

Scania R450 COBO ANOS 6 Compartment Fuel Tanker]

Scania R450 COBO ANOS 6 Compartment Fuel Tanker The Scania R450 COBO ANOS 6 Compartment Fuel Tanker is a specialized truck designed for the safe and efficient transportation of fuel. Below are its key features and specifications:

Chassis & Powertrain

- **Manufacturer:** Scania
- **Model:** R450
- **Engine:** DC13 147 (13L, 6-cylinder)
- **Power Output:** 450 HP
- **Torque:** 2350 Nm (at 1000-1300 rpm)
- **Transmission:** Scania Opti cruise (Automated Manual Transmission)
- **Axle Configuration:** Typically 4x2 or 6x2, depending on regional requirements
- **Fuel Tank Capacity (Vehicle):** ~600-800L (varies by configuration)

Tanker Specifications

- **Tanker Type:** Fuel tanker with 6 compartments (ANOS certification)
- **Material:** Aluminum or stainless steel (corrosion-resistant)
- **Capacity:** ~36,000–40,000 liters (varies by design & regulations)
- **Compartments:** 6 individually sealed sections for multi-product transport
- **Pump System:** Equipped with a high-flow pump (e.g., 500–1000 L/min)
- **Metering System:** Digital or mechanical gauges for accurate measurement

Safety Features:

- ANOS Certification (European standard for fuel tankers)
- Anti-spill valves
- Grounding system (static electricity prevention)
- Fire suppression system (optional)

Rear underrun protection

Applications

- Diesel, gasoline, or Ad Blue transport
- Refueling stations, depots, and industrial sites

Additional Features

- COBO (Cab Over Engine) Design: Optimized for maneuverability
- **Compliance:** ADR (European dangerous goods regulations)
- **Telematics:** Scania Fleet Management System for tracking & efficiency

1. Chassis & Powertrain Extended Details

Engine (DC13 147):

- Euro 6 compliant (or regional equivalent, e.g., Euro V/EEV)
- SCR (Selective Catalytic Reduction) + EGR for emissions control
- Fuel efficiency features: Scania's Eco Roll (coasting function) & predictive cruise control

Transmission:

- Scania Opti cruise (12-speed automated gearbox) with Retarder or Exhaust Brake
- **Optional:** Scania GRS0926R (manual 12-speed) for heavy-duty operations

Axle Options:

- **4x2:** Common for lighter loads (~26–36T GCW)
- **6x4:** Full traction for off-site refueling (e.g., mining/construction)

2. Tanker Body (ANOS Compliance & Safety)

- **ANOS Certification (EN 13012):**
- Mandatory in Europe for fuel tankers (ensures leak-proof design, crash resistance, and fire safety).
- Requires:
 - Double-skin construction (outer shell protects inner tank)
 - Overfill prevention system (90% auto-shutoff)
 - Bottom-loading valves (reduces vapor emissions vs. top-loading)
- Compartmentalization:
 - Typical 6-compartment layout (e.g., 3x 6,000L + 3x 4,000L for varied fuel types).
 - Baffles: Anti-surge plates to stabilize liquid movement.
- Pump & Metering:
 - Pump Types:
 - Rotary gear pump (500–1,200 L/min flow rate)
 - Optional: ATEX-certified for explosive environments
 - Meter Accuracy: $\pm 0.5\%$ (legal trade requirement in most countries).

3. Operational Features

- Safety Systems:
 - Static Grounding: Cable + interlock system to prevent sparks during loading/unloading.
 - Emergency Shutoff: Remote-operated valves (via cab or wireless pendant).
 - Ventilation: Pressure/vacuum relief valves for vapor control.
- ADR Compliance (Transporting Dangerous Goods):
 - Class 3 (Flammable Liquids) – Requires:
 - Orange hazard placards
 - Fire extinguishers (2x 6kg powder)
 - Driver ADR training certification
- Telematics & Tracking:
 - Scania Fleet Management (real-time fuel monitoring, route optimization, theft prevention).

4. Customization Options

- Material Choices:
 - Aluminum: Lightweight (~300–400kg lighter than steel), corrosion-resistant.
 - Stainless Steel: For aggressive fuels (e.g., biodiesel, ethanol blends).
- Add-ons:
 - Heated compartments (for cold climates to prevent fuel gelling).
 - Vapor recovery system (environmental compliance).
 - Rear-mounted hose reel (for direct refueling of equipment).
- Cab Options:
 - Highline Cab: Sleeper berth for long-haul operations.
 - Day Cab: For regional/short-haul deliveries.

5. Typical Use Cases

- Petrol Stations: Multi-compartment loads (e.g., diesel + gasoline + kerosene).
- Aviation Fuel: Dedicated stainless steel tanks for Jet-A1 (requires additional certifications).
- Industrial Sites: Off-road fuel delivery to mining/farming operations.

6. Maintenance & Lifespan

- Service Intervals: Every 60,000–90,000 km (Scania's modular engine design reduces downtime).
- Tanker Lifespan: 15–20 years with proper care (aluminum resists rust better than steel).

7. Pricing & Lead Time

- Estimated Cost:
- Truck (R450 COBO): €120,000–€150,000 (new, depending on specs).
- ANOS Tanker Body: €80,000–€120,000 (6 compartments, aluminum).
- Lead Time: 6–12 months (custom builds require ANOS testing/certification).
- Key Questions to Ask When Ordering:
- ADR Class Needed? (e.g., Class 3 for diesel/gasoline, Class 6.1 for additives).
- Local Weight Limits? (e.g., 36T vs. 44T GCW in Europe).
- Loading Type? (Bottom-load vs. top-load, vapor recovery compatibility).
- Climate Adaptations? (Insulated tanks for Arctic conditions).

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Climate Adaptations? (Insulated tanks for Arctic conditions).

- Advanced Tanker Structural Engineering
 - A. Stress Analysis & Finite Element Modeling (FEM)
 - Critical Stress Points:
 - Bulkhead Welds: Fatigue cracks often initiate here due to cyclic pressure loading.
 - Mounting Brackets: High stress at chassis-tanker interface (FEA-recommended reinforcement).
 - Simulation Standards:
 - EN 13094: Requires FEM for tanks >5,000L capacity under 0.5 bar pressure.
 - Load Cases:
 - Full Braking (0.8g deceleration) → Tests front bulkhead integrity.
 - B. Computational Fluid Dynamics (CFD) for Slosh Mitigation
 - Simulation Parameters:
 - Turbulence Model: k-ε (for high Reynolds number flow).
 - Mesh Resolution: 5mm near baffles (critical for vortex prediction).
 - Findings:
 - Worst-Case Scenario: 50% fill + sudden stop → 12 k N surge force on rear bulkhead.
 - Optimal Baffle Design: 30° angled perforations reduce slosh by 40% vs. flat baffles.
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