

## SAFETY DATA SHEET

### RAW OIL from CHUFA (Cyperus esculentus)

#### 1. Product Identification

Raw chufa oil cold-pressed from chufa seeds, to be delivered to end users in multiple industries

**Recommended use:** production of biodiesel and renewable diesel\*

\* The "Recommended use" identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Manufacturer Safety Data Sheet (MSDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

#### 2. Supplier Information

**Company:** BioEconomy Solutions Agro, LLC  
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#### 3. Hazards Identification

**According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200:**

**Classification of the product:** No need for classification according to GHS criteria for this product.

**Label elements:** The product does not require a hazard warning label in accordance with GHS criteria.

**Hazards not otherwise classified:** No specific dangers known, if the notes for storage, shipping, and handling are observed.

#### 4. Composition / Information on Ingredients:

**According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200:**

Under the referenced regulation, this product does not contain any components classified for health hazards.

#### 4. First-Aid Measures

**General advice:** If any adverse symptoms occur, seek medical attention.

**If spilled onto clothing:** remove contaminated clothing. If adverse health effects develop, seek medical attention.

**If inhaled:** If difficulties occur upon accidental inhalation, remove to fresh air and seek medical attention if any adverse symptoms occur.

**If spilled onto skin:** Wash with soap and water. If irritation develops, seek medical attention.

**If in eyes:** Flush affected eyes for at least 5 minutes under running water with eyelids held open. If irritation develops, seek medical attention.

**If swallowed:** Rinse mouth and then drink 200-300 ml of water. Do not induce vomiting. Immediate medical attention is not required.

Further symptoms and/or ill effects are not known.

**Hazards:** No hazard is expected under intended use and appropriate handling. No indications of any immediate medical attention and special treatment needed.

#### 5. Fire-Fighting Measures

**Extinguishing media:** Suitable extinguishing media (water spray, foam, dry powder, carbon dioxide)

**Special hazards arising from the substance during fire-fighting:** Product is not combustible or explosive.

**Advice for fire-fighters:** Standard protective equipment for fire-fighting. Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

**Further information:** Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

## 6. Accidental Spill Measures.

**Personal precautions, protective equipment and emergency procedures:** For information regarding personal protective measures see, section 9 & 10.

**7 .Environmental Precautions:** Avoid discharge into drains/surface waters/groundwater.

### **Methods for Containment and Cleanup:**

For small amounts, clean up with suitable absorbent material. Dispose of absorbed material in accordance with regulations.

For large amounts: Dike spillage. Pick up with suitable appliance and dispose of contaminated material.

## 8. Handling and Storage

**Precautions for Safe Handling:** Handle in accordance with good industrial hygiene and safety practice.

**Protection against Fire or Explosion:** No special precautions necessary; oil is neither combustible or flammable.

**Conditions for Safe Storage:** Suitable materials for containers are high density polyethylene (HDPE), glass.

**Further Information on Storage Conditions:** Keep containers tightly sealed and dry; store in a cool place. Protect from the effects of light.

**Storage Stability:** Storage temperature: 2 -8 °C

## 9. Exposure Controls

No occupational exposure limits known, no special protective equipment required.

Advice on system design:

Ensure adequate ventilation.

## 10. Personal Protective Equipment

**Respiratory protection:** Respiratory protection not required.

**Hand protection:** Chemical resistant protective gloves not required; standard gloves recommended.

**Eye protection:** Safety glasses recommended.

**Body protection:** Body protection to be chosen depending on activity and possible exposure, e.g. head protection, apron, boots, protective clothing.

**General safety and hygiene measures:** Handle in accordance with good industrial hygiene and safety practice. Keep oil separated and away from food, drink, and animal feed.

