.3800

Fax:831.457.3801

For emergency, call:831.457.3800 x121/ 831.251.2170

## Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
77-86-1	Tris (hydroxymethyl) aminomethane	> 99.8	201-064-4

**Hazard Symbols:** XI **Risk Phrases:** 36/38

Section 3 - Hazards Identification

#### **EMERGENCY OVERVIEW**

Appearance: white solid. May cause liver and kidney damage. The toxicological properties of this material have not been fully investigated. Hygroscopic (absorbs moisture from the air). Causes eye and skin irritation. May cause respiratory tract irritation. **Warning!** 

Target Organs: Kidneys, liver.

#### **Potential Health Effects**

**Eye:** Causes eye irritation. **Skin:** Causes skin irritation.

**Ingestion:** May cause severe gastrointestinal tract irritation with nausea, vomiting and possible burns. May cause liver and kidney damage. The toxicological properties of this substance have not been fully investigated. May cause metabolic changes including hypoglycemia, and hyperkalemia. May depress respiratory center.

**Inhalation:** May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. The toxicological properties of this substance have not been fully investigated.

#### Section 11 - Toxicological Information

RTECS#:

**CAS#** 77-86-1: TY2900000

**LD50/LC50:** CAS# 77-86-1:

Oral, rat: LD50 = 5900 mg/kg;

**Carcinogenicity:** 

CAS# 77-86-1: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

**Epidemiology:** No information available. **Teratogenicity:** No information available.

Reproductive Effects: No information available.

**Neurotoxicity:** No information available. **Mutagenicity:** No information available.

Other Studies: See actual entry in RTECS for complete information.

#### Section 12 - Ecological Information

**Ecotoxicity:** No data available. No information available.

**Environmental:** No information found.

**Physical:** No information found. **Other:** No information available.

#### Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed. RCRA U-Series: None listed.

#### Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	No information available.				No information available.
Hazard Class:					
UN Number:					
Packing Group:					

#### Section 15 - Regulatory Information

#### **US FEDERAL**

#### **TSCA**

CAS# 77-86-1 is listed on the TSCA inventory.

#### **Health & Safety Reporting List**

None of the chemicals are on the Health & Safety Reporting List.

#### **Chemical Test Rules**

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### **TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

#### SARA

#### **CERCLA Hazardous Substances and corresponding RQs**

None of the chemicals in this material have an RQ.

#### **SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPO.

#### **SARA Codes**

CAS # 77-86-1: acute.

#### Section 313

No chemicals are reportable under Section 313.

#### **Clean Air Act:**

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.

#### **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

#### OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

#### **STATE**

CAS# 77-86-1 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California No Significant Risk Level: None of the chemicals in this product are listed.

## **European/International Regulations**

## **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

ΧI

#### **Risk Phrases:**

R 36/38 Irritating to eyes and skin.

#### **Safety Phrases:**

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 7 Keep container tightly closed.

#### WGK (Water Danger/Protection)

CAS# 77-86-1: 1

#### Canada - DSL/NDSL

CAS# 77-86-1 is listed on Canada's DSL List.

#### Canada - WHMIS

This product has a WHMIS classification of D2B.

#### **Canadian Ingredient Disclosure List**

#### **Exposure Limits**

#### Section 16 - Additional Information

MSDS Creation Date: 11/9/04

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall we be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if we have been advised of the possibility of such damages.

## Material Safety Data Sheet



Towbin, without SDS, 10X (contains Glycine)

The Power to Question

## Section 1 - Chemical Product and Company Identification

MSDS Name: Glycine

Catalog Numbers: sc-24955

Synonyms: Aminoacetic acid; Aminoethanoic acid; Gly.

**Company Identification:** 

Santa Cruz Biotechnology, Inc.

2145 Delaware Avenue Santa Cruz, CA 95060

For information, call: 800.457.3801 / 831.457.3800

**Fax Number:** 831.457.3801 **For emergency, call:** 831.457.3800 x121

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
56-40-6	Glycine	>98	200-272-2

**Hazard Symbols:** None listed. **Risk Phrases:** None listed.

#### Section 3 - Hazards Identification

#### **EMERGENCY OVERVIEW**

Appearance: white crystals. **Caution!** May be absorbed through intact skin. May cause eye and skin irritation. May cause respiratory tract irritation.

