



INMOTION ENERGY (OPC) PRIVATE LIMITED

10 ml Mud Retort Kit

Stainless Steel Retort Kit for Oil, Water & Solids Content Analysis — Complete with Cabinet & Carrying Accessories

Model No: IM-RT-10ML

INSTRUCTION MANUAL

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Ver. 1.0

Inmotion Energy (OPC) Private Limited

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Introduction

Knowing how much oil, water, and solids a drilling fluid contains is fundamental to keeping its properties in check — it underpins decisions on oil/water ratio, rheology, density, filtration, and salinity, and it's the starting point for evaluating solids-control equipment.

The retort test is the standard way crews get that answer, distilling a measured sample down to its component liquids and reading the result directly.

Description

A measured sample is sealed into the retort cell and heated well above the vaporization point of both oil and water. The rising vapor passes through a condenser, where it cools back to liquid and collects in a graduated receiver housed inside the unit's stainless steel cabinet.

Because the sample volume is fixed and known, the oil and water volumes read straight off the receiver and convert directly to percentages of the whole; solids are found by difference. A digital temperature controller and heating-status indicator manage and display the heating cycle, so results are repeatable from test to test.



The 10 ml Mud Retort Kit — stainless steel cabinet with hinged top lid and latched front door

Components

Part Number	Description
IM-RT-10ML-01	Retort Cell, 10 ml Sample Capacity, Hinged Clamp-Lever Lid
IM-RT-10ML-02	Condenser
IM-RT-10ML-03	Liquid Receiver, Graduated Cylinder (10 ml)
IM-RT-10ML-04	Digital Temperature Controller
IM-RT-10ML-05	Power / Heating-Status Indicator
IM-RT-10ML-06	Stainless Steel Cabinet with Hinged Top Lid
IM-RT-10ML-07	Front Door with Latching Knobs (×2)
IM-RT-10ML-08	Accessory Set — spatula, wire brush, T-handle tool, coiled wick/hose, corkscrew tool, anti-seize lubricant, steel wool



Cabinet interior, front door open — graduated receiver, digital temperature controller, and door-mounted accessory pocket, with steel wool, spatula, and corkscrew tool



Accessory set: spatula, wire brush, T-handle tool, wick/hose, lubricant, steel wool

Features	• Stainless Steel Cabinet — fully enclosed housing protects the retort cell, receiver, and controller in the field. • Secure Latching Door — two latching knobs keep the front door closed and the internals protected between tests. • Digital Temperature Control — an electronic controller displays and holds the setpoint for consistent, repeatable heating. • Clear Readability — a transparent, clearly graduated liquid receiver makes every reading easier to take. • Complete Kit — supplied with every accessory needed to run a test, from spatula to anti-seize lubricant.
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Specifications	<table> <tr> <td>Retort Capacity</td><td>10 ml</td></tr> <tr> <td>Liquid Receiver</td><td>Graduated cylinder, 10 ml capacity, transparent, inert to water/salt solution</td></tr> <tr> <td>Operating Temperature (Setpoint)</td><td>500 ± 40°C</td></tr> <tr> <td>Digital Temperature Controller</td><td>PID-type digital controller with PV/SV display</td></tr> <tr> <td>Heating Element</td><td>Sized to heat the sample above the vaporizing point of oil and water</td></tr> <tr> <td>Condenser</td><td>Sufficient mass to cool oil and water vapor below their vaporization temperature</td></tr> <tr> <td>Power Supply</td><td>AC220V 50Hz (standard) or AC120V 60Hz (USA), ±10%</td></tr> <tr> <td>Case</td><td>Stainless steel cabinet with hinged top lid and latched front door</td></tr> <tr> <td>Applicable Standard</td><td>API RP 13B-1 (Retort Method — Oil, Water & Solids Content)</td></tr> </table>	Retort Capacity	10 ml	Liquid Receiver	Graduated cylinder, 10 ml capacity, transparent, inert to water/salt solution	Operating Temperature (Setpoint)	500 ± 40°C	Digital Temperature Controller	PID-type digital controller with PV/SV display	Heating Element	Sized to heat the sample above the vaporizing point of oil and water	Condenser	Sufficient mass to cool oil and water vapor below their vaporization temperature	Power Supply	AC220V 50Hz (standard) or AC120V 60Hz (USA), ±10%	Case	Stainless steel cabinet with hinged top lid and latched front door	Applicable Standard	API RP 13B-1 (Retort Method — Oil, Water & Solids Content)
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Operation