## 11. Physical and Chemical Properties

**Form:** liquid

**Odour:** slight odour

**Odour threshold:** not applicable

**Colour:** yellow

**pH value:** ( 20 °C) The substance does not dissociate.(internal method)

**Melting range:** not determined

**Boiling range:** 90-110 °C ( 1,013 hPa)

**Flash point:** 338 °C(DIN ISO 2592)

**Flammability:** not flammable

**Flammability of Aerosol Products:** not applicable, the product does not form flammable aerosols

**Lower explosion limit:** not relevant for classification and labeling.

**Upper explosion limit:** For liquids not relevant for classification and labeling.

**Autoignition:** not determined

**Vapour pressure:** not determined

**Density:** 0.91 -0.95 g/cm<sup>3</sup>( 20 °C) (internal method)

**Vapour density:** not applicable

**Partitioning coefficient n-octanol/water (log Pow):** not determined

**Self-ignition temperature:** not self-igniting

**Thermal decomposition:** No decomposition if stored and handled as prescribed/indicated.

**Viscosity, dynamic:** not determined

**Viscosity, kinematic:** not determined

**Solubility in water:** ( 20 °C) insoluble

**Evaporation rate:** Value can be approximated from Henry's Law Constant or vapor pressure.

**12. Other Information:** If necessary, information on other physical and chemical parameters is indicated in this section. No further information available.

**Stability and Reactivity:** No hazardous reactions if stored and handled as prescribed/indicated.

**Oxidizing properties:** not fire-propagating

**Chemical stability:** The product is chemically stable.

**Possibility of hazardous reactions:** Reacts with oxidizing agents.

**Conditions to avoid:** No special precautions other than good housekeeping of chemicals.

**Incompatible materials:** radical formers

**Hazardous decomposition products:** No hazardous decomposition products if stored and handled as prescribed/indicated.

**Thermal decomposition:** No decomposition if stored and handled as prescribed/indicated.

### 13. Toxicological Information

**Primary routes of exposure:** Routes of entry for liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

**Primary routes of entry:** Dermal contact

**Assessment of acute toxicity:** Not considered to be toxic according to the criteria of the OSHA Hazard Communication Standard. No adverse health effects are known.

**Assessment of STOT single:** Based on available data, the classification criteria are not met.

**Assessment of irritating effects:** Not irritating to eyes and skin.

#### **Skin**

Species: human

Result: non-irritant

Method: Patch-Test

**Assessment of sensitization:** No sensitizing effect.

#### **Patch test**

Species: human

Result: Non-sensitizing.

Method: Human patch test

**Aspiration Hazard:** No aspiration hazard expected

## 14. Chronic Toxicity/Effects

**Assessment of Repeated Dose Toxicity:** None known

**Genetic Toxicity Assessment of Mutagenicity:** Based on the ingredients, there is no suspicion of a mutagenic effect.

**Assessment of Carcinogenicity:** Based on the ingredients there is no suspicion of a carcinogenic effect in humans.

**Assessment of Reproduction Toxicity:** The chemical structure does not suggest a specific alert for such an effect.

**Assessment of Teratogenicity:** The chemical structure does not suggest a specific alert for such an effect.

## 15. Symptoms of Exposure

The most important known symptoms and effects are described in Section 14. Further symptoms and / or effects are not known so far

## 16. Ecological Information

**Assessment of Aquatic Toxicity:** At the present state of knowledge, no negative ecological effects are expected. The product has not been tested. The statement has been derived from the properties of the individual components.

**Persistence and Degradability Assessment:** biodegradation and elimination (H<sub>2</sub>O). Product is expected to be readily biodegradable. The product has not been tested. The statement has been derived from the properties of the individual components.

**Bioaccumulation Potential Assessment:** Study not necessary due to exposure considerations.

**Transport Between Environmental Compartments Assessment:** Study not necessary due to exposure considerations.

## 17. Disposal Considerations

**Waste Disposal of Substance:** Dispose of in accordance with national, state and local regulations. It is the waste generator's responsibility to determine if a particular waste is hazardous under RCRA.

## 18. Transport Information

**Land Transport:** USDOT. Not classified as a dangerous good under transport regulations

**Sea transport:** IMDG. Not classified as a dangerous good under transport regulations

**Air transport:** IATA/ICAO. Not classified as a dangerous good under transport regulations

## 19. Regulatory Information

**Federal Regulations Status:** Chemical TSCA, US released / listed

**EPCRA 311/312 (Hazard categories):** Refer to SDS section 2 for GHS hazard classes applicable for this product.

### NFPA Hazard Codes:

Health: 0      Fire: 1      Reactivity: 0      Special:

### HMIS III rating:

Health:0      Flammability:1      Physical Hazard:0

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