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Bulk Hardness Tester

Part No. #150-87

Instruction Manual

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Ver. 1.0

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Intro

The Bulk Hardness Tester is designed to evaluate the hardness of shale after exposure to fluids. The hardness of the shale can be related to the inhibitive properties of the fluid being evaluated. Shale that interacted with the fluids will become softer due to the adsorption of water, swelling, and dispersion of fine particles. This rock-fluid interaction can be linked to wellbore stability problems, including reduction in the compressive strength, spalling, or fracturing. In terms of integrity of drill cuttings, excessive softening and stickiness of the pieces of shale can produce mud rings in the annulus, sticking problems in the drilling assembly, and bit balling, among other problems.

Components

#150-87-001 Base Plate
#150-87-002 Threaded Top Plate
#150-87-004 Threaded Piston Rod
#150-87-005 Extruder Plunger
#150-87-006 Wafer
#150-87-009 Extruder Plate
#150-87-100 Extruder Cup Weldment
#150-87-501 Standoff
#150-87-502 Torque Wrench, Dial, 0 - 150 in-lb
#150-87-503 Socket, ⅜" Drive, ½"
#150-87-504 Hex Wrench, 3/16"

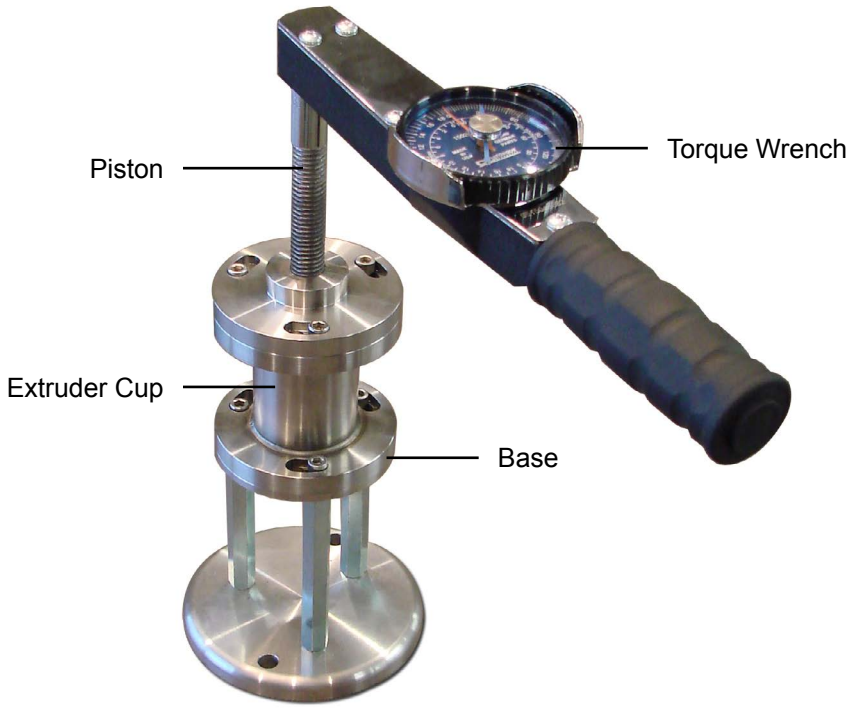
Operation

1. Prepare the test fluid.
2. Add 350 mL of test fluid to an Aging Cell.
3. Add 40.00 ± 2.00 g of bentonite pellets or cleaned, sized cuttings.
4. Hot roll the samples.
5. After hot rolling, allow the samples to cool.
6. Using a 30-mesh sieve, recover the un-dispersed shale from the test fluid.
7. Using an appropriate solvent, quickly rinse the majority of the excess fluid off of the recovered shale.

Note

Be careful not to further disperse the cuttings.

8. Attach the extruder cup to the base and tighten the three screws.



9. Place the cuttings loosely into the extrusion cup with a spatula. Fill the cup half way to the top.
10. Place the wafer inside the cup on top of the cuttings.

