



Technical Data Sheet

Tenite™ Butyrate 576E3720010 Clear, Trsp

Application/Uses

- Furniture/Furniture trim
- Recreational

Product Description

Tenite™ cellulosic plastics are noted for their excellent balance of properties - toughness, hardness, strength, surface gloss, clarity, and a warm feel. The mechanical properties of Tenite™ cellulosic plastics differ with plasticizer levels. Lower plasticizer content yields a harder surface, higher heat resistance, greater rigidity, higher tensile strength, and better dimensional stability. Higher plasticizer content increases impact strength. Color concentrates are available in let-down ratios from 10:1 to 40:1. Tenite™ Cellulose Acetate Butyrate 576-10 contains an odor mask and an ultra-violet inhibitor(UVI). It has a plasticizer level of 10%.

Typical Properties

| Property ^a | Test ^b Method | Typical Value, Units ^c |
|-----------------------|--------------------------|-----------------------------------|
| Plasticizer | | 10% |
| Specific Gravity | D 792 | 1.19 |

Mechanical Properties

| | | |
|-------------------------------|-------|--|
| Tensile Stress @ Yield | D 638 | 33.1 MPa (4800 psi) |
| Tensile Stress @ Break | D 638 | 43.4 MPa (6300 psi) |
| Elongation @ Break | D 638 | 50% |
| Flexural Modulus | D 790 | 1379 MPa (2.00 x 10 ⁵ psi) |
| Flexural Yield Strength | D 790 | 45.5 MPa (6600 psi) |
| Rockwell Hardness, R Scale | D 785 | 78 |
| Izod Impact Strength, Notched | | |
| @ 23°C (73°F) | D 256 | 240 J/m (4.5 ft·lbf/in.) |
| @ -40°C (-40°F) | D 256 | 96 J/m (1.8 ft·lbf/in.) |

Thermal Properties

| | | |
|--|--------|---------------|
| Deflection Temperature ^d | | |
| @ 1.82 MPa (264 psi) | D 648 | 74°C (165°F) |
| @ 0.455 MPa (66 psi) | D 648 | 85°C (185°F) |
| Vicat Softening Temperature ^d | D 1525 | 104°C (219°F) |

Permanence Properties

| | | |
|--|-------|------|
| Water Absorption, 24 h immersion | D 570 | 1.4% |
| Soluble Matter Loss | D 570 | 0.1% |
| Weight Loss on Heating [72 hours @ 80°C (176°F)] | D 707 | 0.5% |

Miscellaneous Butyrate Properties

| | | |
|---|--------|---|
| Refractive Index, n_D | D 542 | 1.46-1.49 |
| Light Transmission ^e | E 308 | >90% |
| Haze ^e | D 1003 | <8.5% |
| Specific Heat @ 23°C (73°F) | DSC | 1.26-1.67 kJ/kg·K (0.301-0.399 Btu/lb·°F) |
| Thermal Conductivity | C 177 | 0.17-0.33 W/m·K (1.2-2.3 Btu·in./h·ft ² ·°F) |
| Coefficient of Linear Thermal Expansion | D 696 | 11-17 x 10 ⁻⁵ /°C (mm/mm·°C) (6-9 x 10 ⁻⁵ /°F (in./in.·°F)) |
| Mold Shrinkage | D 955 | 0.2-0.6% |
| Dielectric Strength | D 149 | 11.8-18.7 kV/mm (300-475 V/mil) |
| Dielectric Constant 1 MHz | D 150 | 3.3-3.8 |
| Dissipation Factor 1 MHz | D 150 | 0.01-0.15 |
| Volume Resistivity | D 257 | 10 ¹³ -10 ¹⁵ ohm·cm |

^a Unless noted otherwise, all tests are run at 23°C (73°F) and 50% relative humidity.

^b Unless noted otherwise, the test method is ASTM.

^c Units are in SI or US customary units.

^d Conditioned 4 hours @ 70°C (158°F)

^e 1.52-mm (0.06-in.) thickness

Characteristics

Formula 576 - odor mask; UVI; standard inventory. Available in 10% plasticizer only.

Comments

Properties reported here are typical of average lots. Eastman makes no representation that the material in any particular shipment will conform exactly to the values given.

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SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name: Tenite(TM) Butyrate 576E3720010 Clear Trsp

Product No.: EAN 090590. 576E3720010, 50000182, 50000184, 50008559, 50011351, 50057590, E0188202

Synonyms, Trade Names: not applicable

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

Identified uses: Plastics

Uses advised against: None known.

