Dependable Products From People You Trust

Aging Cells

#175-25 Stainless Steel Grade 303, 260 mL
#175-30 Stainless Steel Grade 303, 500 mL
#175-50 Stainless Steel Grade 316, 500 mL

Instruction Manual

Updated 8/26/2026
Ver. 7

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Intro

The OFITE Aging Cell is a patented (U.S. Patent No. 4,805,443) pressure vessel that enables samples to be subjected to temperatures higher than the boiling point of water and still be maintained in a liquid state. The cells may be used for static temperature exposure or in a dynamic mode in a roller oven with a preset minimum aging time of 16 hours.

OFITE Aging Cells are available in 260 mL and 500 mL sizes and utilize both Viton® and Teflon® o-ring seals. Aging cells are typically constructed of stainless steel (grade 303 or grade 316) and are used for high-temperature testing (up to 500°F / 260°C). For prolonged exposure to elevated salinity at high temperatures (such as 20,000 mg/L chlorides at 350°F / 176.6°C), cells constructed from premium metals, such as Hastelloy® or Inconel® 600 are available. The aging cell walls may be protected against corrosive fluids by using the popular Teflon® liner (part no. 175-60), designed by OFITE. Refer to the Teflon® liner instruction manual for more details.

For corrosion testing, a special 500 mL, 303 alloy stainless steel Corrosion Test Cell is available with a modified inner cap designed to hold a corrosion coupon. Also available in Hastelloy® upon request.

An optional calibrated rupture disk is available which can be installed in the inner cap of the Aging Cells to rupture and release pressure at a predetermined set point. OFITE can retrofit the rupture disk to existing cells.

Components

The following components are included with OFITE Aging Cells:

#170-17	Valve Stem O-ring, Viton, Qty: 6
#175-05	Thrust Washer
#175-09-1	Teflon® O-ring for Inside of Aging Cell Body (For Temperatures Above 400°F), Qty: 3
#175-09-2	Viton® O-ring for Inside of Aging Cell Body (For Temperatures Below 400°F), Qty: 3
#175-14	Set Screw, ⅜" Diameter, Qty: 3
#175-15	Wrench for ⅜" Set Screw
#175-16	Valve Stem
#175-47	O-ring for Outside of Aging Cell Body, Viton 90, Qty: 2

#175-30-SP Spare Parts Kit

#170-17	Valve Stem O-ring, Qty: 36
#175-09-1	Teflon® O-ring for Inside of Aging Cell Body (For Temperatures Above 400°F), Qty: 12
#175-09-2	Viton® O-ring for Inside of Aging Cell Body (For Temperatures Below 400°F), Qty: 12
#175-14	Set Screw, ⅜" Diameter, Qty: 6
#175-15	Wrench for ⅜" Set Screw
#175-16	Valve Stem, Qty: 2
#175-46	Teflon® O-ring for Outside of Aging Cell, Qty: 4

Parts and Accessories

Caps

#175-13 Outer Cap for Pressurized Aging Cells, 303 Stainless Steel

For tests below 400°F:
#175-18 Inner Cap for Pressurized Aging Cells, 303 Stainless Steel
#175-18-1 Inner Cap for Pressurized Aging Cells, 316 Stainless Steel

For tests above 400°F:
#175-00-3 Inner Cap, Accepts Rupture Disk, 316 Stainless Steel
#175-56 Rupture Disk, ¼", 2,000 psi
#175-57 Rupture Disk, ¼", 1,500 psi

For tests above 400°F, always use an inner cap with a rupture disk.

O-rings and Gaskets

For tests below 200°F:
#175-54 Buna N O-ring for Outside of Aging Cell

For tests up to 400°F:
#170-17 Viton® O-ring for Valve Stem
#175-09-2 Viton® O-ring for Inside of Aging Cell Body
#175-47 Viton® O-ring for Outside of Aging Cell
#175-62 Viton® O-ring for Teflon® Liner Plug
#175-63 Viton® O-ring for Teflon® Liner Lid (Piston)

For tests above 400°F:
#175-09-1 Teflon® O-ring for Inside of Aging Cell Body
#175-46 Teflon® O-ring for Outside of Aging Cell

Buna N O-rings should only be used for temperatures below 200°F.
Viton® O-rings can be used at temperatures up to 400°F.
Teflon® O-rings should be used for temperatures above 400°F.

