



Technical Data Sheet

Orvan™ Ground

Granular Microbial Inoculant for Leguminous Crops

Document control	
Document No.	ORVAN-GTDS-2026-01
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Target crops	Peanut and soybean (lead); other legumes for nodulation and nitrogen-fixation support

Developed by **Oil Crops Research Institute, Chinese Academy of Agricultural Sciences (OCRI-CAAS)**. Commercialized and supplied by **Huasheng Bio Limited**.

1 Product Identification

Field	Detail
Product name	Orvan™ Ground (F1) — standard granule; Orvan™ Microbial Inoculant (granule form).
Product type	Multi-strain microbial inoculant / microbial fertilizer, granule.
Functions	Nodulation enhancement, phosphorus and potassium mobilization, and yield improvement in leguminous crops. The research programme also covers rhizosphere suppression of aflatoxin-producing <i>Aspergillus flavus</i> in peanut; aflatoxin- and <i>A. flavus</i> -related results are reported as research findings; such benefits are subject to registration and regulatory approval in the country of use and are not a registered product function outside China.
Developer	Oil Crops Research Institute, Chinese Academy of Agricultural Sciences (OCRI-CAAS), Wuhan, China.
Commercial partner	Huasheng Bio Limited.
Target crops	Lead crops: peanut (<i>Arachis hypogaea</i>) and soybean (<i>Glycine max</i>). Also applicable to other legumes for nodulation and nitrogen-fixation support.
Regulatory class	Biological soil inoculant / biofertilizer; non-GMO, naturally isolated strains.
Registration	China Ministry of Agriculture and Rural Affairs — microbial inoculant registration No. 16162 (granule; 2026), valid to 2031. This data sheet covers the granule (No. 16162); other Orvan formats are covered by separate registrations.

Product claims, including aflatoxin-related benefits, are subject to registration and regulatory approval in the country of use.

2 Microbial Composition

Strain	Primary function	Form
<i>Bacillus velezensis</i>	Antifungal lipopeptide production; suppression of <i>A. flavus</i> .	Spore-forming
<i>Brevibacillus laterosporus</i>	Rhizosphere colonization; broad-spectrum biocontrol.	Spore-forming
<i>Paenibacillus mucilaginosus</i>	Phosphate / potassium solubilization; nutrient mobilization.	Spore-forming

Total effective viable count $\geq 5 \times 10^8$ CFU/g (per registration). Carrier: mineral / organic composite granule. All three strains are spore-forming, conferring thermotolerance and desiccation tolerance; no refrigeration required. *Paenibacillus mucilaginosus* is listed under its synonym *Bacillus mucilaginosus* on registration No. 16162.

3 Physical & Chemical Specifications

Parameter	Specification
Appearance / form	Brown granule, 2–4 mm
Odour	Slight, earthy
Total effective viable count	$\geq 5 \times 10^8$ CFU/g
pH (10% aqueous suspension)	6.5 – 7.5

Moisture	≤ 10%
Heavy metals (As, Pb, Cd, Cr, Hg)	Within the limits of GB 38400-2019 (values on request)
Pathogen screen	Salmonella absent in 25 g; E. coli < 100 CFU/g; meets registered microbiological limits

4 Packaging, Shelf Life & Storage

- **Packaging:** supplied in moisture-barrier bags. Net weight is stated on the product label and commercial documents.
- **Shelf life:** 18 months from date of manufacture in the original sealed pack under the stated storage conditions.
- **Storage:** store in a cool, dry, ventilated place at ≤ 30 °C (short excursions ≤ 35 °C), relative humidity < 65%, out of direct sunlight. Do not over-stack pallets. Do not store adjacent to pesticides, fuels or strong oxidizers.
- **After opening:** reseal and use within 30 days.

5 Target Crops & Application Rates

Crop	Rate	Interface & timing
Peanut	60 kg/ha	Broadcast or banded, in-soil, co-applied with base fertilizer at sowing.
Soybean	45–60 kg/ha	Broadcast or banded, in-soil, co-applied with base fertilizer at sowing.
Other legumes	see note	Peanut / soybean rate as a starting reference; adjust to the crop, its seeding rate and local conditions.

Unit reference: 60 kg/ha ≈ 24 kg/acre (≈ 53 lb/acre). Rates are reference rates from the five-year multi-site China program; confirm site-specific rates during in-country bridging trials.

6 Application Method

- **With fertilizer:** co-blend with a neutral-pH NPK / base fertilizer and apply in-soil at sowing, or band alongside the seed row. Blend immediately before application; do not store Orvan premixed with fertilizer unless specifically validated.
- **With rhizobial inoculant:** Orvan may be co-applied with native or commercial Rhizobium / Bradyrhizobium inoculants under the recommended application conditions; product-specific compatibility should be confirmed before large-scale use. Orvan amplifies rhizobial performance rather than replacing it.

Orvan complements rhizobia — it does not replace them

The granule does not contain Rhizobium or Bradyrhizobium. It is designed to amplify the performance of native soil rhizobia, or of any commercial rhizobial inoculant co-applied at sowing, and is therefore fully complementary (not substitutive) to existing peanut and soybean inoculant programs.

7 Compatibility & Incompatibilities

- **Compatible:** neutral-pH NPK and starter fertilizers, rhizobial inoculants, and common insecticide seed treatments under short-window co-application.

- **Apply separately:** with fungicide seed treatments, apply Orvan last (sequential, not premixed); confirm the specific product against Orvan compatibility data.
- **Do not mix:** copper-based fungicides, strongly alkaline products (pH > 9), strong oxidizers, or chlorinated water (> 2 ppm). Use clean, non-chlorinated water if wetting is required.

8 Handling, Safety & Import

- **Handling:** a live microbial product. Granule handling may generate dust that can mechanically irritate the eyes and respiratory tract; wear gloves, eye protection and a dust mask when handling large volumes, and wash hands after use.
- **Import:** as a live microbial product with a mineral / organic carrier, import may require a biosecurity, quarantine or phytosanitary permit in the destination country. Confirm import requirements before shipment.
- **Safety data:** refer to the Orvan Safety Data Sheet (granule) for full hazard, first-aid, handling and disposal information.

Contact & Support

Huasheng Bio Limited

Huasheng Bio Limited brings Orvan™ technology to growers internationally; Orvan is developed by the Oil Crops Research Institute, Chinese Academy of Agricultural Sciences (OCRI-CAAS).

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For trial materials, samples, formulation selection, and regulatory dossiers, contact us by email or WhatsApp. Technical dossiers, safety data sheets, and regulatory-grade strain documentation are available to qualified partners under a mutual non-disclosure agreement.

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Performance disclaimer. Field performance varies with soil, climate, variety, cropping system, water regime and management. Users are responsible for ensuring the product is registered, permitted and applied in accordance with all applicable laws, and for verifying compatibility with their own seed treatments, fertilizers and rhizobial inoculants prior to commercial deployment.

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