Details of the supplier of the safety data sheet

Manufacturer / Supplier

Eastman Chemical Company
200 South Wilcox Drive
Kingsport, TN 37660-5280 US
+14232292000

Visit our website at www.EASTMAN.com or email emnmsds@eastman.com

Emergency telephone number:

For emergency health, safety, and environmental information, call 1-423-229-4511 or 1-423-229-2000.

For emergency transportation information, in the United States: call CHEMTREC at 800-424-9300 or call 423-229-2000.

SECTION 2: Hazards identification

Hazard classification:

OSHA Specified Hazards:

Combustible dust

If converted to small particles during further processing, handling or by other means may form combustible dust concentrations in air.

Warning label items including precautionary statement:

Signal words: WARNING!

Hazard Statement(s): If converted to small particles during further processing, handling or by other means may form combustible dust concentrations in air.

Precautionary statement:

Disposal: P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC): None known.

SECTION 3: Composition/information on ingredients

Substances / Mixtures

General information:

| Chemical name | Concentration | Additional identification | Notes |
|----------------------------|---------------|---------------------------|-------|
| cellulose acetate butyrate | >70% | CAS-No.: 9004-36-8 | |
| bis(2-ethylhexyl) adipate | <30% | CAS-No.: 103-23-1 | |
| additive(s)/colorant(s) | <5% | CAS-No.: proprietary | |
| resorcinol monobenzoate | <2% | CAS-No.: 136-36-7 | |

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

This substance has workplace exposure limit(s).

SECTION 4: First aid measures

Description of first aid measures

Inhalation: Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.

Eye contact: Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. Get medical attention if symptoms persist. If molten material contacts the eye, immediately flush with plenty of water for at least 15 minutes. Get medical attention immediately.

Skin contact: Wash with soap and water. Get medical attention if symptoms occur. If burned by contact with hot material, cool molten material adhering to skin as quickly as possible with water, and see a physician for removal of adhering material and treatment of burn. Get medical attention.

Ingestion: Seek medical advice.

Most important symptoms and effects, both acute and delayed: Burns should be treated as thermal burns. The material will come off as healing occurs; therefore, immediate removal from the skin is not necessary.

Indication of any immediate medical attention and special treatment needed

Hazards: Contact with molten substance/product may cause severe burns to skin and eyes.

Treatment: Treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards: Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or grounding procedures.

Extinguishing media

Suitable extinguishing media: Water spray. Dry chemical. Carbon Dioxide.

Unsuitable extinguishing media: None known.

Special hazards arising from the substance or mixture: None known.

Advice for firefighters

Special fire fighting procedures: None known.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures: Wear appropriate personal protective equipment.

Environmental precautions: Not regarded as dangerous for the environment.

Methods and material for containment and cleaning up: Sweep up and place in a clearly labeled container for chemical waste.

Notification Procedures: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SECTION 7: Handling and storage:

Precautions for safe handling: Avoid contact with molten material. Minimize dust generation and accumulation.

Conditions for safe storage, including any incompatibilities: Keep container closed.

Specific end use(s): Plastics.

SECTION 8: Exposure controls/personal protection**Control parameters****Occupational exposure limits**

Country specific exposure limits have not been established or are not applicable unless listed below.

Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information: Eye bath. Washing facilities.

Eye/face protection: It is a good industrial hygiene practice to minimize eye contact. Wear a face shield when working with molten material.

Skin protection

Hand protection: It is a good industrial hygiene practice to minimize skin contact. When material is heated, wear gloves to protect against thermal burns.

Other: No data available.

Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

Hygiene measures: Observe good industrial hygiene practices.