Set Screws and Wrenches

#175-14 Set Screw for Pressurized Aging Cells, ⅜"
#175-15 Wrench for ⅜" Set Screw

#175-60 Teflon® Liner, for 500 mL Aging Cells with T-screw
#175-60-1 Liner
#175-60-2 Piston
#175-60-3 Plug
#175-60-4 T-screw
#175-62 Viton® O-ring for Teflon® Liner Plug
#175-63 Viton® O-ring for Teflon® Liner Piston

Specifications

Maximum Temperature: 500°F (260°C)
Maximum Pressure: 2,000 psi (13.8 MPa)

For tests above 200°F, refer to the chart below for the appropriate pressure.

Mud Volume and Pressure for High-Temperature Aging

Aging Temp. (°F / °C)	Water Vapor Pressure (psi)	Coefficient of Expansion of Water	Suggested Applied Pressure (psi / kPa)	Mud Volume in 260 mL Cell (mL)	Volume with Teflon Liner	Mud Volume in 500 mL Cell (mL)	Volume with Teflon Liner
212 / 100	14.7	1.04	25 / 172	225	130	450	326
250 / 121	30	1.06	50 / 345	225	130	450	326
300 / 149	67	1.09	100 / 690	200	116	425	308
350 / 176	135	1.12	150 / 1,034	200	116	400	289
400 / 204	247	1.16	250 / 1,724	-	-	375	271
450 / 232	423	1.20	300 / 2,069	-	-	375	253
500 / 260	680	1.27	375 / 2,586	-	-	325	235

Important

Do not use nitrous oxide cartridges as pressure sources for high-temperature, high-pressure (HTHP) aging. Under high temperature and pressure, nitrous oxide can detonate in the presence of grease, oil, or carbonaceous materials. Nitrous oxide cartridges are to be used only for Garrett Gas Train Carbonate Analysis.

Important

Carbon dioxide and nitrous oxide cartridges are pressurized to approximately 900 psi at 1 atmosphere (sea level). Therefore, they should never be transported by airplane without proper packing because cabin depressurization may cause an explosion.

Important

If the aging cells are going to be rolled in a roller oven during a test, install o-rings on the outer perimeter on the top and bottom of the cells. Failure to do so can damage the rollers in the oven. Teflon (#175-46), Viton® (#175-47), and Buna N (#175-54) o-rings are available.

Important

Aging Cells are intended to be used for the aging of drilling fluids per the following instructions. They are NOT intended to be used as reaction vessels in which the reactions release gas and intensify pressure. Aging cells cannot automatically release pressure. Dangerous conditions can occur if they are used in an improper manner. OFITE assumes NO liability for any Aging Cell used as it was not intended.

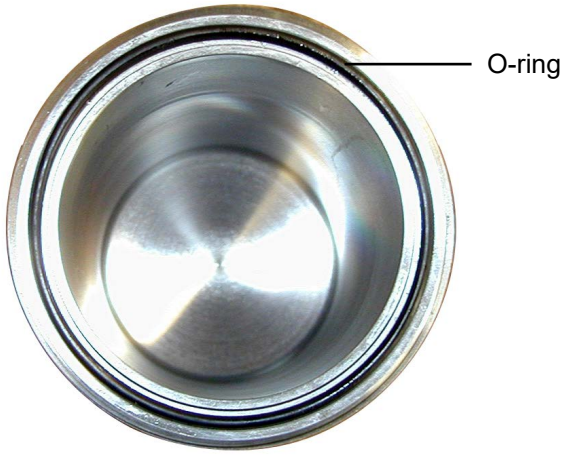
Cell Corrosion

Test fluids under high temperature and pressure can corrode the cell body and caps. Carefully inspect the cell body and caps for corrosion before and after each test.

Some materials are more susceptible to corrosion than other. Also, some fluids and additives are more corrosive than others. OFITE offers a variety of cell materials for different levels of corrosion resistance and cost.

Operation

1. Carefully inspect the o-ring for defects and place it in the groove in the cell body. Replace the o-ring if it is hard or has cuts and nicks. Blow air through the valve stem to make sure it is not plugged.