Note

Do not press the wafer down hard on the cuttings.

11. Make sure the piston is fully unscrewed. Attach the piston assembly to the extruder cup. Tighten the three screws.


Note

Occasionally add thread lubricant to the piston threads.

12. Attach the torque wrench to the top of the piston. Make sure the dial is zeroed.

13. Rotate the torque wrench clockwise at a steady rate (approximately one revolution every two seconds). Record the maximum deflection during each revolution.


Note

If the wafer sticks to the side of the extrusion cup, it may cause a false deflection. Reset the torque wrench and continue the test.

14. Continue the revolutions until the torque meter reads a maximum of 100 in-lb.

15. Loosen the lower three screws and remove the extrusion cup with the piston assembly still attached.

16. Continue to tighten the piston until the rest of the sample is ejected from the extrusion cup.

17. Loosen the three upper screws and remove the piston assembly from the extrusion cup.

18. Thoroughly clean and dry all components. Use pipe cleaner to remove the remaining sample from the holes in the screen.

Warranty and Return Policy

Warranty:

OFI Testing Equipment, Inc. (OFITE) warrants that the products shall be free from liens and defects in title, and shall conform in all respects to the terms of the sales order and the specifications applicable to the products. All products shall be furnished subject to OFITE's standard manufacturing variations and practices. Unless the warranty period is otherwise extended in writing, the following warranty shall apply: if, at any time prior to twelve (12) months from the date of invoice, the products, or any part thereof, do not conform to these warranties or to the specifications applicable thereto, and OFITE is so notified in writing upon discovery, OFITE shall promptly repair or replace the defective products. Notwithstanding the foregoing, OFITE's warranty obligations shall not extend to any use by the buyer of the products in conditions more severe than OFITE's recommendations, nor to any defects which were visually observable by the buyer but which are not promptly brought to OFITE's attention.

In the event that the buyer has purchased installation and commissioning services on applicable products, the above warranty shall extend for an additional period of twelve (12) months from the date of the original warranty expiration for such products.

In the event that OFITE is requested to provide customized research and development for the buyer, OFITE shall use its best efforts but makes no guarantees to the buyer that any products will be provided.

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This limited warranty does not cover any losses or damages that occur as a result of:

- Improper installation or maintenance of the products
- Misuse
- Neglect
- Adjustment by non-authorized sources
- Improper environment
- Excessive or inadequate heating or air conditioning or electrical power failures, surges, or other irregularities
- Equipment, products, or material not manufactured by OFITE
- Firmware or hardware that have been modified or altered by a third party
- Consumable parts (bearings, accessories, etc.)

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Items being returned must be carefully packaged to prevent damage in shipment and insured against possible damage or loss. OFITE will not be responsible for equipment damaged due to insufficient packaging.

Any non-defective items returned to OFITE within ninety (90) days of invoice are subject to a 15% restocking fee. Items returned must be received by OFITE in original condition for it to be accepted. Reagents and special order items will not be accepted for return or refund.

OFITE employs experienced personnel to service and repair equipment manufactured by us, as well as other companies. To help expedite the repair process, please include a repair form with all equipment sent to OFITE for repair. Be sure to include your name, company name, phone number, email address, detailed description of work to be done, purchase order number, and a shipping address for returning the equipment. All repairs performed as "repair as needed" are subject to the ninety (90) day limited warranty. All "Certified Repairs" are subject to the twelve (12) month limited warranty.

Returns and potential warranty repairs require a Return Material Authorization (RMA) number. An RMA form is available from your sales or service representative.

Please ship all equipment (with the RMA number for returns or warranty repairs) to the following address:

OFI Testing Equipment, Inc.
Attn: Repair Department
11302 Steeplecrest Dr.
Houston, TX 77065
USA

OFITE also offers competitive service contracts for repairing and/or maintaining your lab equipment, including equipment from other manufacturers. For more information about our technical support and repair services, please contact techservice@ofite.com.