Environmental Controls: No data available.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

| | |
|---|-----------------------------------|
| Physical State: | Solid |
| Form: | Pellet |
| Color: | varies with product |
| Odor: | slight |
| Odor Threshold: | No data available. |
| pH: | Not applicable |
| Softening Point: | varies with formulation |
| Boiling Point: | No data available. |
| Flash Point: | not applicable, combustible solid |
| Evaporation Rate: | Not determined. |
| Flammability (solid, gas): | No data available. |
| Flammability Limit - Upper (%)-: | No data available. |
| Flammability Limit - Lower (%)-: | No data available. |
| Vapor pressure: | Not determined. |

| | |
|---|---|
| Vapor density (air=1): | No data available. |
| Specific Gravity: | > 1 |
| Solubility(ies) | |
| Solubility in Water: | Negligible |
| Solubility (other): | No data available. |
| Partition coefficient (n-octanol/water): | No data available. |
| Autoignition Temperature: | No data available. |
| Decomposition Temperature: | Thermal stability not tested. Low stability hazard expected at normal operating temperatures. |
| Dynamic Viscosity: | Not determined. |
| Kinematic viscosity: | Not determined. |
| Explosive properties: | No data available. |
| Oxidizing properties: | No data available. |

SECTION 10: Stability and reactivity

| | |
|--|----------------------------------|
| Reactivity: | None known. |
| Chemical stability: | Stable |
| Possibility of hazardous reactions: | None known. |
| Conditions to avoid: | None at ambient temperatures. |
| Incompatible materials: | Strong oxidizing agents. |
| Hazardous decomposition products: | Carbon Monoxide. Carbon Dioxide. |

SECTION 11: Toxicological information

Information on likely routes of exposure

| | |
|----------------------|---|
| Inhalation: | None known. |
| Ingestion: | None known. |
| Skin contact: | Molten material will produce thermal burns. |
| Eye contact: | Molten material will produce thermal burns. |

Information on toxicological effects

Acute Toxicity

Oral

| | |
|-----------------|--------------------|
| Product: | No data available. |
|-----------------|--------------------|

Specified substance(s)

| | |
|----------------------------|--|
| cellulose acetate butyrate | Oral LD-50: (Rat): > 3,200 mg/kg (highest dose tested) |
| bis(2-ethylhexyl) adipate | Oral LD-50: (Rat, Male.): 45,000 mg/kg Oral LD-50: (Rat, Female.): 24,600 mg/kg |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Dermal

Product: No data available.

Specified substance(s)

cellulose acetate butyrate Dermal LD-50: (Guinea Pig): > 1,000 mg/kg
 (highest dose tested)

bis(2-ethylhexyl) adipate Dermal LD-50: (Rat): > 2,000 mg/kg

additive(s)/colorant(s) No data available.

resorcinol monobenzoate No data available.

Inhalation

Product: No data available.

Specified substance(s)

cellulose acetate butyrate No data available.

bis(2-ethylhexyl) adipate LC50 (Rat, 4 h): > 5.7 mg/l (highest concentration tested)

additive(s)/colorant(s) No data available.

resorcinol monobenzoate No data available.

Repeated dose toxicity

Product: No data available.

Specified substance(s)

cellulose acetate butyrate No data available.

bis(2-ethylhexyl) adipate NOAEL (Rat, Oral Study): 200 mg/kg

additive(s)/colorant(s) No data available.

resorcinol monobenzoate No data available.

Skin corrosion/irritation:

Product: No data available.

Specified substance(s)

cellulose acetate butyrate (Guinea Pig, 24 h): slight

bis(2-ethylhexyl) adipate (Rabbit, 24 h): none

additive(s)/colorant(s) No data available.

resorcinol monobenzoate (Guinea Pig, 24 h): moderate

Serious eye damage/eye irritation:

Product: No data available.

Specified substance(s)

cellulose acetate butyrate No data available.

bis(2-ethylhexyl) adipate (Rabbit, 24 h): none

additive(s)/colorant(s) No data available.

resorcinol monobenzoate No data available.

Respiratory or skin sensitization:

Product: Skin Sensitization: (Human Repeat Insult Patch Test) - non-sensitizing

Mutagenicity

In vitro

Product: No data available.

Specified substance(s)

| | |
|----------------------------|---|
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | Salmonella typhimurium assay (Ames test), Bacterial Reverse Mutation Assay : negative +/- activation |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

In vivo

Product: No data available.

Specified substance(s)

| | |
|----------------------------|--------------------|
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | No data available. |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Carcinogenicity

Product: No data available.

Specified substance(s)

| | |
|----------------------------|--------------------|
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | No data available. |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Reproductive toxicity

Product: No data available.

Specified substance(s)

| | |
|----------------------------|--------------------|
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | No data available. |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Specific target organ toxicity - single exposure

Product: No data available.

Specified substance(s)

| | |
|----------------------------|--------------------|
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | No data available. |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Specific target organ toxicity - repeated exposure

Product: No data available.

