

SAFETY DATA SHEET

ANGUS CHEMICAL COMPANY

Product name : TRIS AMINO ULTRA PURE USP/EP
Biologics GradeRevision Date: 04/06/2023
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ANGUS CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : TRIS AMINO ULTRA PURE USP/EP Biologics Grade

Manufacturer or supplier's detailsCompany name of supplier : ANGUS CHEMICAL COMPANY
Address : 1500 E. LAKE COOK ROAD
Buffalo Grove IL 60089-6553

Customer Information Number +1-847-808-3711

E-mail address NAR_CC@ANGUS.COM

Emergency telephone number +1 800-424-9300 (24x7)Recommended use : Biological buffer.
Pharmaceutical intermediate.
For industrial use.
The ANGUS Chemical Company recommends that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact the Customer Information Group (see Section 1 of this data sheet).

2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

Other hazards

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a substance.

Components

Chemical name	CAS-No.	Concentration (% w/w)
Tris(hydroxymethyl)aminomethane	77-86-1	>= 99

4. FIRST AID MEASURES

- If inhaled : Move person to fresh air; if effects occur, consult a physician.
- In case of skin contact : Wash off with plenty of water.
- In case of eye contact : Flush eyes thoroughly with water for several minutes.
Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.
- If swallowed : No emergency medical treatment necessary.
- Most important symptoms and effects, both acute and delayed : None known.
- Protection of first-aiders : If potential for exposure exists refer to Section 8 for specific personal protective equipment.

5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Water.
Carbon dioxide fire extinguishers.
Dry chemical fire extinguishers.
- Specific hazards during firefighting : Pneumatic conveying and other mechanical handling operations can generate combustible dust. To reduce the potential for dust explosions, do not permit dust to accumulate.
Container may rupture from gas generation in a fire situation.
- Hazardous combustion products : During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating.
Combustion products may include and are not limited to:
Carbon dioxide.
Carbon monoxide.
Nitrogen oxides.
- Further information : Hand held dry chemical or carbon dioxide extinguishers may be used for small fires.
Soak thoroughly with water to cool and prevent re-ignition.
Keep people away. Isolate fire and deny unnecessary entry.

Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container.
Move container from fire area if this is possible without hazard.
Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed.

Special protective equipment for firefighters : Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves).
If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Keep unnecessary and unprotected personnel from entering the area.
Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions : Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up : Contain spilled material if possible.
Collect in suitable and properly labeled containers.
Use care to minimize generation of airborne dust.
See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Advice on safe handling : Avoid generating and breathing dust.
Good housekeeping and controlling of dusts are necessary for safe handling of product.
Keep container closed.
See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage : Store in a dry place.
Do not store in:
Zinc.
Galvanized containers.
Aluminum.
Copper.
Copper alloys.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : Local exhaust ventilation may be necessary for some operations.
Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations.

Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required.

Hand protection

Remarks : Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Neoprene. Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Eye protection : Use safety glasses (with side shields).

Skin and body protection : Wear clean, body-covering clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Crystals

Colour : White

Odour : Odorless

Odour Threshold : No test data available

pH : 10.4
Method: Literature
1% aqueous solution.

Melting point/range : 340 - 342 °F / 171 - 172 °C
Method: Literature

Freezing point : 340 - 342 °F / 171 - 172 °C
Method: Literature

Boiling point/boiling range : Not applicable

Flash point : Method: closed cup
Not applicable

Evaporation rate : No test data available

Upper explosion limit / Upper flammability limit	:	No test data available
Lower explosion limit / Lower flammability limit	:	No test data available
Vapour pressure	:	Method: Literature Nil
Relative vapour density	:	Not applicable
Partition coefficient: n-octanol/water	:	log Pow: -2.31 (68 °F / 20 °C) Method: OECD Test Guideline 107 Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Auto-ignition temperature	:	No test data available
Decomposition temperature	:	No test data available
Viscosity Viscosity, kinematic	:	Not applicable
Molecular weight	:	121.14 g/mol Method: Calculated.
Particle size	:	No data available

10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Hygroscopic Stable under recommended storage conditions. See Storage, Section 7.
Possibility of hazardous reactions	:	Polymerization will not occur.
Conditions to avoid	:	Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Avoid moisture.
Incompatible materials	:	Avoid contact with: Strong acids. Strong oxidizers. Avoid contact with metals such as: Zinc. Galvanized metals. Aluminum. Copper. Copper alloys. Avoid unintended contact with: Halogenated hydrocarbons.
Hazardous decomposition products	:	Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to:

Carbon dioxide.
Carbon monoxide.
Nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity

Not classified based on available information.

Product:

Acute oral toxicity : Remarks: Very low toxicity if swallowed.
Harmful effects not anticipated from swallowing small amounts.

LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 425
Symptoms: No deaths occurred at this concentration.

Acute dermal toxicity : Remarks: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD 402 or equivalent
Symptoms: No deaths occurred at this concentration.

Skin corrosion/irritation

Not classified based on available information.

