

## Technical Data Sheet (TDS)

### 1. Product Overview

- Product Name: 石榴皮提取物
- English Name: Pomegranate Peel Extract
- CAS Number: N/A (Main active: Ellagic Acid 476-66-4)
- Formula: Punica granatum L. Peel Extract (Main component: C<sub>14</sub>H<sub>6</sub>O<sub>8</sub>)
- Molecular Weight: 302.20 Da (Ellagic Acid, main active)
- Product Characteristics: Natural plant extract derived from pomegranate peel via ethanol-water extraction; standardized ellagic acid content ≥40%; reddish brown free-flowing fine powder with faint natural pomegranate peel scent; slightly soluble in water, soluble in ethanol/acetone; excellent antioxidant, anti-inflammatory and whitening activity; stable under recommended storage conditions; compatible with most food/health care/cosmetic excipients; no artificial additives/preservatives; fully biodegradable and environmentally friendly.

### 2. Technical Specifications (Complies with Industrial Standards)

Item	Specification
Appearance	Reddish brown to dark brown free-flowing fine powder
Total Ellagic Acid Content	≥ 40.0%
Loss on Drying	≤ 5.0%
Total Ash	≤ 6.0%
pH Value (1% aq. suspension, 25°C)	4.0-6.0
Heavy Metals (Pb)	≤ 5 ppm
Heavy Metals (As)	≤ 1 ppm
Total Aerobic Microorganisms	≤ 1000 CFU/g
Molds & Yeasts	≤ 100 CFU/g
E. coli	Negative
Particle Size	≥95% passing 80 mesh
Water Solubility	Slightly soluble in water; soluble in ethanol (1:8)
Bulk Density	0.50-0.70 g/cm <sup>3</sup>
Temperature Stability	Stable at 0-40°C (ellagic acid retention ≥ 90%)
Storage Stability	24 months (unopened, ≤25°C, dry)
Odor	Faint natural pomegranate peel fragrance

### 3. Product Advantages

1. **Standardized Active Component:** Ellagic acid content ≥40% with batch-to-batch consistency; complies with international plant extract standards; stable antioxidant activity.
2. **Green Extraction Process:** Ethanol-water low-temperature extraction (no organic solvent residue); no artificial additives/colorants/preservatives; high purity and low impurity.
3. **Multi-Biological Activity:** Strong antioxidant capacity (scavenges free radicals); natural anti-inflammatory and whitening effects; inhibits tyrosinase activity for skin whitening; delays oxidative deterioration of food.
4. **Good Formulability:** Soluble in ethanol/acetone; compatible with common food/health care/cosmetic excipients (maltodextrin, glycerin, plant oils); no precipitation in formulated products.
5. **High Safety:** GRAS certified for food use; low heavy metal/pesticide residue; mild to human body; non-hazardous for transport/storage; fully biodegradable with no environmental pollution.

### 4. Application Fields

- **Food Industry:** Natural antioxidant additive (beverages, pastries, edible oils, meat products); delays food oxidative spoilage; extends shelf life of food products.
- **Health Care Products:** Antioxidant dietary supplements (capsules, tablets, powder); anti-aging products; immune conditioning supplements; oral care products (toothpaste, mouthwash).



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- **Cosmetics:** Whitening/anti-aging/antioxidant skin care products (serum, cream, mask, lotion); improves skin dullness; scavenges skin free radicals; enhances skin barrier function.
- **Other Fields:** Natural plant extract raw material for daily chemicals; antioxidant ingredient for animal feed additives (small dosage).

## 5. Usage Methods

### 5.1 Formulation Compatibility

- **Food Industry:** Mix with maltodextrin for solid food additives; dissolve in ethanol for liquid food (beverages); add during low-temperature processing ( $\leq 60^{\circ}\text{C}$ ) to avoid activity loss.
- **Health Care Products:** Mix with starch/maltodextrin for solid dosage forms (capsules/tablets); dissolve in ethanol/glycerin for liquid dosage forms (oral liquid); compatible with honey for oral products.
- **Cosmetics:** Dissolve in ethanol/glycerin first (1:8 ratio) then add to water-based/oil-based formulations; optimal addition pH 4.0-6.0; avoid high temperature ( $>60^{\circ}\text{C}$ ) during formulation.

### 5.2 Recommended Dosage

- **Food Industry:** 0.05-0.5% (w/w) (antioxidant); adjust according to food type and shelf life requirements.
- **Health Care Products:** 1.0-5.0% (w/w) of total formulation; adult daily dosage 50-200 mg (as pure ellagic acid).
- **Cosmetics:** 0.1-2.0% (w/w) (whitening/antioxidant); 0.5-3.0% (w/w) (anti-inflammatory).

### 5.3 Processing Precautions

- Operate in a well-ventilated low-dust area; avoid powder dispersion during formulation.
- Do not mix with strong oxidizing agents/concentrated acids; avoid high temperature ( $>60^{\circ}\text{C}$ ) and prolonged heating during processing.
- Control workshop humidity  $\leq 70\%$  to prevent product hygroscopy; seal the product container immediately after use.

## 6. Packaging & Storage

### 6.1 Packaging Specifications

- 1 kg/bag (food/cosmetic-grade aluminum foil bag, vacuum sealed)
- 5 kg/10 kg/drum (sealed HDPE drum with inner aluminum foil bag)
- 25 kg/drum (food/cosmetic-grade fiber drum with inner vacuum-sealed aluminum foil bag)
- Custom small packaging (100g/500g) available for small-batch orders.

### 6.2 Storage Conditions

- Store in a cool, dry, dark well-ventilated warehouse; keep container tightly sealed; avoid direct sunlight and high temperatures (storage temperature  $\leq 25^{\circ}\text{C}$ ); control warehouse humidity  $\leq 70\%$ .
- Store separately from strong oxidizing agents, concentrated acids and high-temperature cargo; no mixing with other plant extracts unless formulated.
- Shelf Life: 24 months (unopened, under specified storage conditions); 6 months after opening (resealed, dry, cool storage).

## 7. Safety & Protection

- The product is non-hazardous in normal use; mild eye irritation only if direct contact; wear safety goggles/nitrile gloves during handling.
- Avoid direct eye contact; rinse eyes with plenty of water if contact occurs; consult a doctor if irritation persists.
- Wash hands thoroughly after handling; no eating/drinking/smoking in the handling area during operation.
- No special protective equipment required for normal low-dust handling; dust mask recommended for large-scale processing.

## 8. Quality Assurance

- Manufactured in accordance with ISO 9001 quality management system and GMP standards; green extraction process with no organic solvent residue.