Specified substance(s)

| | |
|----------------------------|--------------------|
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | No data available. |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Aspiration hazard**Product:** No data available.**Specified substance(s)**

| | |
|----------------------------|--------------------|
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | No data available. |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Other adverse effects:

This material contains resorcinol monobenzoate which has been reported to be a contact sensitizer in studies with guinea pigs and humans. However, this material was tested in a human repeated insult patch test and showed no evidence of sensitization in any of the over two-hundred volunteers.

SECTION 12: Ecological information**Toxicity****Acute toxicity****Fish****Product:** No data available.**Specified substance(s)**

| | |
|----------------------------|--|
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | NOEC: (golden orfe, 48 h): > 10,000 mg/l |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Aquatic invertebrates**Product:** No data available.**Specified substance(s)**

| | |
|----------------------------|--------------------------------------|
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | EC-50 (Water Flea, 48 h): > 500 mg/l |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Chronic Toxicity**Fish****Product:** No data available.**Specified substance(s)**

| | |
|----------------------------|--------------------|
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | No data available. |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Aquatic invertebrates**Product:** No data available.**Specified substance(s)**

| | |
|----------------------------|--------------------------------------|
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | NOEC (Water Flea, 21 d): > 0.77 mg/l |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Toxicity to Aquatic Plants

| | |
|-------------------------------|---|
| Product: | No data available. |
| Specified substance(s) | |
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | EC-50 (Scenedesmus subspicatus, 72 h): > 500 mg/l |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Persistence and degradability

Biodegradation

| | |
|-------------------------------|---|
| Product: | No data available. |
| Specified substance(s) | |
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | 90 - 100 % (28 d, Ready Biodegradability: Manometric Respirometry Test) Readily biodegradable |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Biological Oxygen Demand:

| | |
|-------------------------------|--------------------|
| Product | No data available. |
| Specified substance(s) | |
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | No data available. |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Chemical Oxygen Demand:

| | |
|-------------------------------|--------------------|
| Product | No data available. |
| Specified substance(s) | |
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | No data available. |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

BOD/COD ratio

| | |
|-------------------------------|--------------------|
| Product | No data available. |
| Specified substance(s) | |
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | No data available. |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Bioaccumulative potential

| | |
|-------------------------------|--------------------|
| Product: | No data available. |
| Specified substance(s) | |
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | No data available. |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Mobility in soil: No data available.

Known or predicted distribution to environmental compartments

| | |
|----------------------------|--------------------|
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | No data available. |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Results of PBT and vPvB assessment: No data available.

| | |
|----------------------------|--------------------|
| cellulose acetate butyrate | No data available. |
| bis(2-ethylhexyl) adipate | No data available. |
| additive(s)/colorant(s) | No data available. |
| resorcinol monobenzoate | No data available. |

Other adverse effects: No data available.

SECTION 13: Disposal considerations

Waste treatment methods

General information: No data available.

Disposal methods: Dispose of waste and residues in accordance with local authority requirements. Incinerate.

SECTION 14: Transport information

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

DOT

Class not regulated

IMDG - International Maritime Dangerous Goods Code

Class not regulated

IATA

Class not regulated

SECTION 15: Regulatory information

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

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

WHMIS (Canada) Status: noncontrolled

SARA 311-312 Hazard Classification(s):

fire hazard

US EPCRA (SARA Title III) Section 313 - Toxic Chemical List

NONE

OSHA: hazardous

TSCA (US Toxic Substances Control Act): All components of this product are listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act): One or more components of this product are not listed on the DSL.

AICS / NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): One or more components of this product are not listed on AICS. In Australia, its use is restricted to research and development purposes only.

MITI (Japanese Handbook of Existing and New Chemical Substances): All components of this product are listed in the Handbook or have been approved in Japan by new substance notification.

ECL (Korean Toxic Substances Control Act): One or more components of this product are not listed on the Korean inventory.

Philippines Inventory (PICCS) : One or more components of this product are not listed on the Philippine inventory.

Inventory of Existing Chemical Substances in China: All components of this product are listed on the Inventory of Existing Chemical Substances in China (IECSC).

SECTION 16: Other information

HMIS® Hazard Ratings: Health - 1, Flammability - 1, Chemical Reactivity - 0

HMIS® rating involves data interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

Revision Information: New SDS

Key literature references and sources for data: No data available.

Training information: No data available.

Issue date: 08/28/2014

SDS No.:

Disclaimer:

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.