



# MATERIAL SAFETY DATA SHEET



International Calibration Standard: **ICS-T2** (“Tetra”)

Section I. PRODUCT AND SUPPLIERS	
<b>Supplier's Name</b> 1. ASBC 2. Labor Veritas	<b>Emergency Telephone Nos.</b> 1. USA: (+1) 651 454 7250 <b>or</b> 2. Switzerland: (+41) (0) 44 283 29 30
<b>Address</b> 1. ASBC, 3340 Pilot Knob Road, St. Paul, MN 55121-2097, USA <b>or</b> 2. Labor Veritas, Engimattstrasse 11, Postfach 353, CH-8027 Zürich, Switzerland	
<b>Product Name</b> ICS-T2	<b>Synonyms</b> Tetra; Tetra Standard
<b>CAS No(s).</b> Not available	<b>Empirical Formula</b> Contains mainly C <sub>20</sub> H <sub>32</sub> O <sub>5</sub> & C <sub>21</sub> H <sub>34</sub> O <sub>5</sub>
<b>Chemical Family</b> Isomerized hop resin acid	<b>Molecular Weight</b> Mainly 352 & 366 daltons

Section II. COMPOSITION	
<b>Material or components</b>	<b>%</b>
A purified, semi-crystalline preparation of <i>cis</i> - and <i>trans</i> - forms of tetrahydroiso- $\alpha$ -acids. Derived via hydrogenation from CO <sub>2</sub> extracted $\alpha$ -acids of hops. Mostly contains co-, n- and ad- homologs.	99% tetrahydroiso- $\alpha$ -acids

Section III. PHYSICAL DATA	
<b>Boiling Point °C (°F.)</b> Not applicable	<b>Solubility in Water</b> Slightly soluble; soluble at pH 8 - 11
<b>Melting Point °C (°F.)</b> 53°C (127°F)	<b>Solubility in Alcohol</b> Soluble
<b>Vapor Pressure (mm Hg.)</b> Not applicable	<b>Specific Gravity (H<sub>2</sub>O = 1)</b> Not applicable
<b>Vapor Density (AIR =1)</b> Not applicable	<b>Volatiles by volume (%)</b> Not applicable
	<b>Evaporation Rate ( Ether =1)</b> Not applicable
<b>Appearance and Odor</b> A white, virtually odorless, semi-crystalline powder.	



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<b>Section IV. FIRE AND EXPLOSION HAZARD DATA</b>			
<b>Flash Point (Method used)</b> Not applicable	<b>Flammable Limits</b> Not applicable	<b>Le<sup>1</sup></b>	<b>Ue<sup>f</sup></b>
<b>Extinguishing Media</b> Water, CO <sub>2</sub> , Foam, Dry Powder			
<b>Specific Fire Fighting Procedures</b> None required.			
<b>Unusual Fire and Explosion Hazards</b> None known			

<b>Section V. HEALTH HAZARD DATA</b>
<b>Important Note</b> Intended for use only as an HPLC calibration standard! Not recommended for addition to food, water or beer that may be tasted or consumed by humans!
<b>Threshold Limit Value</b> None known
<b>Effects of Exposure</b> No data available. Believed non-toxic, non-carcinogenic. <u>Oral Ingestion</u> : Not known; ingestion of large amounts is probably dangerous. <u>Eye contact</u> : Believed to be irritant; may cause corneal inflammation. <u>Skin contact</u> : Prolonged contact may possibly cause dermatitis in some individuals. <u>Respiratory Tract</u> : Probably irritant or corrosive.
<b>Emergency and First Aid Procedures</b> <u>Eye contact</u> : Wash with copious amounts of water; seek medical attention. <u>Skin contact</u> : Remove with warm soapy water.

<b>Section VI. SPILL OR LEAK PROCEDURES</b>
Scoop or vacuum material into disposal container. Clean area with disposable cloth, warm water and detergent to remove final traces.



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<b>Section VII. SPECIAL PROTECTION &amp; PRECAUTION INFORMATION</b>	
<b>Respiratory Protection (Specify type)</b> Simple dust mask recommended.	
<b>Ventilation</b> Normally, none required.	
<b>Protective Gloves</b> Laboratory grade, flexible latex or vinyl gloves recommended.	<b>Eye Protection</b> Protective goggles or safety glasses recommended.
<b>Other Protective Equipment</b> Use of low-grade protective clothing (e.g. laboratory coat) recommended.	
<b>Precautions Taken in Handling and Storing</b> Store in freezer in original container. Protect from moisture. Minimum storage temperature: -20°C (-4°F) Maximum storage temperature (to retain as a standard): -10°C (14°F) Maximum storage temperature (for safety purposes only): 30°C (86°F)	

## Disclaimer

The information given in this MSDS is believed correct and is supplied in good faith but without warranty of any kind. It should be used only as a supplement to information already in your possession concerning this product and its use. The determination of whether and under what conditions you or your employees should handle and use the product is yours to make.