Target Organs: No data found.

#### **Potential Health Effects**

**Eve:** May cause eye irritation.

**Skin:** May cause skin irritation. Low hazard for usual industrial handling. May be absorbed through the skin.

**Ingestion:** Ingestion of large amounts may cause gastrointestinal irritation. Low hazard for usual industrial handling.

Inhalation: May cause respiratory tract irritation. Low hazard for usual industrial handling.

Chronic: No information found.

#### Section 4 - First Aid Measures

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Get medical aid if irritation develops or persists. Wash clothing before reuse. Flush skin with plenty of soap and water.

**Ingestion:** Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

#### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Dusts at sufficient concentrations can form explosive mixtures with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: Not applicable.

**Autoignition Temperature:** Not available. **Explosion Limits, Lower:**Not available.

**Upper:** Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 1; Instability: 0

#### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8. **Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

#### Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid breathing dust.

**Storage:** Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

#### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

**Exposure Limits** 

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Glycine	none listed	none listed	none listed

OSHA Vacated PELs: Glycine: No OSHA Vacated PELs are listed for this chemical.

#### **Personal Protective Equipment**

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

#### Section 9 - Physical and Chemical Properties

Physical State: Crystals Appearance: white Odor: odorless pH: 4.0 (1.4% sol.)

Vapor Pressure: Negligible. Vapor Density: Not available. Evaporation Rate: Negligible. Viscosity: Not available. Boiling Point: Not available.

Freezing/Melting Point:232-236 deg C (dec)
Decomposition Temperature:232 deg C

Solubility: Soluble.

**Specific Gravity/Density:**1.1607 (water=1)

Molecular Formula:C2H5NO2 Molecular Weight:75.06

## Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

**Conditions to Avoid:** Dust generation, excess heat.

**Incompatibilities with Other Materials:** Strong oxidizing agents.

Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, irritating and toxic fumes

and gases, carbon dioxide.

Hazardous Polymerization: Will not occur.

#### Section 11 - Toxicological Information

RTECS#:

CAS# 56-40-6: MB7600000

**LD50/LC50:** CAS# 56-40-6:

Oral, mouse: LD50 = 4920 mg/kg;

Oral, rat: LD50 = 7930 mg/kg;

**Carcinogenicity:** 

CAS# 56-40-6: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

**Epidemiology:** No information available. **Teratogenicity:** No information available.

**Reproductive Effects:** No information available. **Neurotoxicity:** Major inhibitory neurotransmitter.

Mutagenicity: No information available.

Other Studies: See actual entry in RTECS for complete information.

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed. RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	No information available.				No information available.
Hazard Class:					
UN Number:					
Packing Group:					

Section 15 - Regulatory Information

#### **US FEDERAL**

#### **TSCA**

CAS# 56-40-6 is listed on the TSCA inventory.

## **Health & Safety Reporting List**

None of the chemicals are on the Health & Safety Reporting List.

#### **Chemical Test Rules**

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### **TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

#### **SARA**

#### **CERCLA Hazardous Substances and corresponding RQs**

None of the chemicals in this material have an RO.

#### **SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

#### Section 313

No chemicals are reportable under Section 313.

#### **Clean Air Act:**

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.

#### **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

#### **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

#### STATE

CAS# 56-40-6 is not present on state lists from CA, PA, MN, MA, FL, or NJ. California No Significant Risk Level: None of the chemicals in this product are listed.

#### **European/International Regulations**

**European Labeling in Accordance with EC Directives** 

#### **Hazard Symbols:**

Not available.

#### **Risk Phrases:**

#### **Safety Phrases:**

S 24/25 Avoid contact with skin and eyes.

#### **WGK (Water Danger/Protection)**

CAS# 56-40-6: 0

Canada - DSL/NDSL

CAS# 56-40-6 is listed on Canada's DSL List.

#### Canada - WHMIS

This product has a WHMIS classification of Not controlled..

#### **Canadian Ingredient Disclosure List**

**Exposure Limits** 

CAS# 56-40-6: OEL-RUSSIA:STEL 5 mg/m3

#### Section 16 - Additional Information

MSDS Creation Date: 11/9/04

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall we be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if we have been advised of the possibility of such damages.