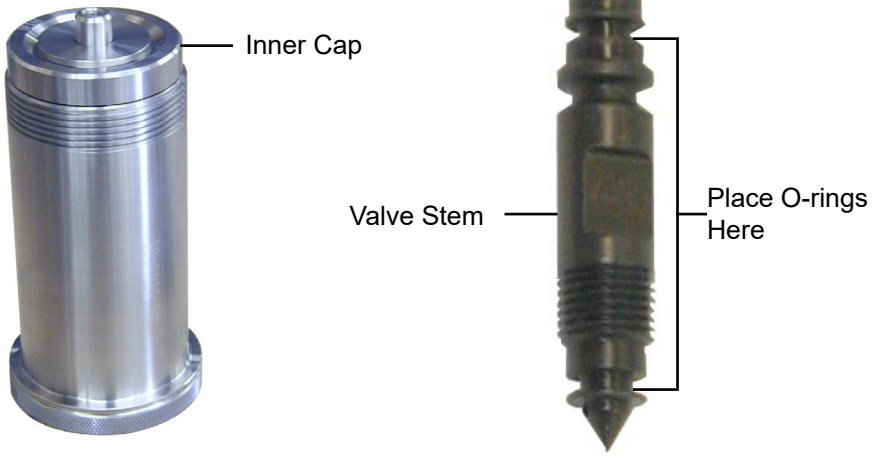


2. Determine a safe volume and safe initial pressure for the temperature at which the sample will be tested (refer to the chart on page 5). Place the correct volume of fluid into the cell. Be careful not to get fluid in the o-ring groove or on the o-ring.

Important

Do not overfill the cell.

3. Clean any spilled fluid from the edge of the cell and place the inner cap on top of the cell body o-ring so that it seats in place. Hand tighten the outer cap in place. Using the Allen wrench, tighten the set screws in the outer cap. Insert the valve stem with the o-rings in place into the inner cap and tighten completely. Loosen the valve stem approximately one half turn before pressurizing.



4. When the desired pressure is reached, close the valve stem by tightening it with a wrench. To ensure there are no leaks, immerse the cell in water and check for any bubbles coming from the valve stem or cell cap.

5. Place the Aging Cell inside the oven and adjust to the desired temperature.

6. After the desired aging time has elapsed, remove the cell from the oven and allow it to air cool until the sample temperature is 300°F (149°C) or less. The cell may then be either air or water cooled.

The sample temperature must be equal to the ambient temperature before you release the pressure and open the cell.

7. Loosen the set screws, unscrew the outer cap, and remove the inner cap.

8. Clean out the valve stem with water. Blow air through the stem to remove any residual water.

9. Observe the aged fluid and record the condition as “fluid”, “gelled”, “plastic”, “hard”, etc. You may also want to test for viscosity, shear or gel strength, or filtration control.

10. Thoroughly clean the entire cell with soap and water.

Maintenance

Regular maintenance will extend the useful life of the aging cells.

After every test:

1. Thoroughly clean and dry all components including the cell body, inner cap, outer cap, valve stem, and o-rings.

2. Inspect all o-rings for damage or wear. Discard any that are nicked, cracked, or distorted from their original shape. Replace them with new o-rings.

3. Apply grease to the threads on the outer cap and cell body.

Every three years (yearly for highly corrosive conditions):

1. Sand blast the metal components (cell body, inner cap, outer cap).

2. Visually inspect the cell body and inner cap for pitting or other signs of corrosion. If any material loss is present, replace the damaged component.

3. Inspect the threads on the outer cap and cell body for burrs.

4. Replace all o-rings and apply grease to the threads on the outer cap and cell body.

5. Pressure test with water up to 4,000 psi.

OFITE offers aging cell recertification that includes all of the above plus a one-year certificate. Contact your sales representative for more information.

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.

OFITE makes no other warranties or guarantees to the buyer, either express or implied, and the warranties provided in this clause shall be exclusive of any other warranties including ANY IMPLIED OR STATUTORY WARRANTIES OF FITNESS FOR PURPOSE, MERCHANTABILITY, AND OTHER STATUTORY REMEDIES WHICH ARE WAIVED.

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.)

Returns and Repairs:

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.