1. Set the unit on a flat, stable surface and confirm it's powered off before assembly.
2. Turn both front-door latching knobs to OPEN and swing the door open to access the receiver and controller.
3. Fill the retort cell's sample cup completely, then strike off the excess level with the spatula so the sample sits exactly flush with the rim — the test's accuracy depends on starting from this fixed volume. Wipe any residue from the threads and apply a light film of the supplied anti-seize lubricant.
4. Loosely pack a small amount of fresh steel wool into the cell body above the sample — it breaks up foam and keeps solids from carrying over into the vapor stream, which is what keeps the reading clean. Do not pack it tightly, as that restricts vapor flow. Then close and secure the clamp-lever lid.



The retort cell with clamp-lever lid, condenser tube, and receiver fitting

5. Open the cabinet's top lid, seat the retort cell in position, and connect the tube fitting to the condenser. Confirm the graduated cylinder is seated to catch the condensate, then close the top lid.
6. Close the front door and turn both knobs to CLOSE.
7. Power on. Confirm the digital temperature controller is reading (PV) and the setpoint (SV) is at 500°C.

⚠ IMPORTANT

Run the unit in a well-ventilated area. Heating a drilling fluid sample drives off hydrocarbon vapor, and oil-based samples in particular can produce a noticeable odor.

✓ TIP

Run the distillation for the full time even if dripping appears to stop early — cutting it short is the most common cause of a low reading.

8. Let the sample distill until liquid stops dripping into the receiver, then continue heating for a further 10 minutes.
9. Power off and allow the unit and receiver to cool to room temperature.
10. Open the front door and read the oil and water volumes directly from the graduated cylinder — oil separates out and sits on top of the water, so read the oil/water interface for the water volume and the top of the oil layer for the combined total.



Read oil and water volumes directly from the graduated receiver

11. Open the top lid, remove the retort cell, and clean it before storage.

⚠ IMPORTANT

The retort cell, condenser, and receiver run hot during and after a test. Let the unit cool fully before opening the top lid or handling the cell, and wear heat-resistant gloves.

Reporting Results

Water volume is the reading at the oil/water interface; oil volume is the reading at the top of the oil layer minus the water volume. Calculate: % Water = (water volume ÷ retort capacity) × 100; % Oil = (oil volume ÷ retort capacity) × 100; % Solids = 100 – % Water – % Oil. Solids by difference include dissolved salt as well as suspended solids; for a chloride-corrected suspended-solids figure, apply the correction in API RP 13B-1 using the mud's chloride titration.

Calibration

Periodic Verification

1. Periodically check the digital temperature controller's setpoint reading against a reference thermometer at 500°C.
2. Verify the graduated receiver's volume markings against a certified reference volume.
3. If either check drifts out of tolerance, note the deviation and contact Inmotion Energy before relying on the unit for critical testing.

Fresh-Water Recovery Check

Run this check periodically to confirm the whole system — heat, seal, and condenser — is performing correctly, not just the controller and receiver individually.

4. Fill the sample cup level with clean fresh water only (no mud) and run a complete distillation cycle as described under Operation.
5. The receiver should recover a volume close to the full retort capacity, allowing for a small, consistent evaporative loss.
6. If recovery is consistently low, check the cell seal, the condenser fitting, and the cell for damage before the next mud test.

When to Re-check

- Whenever the retort cell lid, condenser, or any other non-consumable part is swapped out.
- After a drop, impact, or any other physical damage.
- If a temperature, volume, or fresh-water recovery check drifts out of tolerance.
- On whatever routine schedule your facility's QA/QC program calls for.

⚠ IMPORTANT

Swapping in a different retort cell lid or receiver can shift the instrument's readings, even if the replacement looks identical. Re-run the calibration checks whenever a part changes.

Maintenance

1. Inspect the retort cell threads, seals, and steel wool packing before each test.
2. Clean the cell, lid, condenser, and liquid receiver after every use; a mild solvent helps with stubborn residue. Avoid abrasive tools on stainless surfaces.
3. Replace the steel wool packing each test — it's a consumable. Use the corkscrew tool to pull the spent steel wool out of the cell body.
4. Keep the cabinet's front door latched and top lid closed between uses.
5. Re-run the Calibration checks (page 8) any time a part is swapped or readings look off.