Product:

Species : Rabbit
Assessment : No skin irritation
Method : OECD Test Guideline 404
Remarks : Prolonged contact is essentially nonirritating to skin.
Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation

Not classified based on available information.

Product:

Species : Rabbit
Assessment : No eye irritation
Method : OECD Test Guideline 405
Remarks : May cause slight temporary eye irritation.
Corneal injury is unlikely.

Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Product:

Remarks : For skin sensitization:
Did not cause allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:
No relevant data found.

Germ cell mutagenicity

Not classified based on available information.

Carcinogenicity

Not classified based on available information.

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Teratogenicity

Product

For similar material(s):
Did not cause birth defects or any other fetal effects in laboratory animals.

Mutagenicity

Product

For similar material(s):
In vitro genetic toxicity studies were negative.

Reproductive toxicity

Not classified based on available information.

STOT - single exposure

Not classified based on available information.

Product:

Assessment : Evaluation of available data suggests that this material is not an STOT-SE toxicant.

STOT - repeated exposure

Not classified based on available information.

Repeated dose toxicity

Product:

Species : Rat
Application Route : Oral
Method : OECD Test Guideline 421
Remarks : Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Aspiration toxicity

Not classified based on available information.

Product:

Product test data not available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

- Toxicity to fish : Remarks: Material is practically non-toxic to fish on an acute basis (LC50 > 100 mg/L).
LC50 (zebra fish (Brachydanio rerio)): 460 mg/l
Exposure time: 96.0 h
Remarks: For similar material(s):
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 980.00 mg/l
Exposure time: 48.0 h
Method: OECD Test Guideline 202
- Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 397 mg/l
End point: Growth rate
Exposure time: 72 h
Method: OECD Test Guideline 201
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (water flea Daphnia magna): 3.99 mg/l
End point: number of offspring
Exposure time: 21 d
Remarks: For similar material(s):

Components:

trometamol:

- Toxicity to fish : Remarks: Material is practically non-toxic to fish on an acute basis (LC50 > 100 mg/L).
LC50 (zebra fish (Brachydanio rerio)): 460 mg/l
Exposure time: 96.0 h
Remarks: For similar material(s):
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 980.00 mg/l
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- Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 397 mg/l
End point: Growth rate
Exposure time: 72 h
- Toxicity to daphnia and other : NOEC (water flea Daphnia magna): 3.99 mg/l

aquatic invertebrates
(Chronic toxicity)

End point: number of offspring
Exposure time: 21 d
Remarks: For similar material(s):

Persistence and degradability

Product:

Biodegradability : Result: Readily biodegradable.
Remarks: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

Test Type: O2 consumption
Biodegradation: 100 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
Remarks: 10-day Window: Pass

Biochemical Oxygen Demand (BOD) : 0 %
Incubation time: 5 d

: 84%
Incubation time: 28 d

Photodegradation : Test Type: Half-life (indirect photolysis)
Sensitiser: OH radicals
Rate constant: 3.35E-11 cm³/s
Method: Estimated.

Components:

trometamol:

Biodegradability : Result: Readily biodegradable.
Remarks: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

Biodegradation: 100 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent
Remarks: 10-day Window: Pass

Bioaccumulative potential

Components:

trometamol:

Partition coefficient: n-octanol/water : log Pow: -2.31
Method: Measured
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Mobility in soil

Product:

Distribution among environmental compartments : Koc: 22 - 75
Method: Estimated.

Remarks: Potential for mobility in soil is high (Koc between 50 and 150).

Components:

trometamol:

Distribution among environmental compartments : Koc: 75
Method: Estimated.
Remarks: Potential for mobility in soil is high (Koc between 50 and 150).

Other adverse effects

Product:

Endocrine disrupting potential : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Components:

trometamol:

Results of PBT and vPvB assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER.
All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations.
Regulations may vary in different locations.
Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.
THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION:
Composition Information.
FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.
Landfill.
ANGUS HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL.

14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

49 CFR

Not regulated as a dangerous good

Special precautions for user

Not applicable

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : No SARA Hazards

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations

Massachusetts Right To Know

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know

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Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

New Jersey Right To Know

trometamol 77-86-1

California Prop. 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

TSCA : All substances listed as active on the TSCA inventory y
(positive listing)

TSCA list

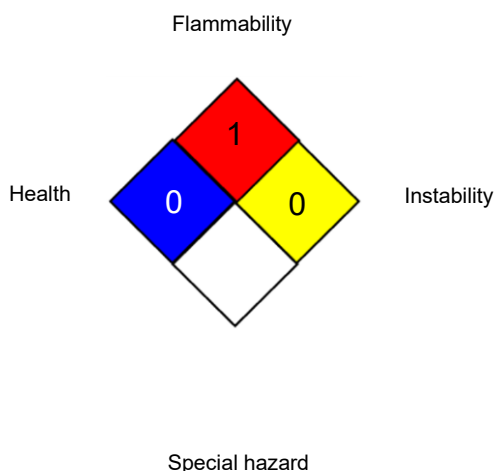
No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:

HEALTH		0
FLAMMABILITY		0
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

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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 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.

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