

## Technical Data Sheet (TDS)

**Issue Date:** 28 FEB 2026 **Product Name:** Manganese Sulphate Monohydrate (Feed Grade) **CAS Number:** 10034-96-5

### 1. Product Overview

- **English Name:** Manganese (II) Sulphate Monohydrate (Feed Grade)
- **Synonyms:** Manganese sulfate monohydrate; Feed grade manganese sulfate
- **Molecular Formula:**  $MnSO_4 \cdot H_2O$
- **Molecular Weight:** 169.02 g/mol
- **CAS No.:** 10034-96-5
- **Product Characteristics:** Pale pink to light red crystalline powder, odorless, freely soluble in water, slightly hygroscopic. As an essential trace mineral feed additive, manganese is a key component of animal body enzymes (e.g., superoxide dismutase, arginase), and is critical for bone and cartilage development, reproductive performance improvement, eggshell quality enhancement and carbohydrate/lipid metabolism regulation. The monohydrate form has high manganese content, good water solubility and stable physical properties, which is the most commonly used manganese supplement in animal feed industry.

### 2. Technical Specifications (Complies with Feed Industry Standards)

Item	Specification
Appearance	Pale pink to light red crystalline powder
Assay (as $MnSO_4 \cdot H_2O$ )	$\geq 98.0\%$
Manganese (Mn) Content	$\geq 31.8\%$
Water Insoluble Matter	$\leq 0.05\%$
pH Value (5% in $H_2O$ , 25°C)	3.5 - 6.0
Loss on Drying	8.0% - 10.0%
Heavy Metals (Pb)	$\leq 10$ ppm
Heavy Metals (As)	$\leq 2$ ppm
Cadmium (Cd)	$\leq 2$ ppm
Iron (Fe)	$\leq 50$ ppm
Zinc (Zn)	$\leq 50$ ppm
Water Solubility (25°C)	$\geq 65$ g/L
Bulk Density	1.2 - 1.5 g/cm <sup>3</sup>
Total Bacterial Count	$\leq 10^4$ CFU/g
E. coli	Negative
Salmonella	Negative

### 3. Product Advantages

1. **High Manganese Content:** Mn content  $\geq 31.8\%$ , higher than anhydrous manganese sulfate, small addition amount meets animal nutritional needs, reduces feed formulation cost.
2. **Good Bioavailability:** Freely soluble in water, rapid dissolution and absorption in animal gastrointestinal tract, higher utilization rate than insoluble manganese minerals.
3. **Stable Physical Properties:** Slightly hygroscopic, not easy to cake under proper storage conditions, easy to mix evenly with feed raw materials, suitable for all feed processing technologies.
4. **Strict Purity Control:** Ultra-low heavy metal (Pb, As, Cd) and impurity content, meets global feed safety standards (EU, US FDA, China), no toxic side effects on animals.
5. **Wide Compatibility:** Compatible with most feed additives (vitamins, amino acids, other trace minerals) except strong alkalis, no adverse reaction, no nutrient loss.
6. **Cost-Effective:** The most economical and widely used manganese supplement in feed industry, with high cost performance and mature production process.

### 4. Application Fields

Manganese is an essential trace element for all animals, and the deficiency will cause bone dysplasia, reproductive disorder, reduced production performance and other problems. This

product is suitable for all animal feed formulations, especially for poultry (high manganese demand).

- **Poultry Feed:** Broilers, layers, ducks, geese, quails; promotes bone development, improves eggshell thickness and hardness, increases hatching rate, prevents perosis.
- **Livestock Feed:** Pigs (nursery, grow-finish, sows), cattle, sheep; improves reproductive performance of breeding animals, promotes skeletal development of young animals, enhances immune function.
- **Aquaculture Feed:** Fish (tilapia, carp, salmon), shrimp, crab; regulates enzyme activity, promotes growth and development, improves stress resistance of aquatic animals.
- **Pet Feed:** Dogs, cats; supplements manganese for pet daily nutrition, prevents bone and joint diseases.
- **Feed Premixes:** Vitamin, mineral and compound premixes; as the main manganese source, matches with other trace elements (Fe, Zn, Cu) to meet the balanced nutritional needs of animals.

## 5. Usage Methods

### 5.1 Recommended Dosage (Addition amount per ton of complete feed, adjust according to animal species, growth stage and manganese content in raw materials)

Animal Species	Growth Stage	Recommended Dosage (g/ton)
Poultry	Broilers (0-42 days)	80 - 150
	Layers (Laying period)	100 - 200
	Breeding poultry	150 - 250
Livestock	Weaned piglets (7-28 days)	50 - 100
	Grow-finish pigs	30 - 60
	Lactating sows	80 - 120
	Dairy cattle (Lactation)	60 - 100
Aquaculture	Fish/Shrimp (All stages)	100 - 300
Pet Feed	Dogs/Cats (Adult)	50 - 80
Feed Premixes	Mineral premix	1.0% - 3.0% (by weight)

### 5.2 Addition Method

- Dry mixing: Mix the crystalline powder evenly with feed raw materials or premixes (**step-by-step dilution** with 5-10 times carrier such as corn meal is recommended to ensure uniform distribution); suitable for all dry feed processing (pelleting, extruding).
- Wet mixing: Dissolve in clean water (room temperature) first, then add to wet feed, mash or drinking water; stir evenly before use, no precipitation at normal dosage.

## 6. Packaging & Storage

- 1 kg / 5 kg / 10 kg: Sealed aluminum foil bags (with moisture-proof liner) – for small-batch use, trials and pet feed production.
- 25 kg: Multi-ply paper bags with inner polyethylene (PE) liner (moisture-proof, dust-proof) – standard industrial packaging for feed mills.
- 500 kg / 1000 kg: Bulk FIBC bags with PE liner (with anti-leakage and moisture-proof valve) – for large-scale feed production and aquaculture use.
- Custom packaging: Available upon customer request (all packaging is moisture-proof as standard).

## 7. Safety & Protection

- The product causes mild skin and eye irritation; wear mandatory PPE (safety goggles, nitrile rubber gloves, FFP1 dust mask) during all handling operations to avoid direct contact and dust inhalation.
- Do not eat, drink or smoke while handling the product; wash hands and face thoroughly with soap and water after operation.
- In case of eye contact: Rinse with plenty of running water for 15-20 minutes and seek medical advice immediately if irritation persists.