

NATURAL DYE MATERIAL SAFETY DATA SHEET

SECTION 1--COMPANY IDENTITY

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SECTION 2--CHEMICAL PRODUCT AND COMPOSITION/INFORMATION ON INGREDIENTS

Trade/Common Names

Gallo-tannin

Botanical Name

Quercus infectoria

Chemical Name/Synonyms: C₇₆H₅₂O₄₆, tannin, tannins, "natural tannin", "gallotannic acid", gallotannin, glycerite, "chestnut tannin extract"

Name	%	CAS No.	RTECS No.
Gallotannin	>90	1401-55-4	Not Listed

SECTION 3--HAZARDS IDENTIFICATION

No toxic effects known from dust inhalation or ingestion. Inhalation may cause coughing and sneezing. Avoid breathing dust from powders. Avoid contact with eyes. Contact with skin will cause temporary discoloration. Wash thoroughly after handling.

NFPA Rating:

Health	1	(Slight)
Flammability	1	(Slight)
Reactivity	0	(Insignificant)

HMIS Rating:

Health	1	(Slight)
Flammability	1	(Slight)
Reactivity	0	(Insignificant)



SECTION 4--FIRST AID MEASURES

Inhalation: Remove person to fresh air. If breathing difficulty occurs, or coughing persists, get prompt medical attention.

Skin/Eye Contact: Flush eyes with plenty of clean water for at least 15 minutes. If irritation persists, get medical attention. Wash skin thoroughly with soap and warm water to remove temporary staining and use emollients if needed.

Ingestion (of quantity): If person is conscious, give water, induce vomiting. Get medical attention.

SECTION 5--FIRE FIGHTING MEASURES

Flash Point: N/A

Flammable Limits: N/A

Extinguishing Media:

Water, carbon dioxide or dry chemical

Special Fire Fighting Procedures & Equipment:

Wear SCBA

Hazardous Incomplete Combustion Products:

Unknown

Unusual Fire & Explosion Hazards:

May form explosive mixture like all organic dust

SECTION 6--ACCIDENTAL RELEASE MEASURES

Steps to be taken if material is spilled:

Sweep and pick up for disposal.

On Highway:

Sweep and pick up for disposal.

Disposal Methods:

Per Federal and State regulation.

SECTION 7--HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.

- Work clothes should be laundered separately.
- Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.
- Do NOT cut, drill, grind or weld such containers
- In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

RECOMMENDED STORAGE METHODS

- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

SECTION 8--EXPOSURE CONTROL/PERSONAL PROTECTION

Respiratory Protection: Dust respirator when handling, sifting, measuring, or dissolving powder.

Eye Protection: Safety glasses when handling, sifting, measuring, or dissolving powder.

Protective Clothing: Appropriate clean clothing to prevent skin contact.

Personal Hygiene: Wash hands after exposure.

SECTION 9--PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point:	N/A
Melting Point:	N/A
Specific Gravity:	N/A
Vapor Pressure:	N/A
Vapor Density:	N/A
pH (1% solution):	3.0
Physical Appearance:	Liquid
Solubility:	Completely soluble in water

SECTION 10--STABILITY AND REACTIVITY DATE

Stability: At ambient temperatures: Stable
At elevated temperatures: Stable to decomposition
Conditions to avoid: None
Hazardous polymerizations will NOT occur.

SECTION 11--TOXICOLOGICAL DATA

Classification (29CFR 1910.1200): Non hazardous, non regulated material

Toxicity and Sensitivity Data:

Ingestion Oral LD-50: Not Applicable
Absorption Dermal: Not Applicable
Irritation: Not Applicable
Inhalation Rate: Not Applicable

Carcinogenicity: This material is not listed as a carcinogen by OSHA, NTP, IARC.

Primary Routes: Inhalation, eyes

Signs and Symptoms of Exposure (progressive):

- Inhalation: Sneezing, mucous flow, coughing
- Skin/eyes: Skin coloring, eyes irritation, tearing
- Ingestion: None
- Aqueous solution discolors skin, but no permanent adverse effects. No toxic effect known from dust inhalation or ingestion.

SECTION 12--ECOLOGICAL INFORMATION

Refer to data for ingredients, which follows:

TANNIC ACID:

- Fish LC50 (96hr.) (mg/l): 100
- BOD5: 0.35
- Harmful to aquatic organisms.
- Tannin (tannic acid) is approved for use as a dispersing agent in pesticide formulations applied to growing crops. Tannins also occur naturally in coffee and tea and nearly all wood and vegetation contain some form of tannin in the leaves, twigs, bark, wood, or fruit, including a variety of plants utilised for food and feed (food grains, fruits, wines, teas, and forages). The US EPA has determined that there is a reasonable certainty that no harm to any population subgroup will result from aggregate exposure to tannin when used as a dispersing agent in pesticide formulations applied to growing crops. The

environmental fate of tannin will limit its likelihood of reaching either surface (drinking water) or ground water or bioaccumulating in the environment. Tannin is expected to biodegrade in the environment with ultimate aerobic degradation estimated to be weeks and primary degradation estimated to be days. Migration to groundwater drinking water sources is possible in sandy soil and, therefore, exposures of concern via drinking water are likely to be low. Tannin is slightly to moderately soluble in water, nonvolatile, and exhibits strong sorption to very strong sorption to soil ($\log K_{oc}=4.912$). Migration (leaching) to groundwater is likely in sandy or porous soils, however this is mitigated in other soils due to biodegradation and sorption. The potential for tannin to volatilize from surface waters is low and it undergoes rapid atmospheric oxidation in the presence of hydroxyl radicals with a half-life of 0.96 hours if volatilisation from soils or water does occur. Tannin is considered to be moderately toxic to practically nontoxic to aquatic organisms. Measured effects data for fish indicate 48h to 96h LC50's are on the order of several mg/L to >100 mg/L depending on species and test conditions. Aquatic invertebrate data is more limited, but indicate effects levels for population and behavior in the low mg/L range (e.g., *Daphnia magna* effects level for behavior of <26 mg/L). A single study on the bull frog for 12 hours under static conditions was inconclusive at concentrations up to 1000 mg/L. Plant effects data for both aquatic (blue-green algae) and terrestrial (agricultural crop) species reported no adverse responses up to the test dose for terrestrial plants (note: test concentrations were not verified in the terrestrial plant studies) and a decrease in algae population at 100 umoles. Depending on structural class (esters or phenols), predicted acute toxicity values are tannins are approximately: 1400-2100 parts per million (ppm) for fish 96h LC50's, 260-49000 ppm for daphnid 48h LC50's, and 100-27500 ppm for green algae 96h EC50's. Tannin is not expected to bioaccumulate in the environment.

BOD (5 days) 38%

The primary route of exposure to tannin is expected to be through consumption of food products tannin . The exposure of the general population to tannin from its use in pesticides or in chemicals is expected to be small in comparison to exposure from its natural occurrence in feed grains, wine, tea, fruits, and forage, and its use as an FDA-approved direct food additive in numerous food and beverage products. The rapid atmospheric oxidation, ready biodegradation, as well as the low toxicity and rapid metabolism and excretion of tannin further decrease the likelihood of dietary exposures of concern from tannin. Compounds considered to be tannins vary from simple phenols such as gallic acid to macromolecules with molecular weights between 500 and 3000. Tannic acid, the commercial term for a mixture of large gallotannins, trigallic, m-digallic, and gallic acid is extracted from plant material. Gallotannins are large polyphenolic compounds consisting of glucose esterified to gallic acid and occur in 18% of all dicotyledenous plants - they play important roles in defense against attack by bacteria, fungi, or herbivores. There are two types of tannins: condensed tannins and hydrolysable tannins. Condensed tannins are those derived from flavonols and contain little or no carbohydrate. Hydrolysable tannins are esters of sugar hydrolysed by acids, alkalis and enzymes into glucose or other polyhydric alcohols and phenolic acids; they are further subdivided into two groups based on the phenolic acids they contain (i.e., gallotannins or ellagitannins) (International Agency for

Research on Cancer (IARC) 1976). According to IARC "tannic acid is the astringent or tanning principle occurring in the wood, bark, fruit, leaves, and roots of a large number of plants. The Environmental Protection Agency's Substance Registry System (SRS) lists the following synonyms for tannin: tannic acid, tannins, quebracho wood extract, quebracho extract, Chinese tannin,

- DO NOT discharge into sewer or waterways. BOD 5: 0.31-0.46 Fish LC50 (96 h): 0.4-2.5 mg/L

Ecotoxicity

Ingredient:	Tannic Acid
Persistence:	Water/Soil
Persistence:	Air
Bioaccumulation:	LOW

SECTION 13--DISPOSAL CONSIDERATIONS

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.

Legislation addressing waste disposal requirements may differ by country, state and/ or territory.

Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.

- Recycle wherever possible.
- Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.
- Dispose of by: Burial in a licensed land-fill or Incineration in a licensed apparatus (after admixture with suitable combustible material)
- Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

SECTION 14--TRANSPORT CONSIDERATIONS

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: DOT, IATA, IMDG

SECTION 15--REGULATORY INFORMATION

Tannic acid (CAS: 1401-55-4,72401-53-7,93615-37-3) is found on the following regulatory lists; "Canada Domestic Substances List (DSL)", "IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk", "OECD Representative List of High Production Volume (HPV) Chemicals", "US EPA High Production Volume Program Chemical List", "US Food Additive Database", "US Toxic Substances Control Act (TSCA) - Inventory

SECTION 16--OTHER INFORMATION

LIMITED EVIDENCE

- Skin contact and/or ingestion may produce health damage*.
- Cumulative effects may result following exposure*. * (limited evidence).

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- The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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