

Technical Data Sheet (TDS)

1. Product Overview

- **Product Name:** Sodium Formate
- **English Name:** Sodium Formate
- **CAS Number:** 141-53-7
- **Formula:** HCOONa
- **Molecular Weight:** 68.01 g/mol
- **Product Characteristics:** High-purity white crystalline powder, slightly hygroscopic, highly soluble in water, mild alkaline. Non-combustible, chemically stable under normal storage, biodegradable. Reacts with strong acids to release formic acid and decomposes at high temperature (>300°C). Excellent performance as a leather tanning agent, concrete early strength agent and chemical synthesis intermediate. Low impurity content, consistent quality, suitable for various industrial applications.

2. Technical Specifications

Item	Specification (Industrial Grade)
Appearance	White to off-white crystalline powder/granules
Purity (HCOONa)	≥ 98.0%
Moisture Content	≤ 0.5%
pH Value (10% aq. solution, 25°C)	7.5-9.5
Sodium Carbonate Content	≤ 1.0%
Sodium Chloride Content	≤ 0.1%
Sodium Sulfate Content	≤ 0.1%
Heavy Metals (Pb)	≤ 5 ppm
Iron (Fe)	≤ 5 ppm
Insoluble Matter in Water	≤ 0.1%
Melting Point	250-255°C
Solubility (water, 20°C)	≥ 95 g/100mL

3. Product Advantages

1. **High Purity & Low Impurities:** ≥98% purity with ultra-low chloride/sulfate/heavy metal impurities; ensures stable performance in industrial applications.
2. **Excellent Solubility:** Highly soluble in water and glycerol; easy to prepare aqueous solutions for on-site use.
3. **Chemical Stability:** Stable under normal storage (36-month shelf life); no degradation at room temperature; suitable for long-term storage.
4. **Multi-Functional Application:** Versatile use as tanning agent, concrete additive, drilling fluid modifier and chemical intermediate; reduces procurement costs for multi-scenario use.
5. **Eco-Friendly:** Fully biodegradable formate ion; no environmental accumulation; low aquatic toxicity; meets global environmental standards.
6. **Consistent Quality:** Strict quality control in production; each batch tested for purity and impurities; consistent physical/chemical properties.

4. Application Fields

- **Leather Industry:** Tanning agent and auxiliaries; improves leather softness and wear resistance; reduces leather shrinkage rate.
- **Construction Industry:** Concrete early strength agent; accelerates cement hydration; improves concrete early strength and frost resistance.

- **Oilfield Drilling:** Drilling fluid modifier and antifreeze; reduces drilling fluid viscosity; prevents freezing in low-temperature drilling environments.
- **Chemical Synthesis:** Intermediate for formic acid, oxalic acid and sodium hydrosulfite production; raw material for pharmaceutical and pesticide synthesis.
- **Textile & Dyeing:** Dyeing auxiliaries; improves dye fixation rate; enhances color fastness of textiles.
- **Other:** Antifreeze fluid additive for industrial equipment; metal surface treatment agent; catalyst for organic synthesis.

5. Usage Methods

- **Leather Tanning:** Add 2-5% (w/w of leather) to tanning solution; dissolve in water first; adjust pH to 8.0-9.0; tan at 30-40°C for 4-6 hours.
- **Concrete Additive:** Add 0.5-2.0% (w/w of cement) to concrete mix; mix evenly with cement/sand before adding water; improves early strength by 30-50%.
- **Oilfield Drilling Fluid:** Add 3-8% (w/v) to drilling fluid; stir until fully dissolved; adjust drilling fluid density and viscosity as needed.
- **Chemical Synthesis:** Use as raw material in molar ratio according to synthesis process; react with strong acids (HCl/H₂SO₄) to produce formic acid (under ventilation).
- **Optimal Conditions:** Dissolve in deionized water for high-purity applications; use at 15-35°C; avoid mixing with strong acids; seal after use.

6. Packaging & Storage

- **Packaging Specifications:** 1 kg PE bags, 25 kg HDPE drums, 200 kg HDPE drums, 1000 kg IBC totes; customized packaging available upon request.
- **Storage Conditions:** Cool, dry, well-ventilated warehouse ($\leq 30^{\circ}\text{C}$); store in sealed moisture-proof containers; avoid direct sunlight and high humidity; keep away from strong acids, oxidizers and heat sources.
- **Shelf Life:** 36 months (unopened, specified conditions); 6 months after opening (seal tightly with moisture-proof tape).
- **Transportation:** Non-dangerous goods; transport by ordinary vehicles; avoid collision, leakage, direct sunlight and high temperature; keep sealed during transport.

7. Safety & Protection

- Wear safety goggles, nitrile gloves and N95 dust mask for bulk powder handling; avoid dust inhalation and eye/skin contact.
- Rinse eyes with plenty of water if contact occurs; consult a doctor if irritation persists.
- Wash skin with soap and water after contact; apply moisturizer for dryness/irritation.
- Do not mix with strong acids (e.g., HCl, H₂SO₄) without proper ventilation; avoid high-temperature ($>300^{\circ}\text{C}$) processing.
- No eating/drinking/smoking in the work area; wash hands thoroughly after handling.

8. Quality Assurance

- Manufactured under ISO 9001 (quality) and ISO 14001 (environmental) management systems; strict production process control.
- Each batch is tested for purity, impurities and physical properties; accompanied by a Certificate of Analysis (COA).
- Customized purity grades (98%/99%/99.5%) available upon request; technical support for formulation optimization.
- Provide on-site technical guidance for large-scale industrial applications (e.g., concrete mixing, leather tanning); after-sales service for quality feedback.