NOTE

Dry every surface completely before storage — residue left on stainless steel can pit or corrode over time. Handle the retort cell and condenser tubing gently; a bent fitting will affect the seal.

Troubleshooting

Symptom	Possible Cause	Recommended Action
No liquid distilling	Controller not reaching setpoint, or retort cell not sealed	Confirm the indicator shows heating and the setpoint is correct; check the cell's clamp-lever seal
Solids boiling over / spattering	Cell overfilled, or steel wool missing/packed incorrectly	Repack steel wool per instructions; don't overfill the sample cup
Inaccurate volume readings	Receiver not seated level, or fluid trapped in condenser tube	Reseat the receiver; clear and clean the condenser tube
Fresh-water recovery check reads low	Cell seal, condenser fitting, or cell damage letting vapor escape	Check all fittings and the cell seal; run the check again before testing mud
Corrosion or pitting on stainless surfaces	Incomplete drying, or exposure to corrosive residue	Make thorough drying after every use a habit (see Maintenance, page 9)

Still stuck after trying the above? Set the instrument aside and get in touch with Inmotion Energy (see Company & Contact Information, page 12).

Warranty and Return Policy

Warranty

Inmotion Energy (OPC) Private Limited stands behind the materials and workmanship of every instrument it ships. For eighteen (18) months from the invoice date, if a product turns out not to meet its stated specifications through no fault of the buyer, and we're notified in writing once the issue is found, we'll repair or replace it at our discretion, subject to the exclusions below.

This coverage assumes normal use, in line with the operating conditions described in this manual. It does not stretch to cover use outside those conditions, nor to flaws that were plainly visible on arrival but went unreported.

Beyond what's stated here, Inmotion Energy doesn't offer any other express or implied warranty — including, to the extent the law allows, implied warranties of merchantability or fitness for a particular purpose.

Coverage does not extend to damage or loss caused by:

- Installation, operation, or upkeep that doesn't follow this manual
- Misuse, carelessness, or accidental damage
- Adjustment or repair carried out by anyone other than Inmotion Energy or an authorized service provider
- Storage conditions or exposure beyond what normal field use implies
- Parts or components sourced from outside Inmotion Energy
- Ordinary wear items — the steel wool packing and accessory tools, for example

Returns and Repairs

Pack anything you're sending back carefully — Inmotion Energy can't take responsibility for damage caused by inadequate packaging in transit.

If you're returning a unit that isn't defective, do so within thirty (30) days of your invoice; a restocking charge may apply, and the item needs to arrive in its original condition to qualify for a refund.

Before shipping anything back, reach out to us with your invoice number, a description of the issue, and your contact details so we can set expectations. Send equipment to:

Inmotion Energy (OPC) Private Limited

Attn: Service & Repair

186, 1st Main Road, Vijaya Bank Layout, Bilekahalli
Bangalore, Karnataka – 560076, India

Questions before then? Reach our support team at info@inmotionenergy.in.

Ordering & Replacement Parts	Send the Inmotion Energy sales team a note about what you're working on, and we'll get back with a recommendation. Spares and consumables (steel wool, accessory tools) are available on request. Have this ready when you reach out: • Model / catalog number (IM-RT-10ML) • The part number and description you need (see Components, page 4) • How many you need • Your company name, shipping address, and a contact point
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Company & Contact Information	Inmotion Energy has spent years supplying precision testing instruments and drilling tools to operators working with drilling fluids, cements, and completion fluids. Working out of our Bangalore facility, we serve customers across India and the Middle East. Being an independent manufacturer means our customers come first, not a parent company's agenda. Industries We Serve • Onshore & offshore drilling contractors • National & independent oil companies • Mud engineering & testing laboratories • Well completion & workover operations Why Choose Us • Every unit goes through rigorous checks before it ships • Spares and replacements move fast, so downtime doesn't stack up • Designs proven in the field, built to keep working Contact Details Inmotion Energy (OPC) Private Limited 186, 1st Main Road, Vijaya Bank Layout, Bilekahalli, Bangalore, Karnataka – 560076 Phone: +91 96637 44619 Email: info@inmotionenergy.in Website: inmotionenergy.in
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