

*Instructions*  
**OFITE AGING CELLS**

The OFITE Aging Cell is a patented 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 normal minimum aging time of 16 hours. OFITE Aging Cells are available in 260 ml and 500 ml sizes and utilize both Viton<sup>®</sup> and Teflon<sup>®</sup> O-rings seals. Aging cells are typically constructed of brass, grade 303 or grade 316 stainless steel. The stainless steel cells are used for high temperature testing, up to 450°F. For prolonged exposure to elevated salinity at high temperatures, e.g., 20,000 mg/l chlorides at 350°F, cells constructed from premium metals such as Hastalloy<sup>®</sup> or Inconel<sup>®</sup> 600 are available from OFITE. 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. The aging cell walls may be protected against corrosive fluids by using the popular Teflon liner, designed by OFITE. An optional calibrated rupture disc is available which can be installed in the inner cap to rupture and release pressure at a predetermined set point. OFITE can retrofit the rupture disc to existing cells.

## **AGING CELLS, BRASS**

### **No. 175-00 AGING CELL, BRASS, 260 ML, NON - PRESSURIZED CELL**

#### **Components:**

- #175-06 Set Screw, 5/8" diameter, stainless steel
- #175-08 Wrench, for 5/8" Set Screw
- #175-09 O-ring, for inside of Aging Cell, Viton<sup>®</sup>
- #175-09-1 O-ring, Teflon<sup>®</sup>, for Cell

### **No. 175-01 AGING CELL, BRASS, 260 ML, PRESSURIZED WITH VALVE**

### **No. 175-20 AGING CELL, BRASS, 500 ML, PRESSURIZED WITH VALVE**

#### **Components:**

- #170-17 O-ring, Viton, for Valve Stem, Viton<sup>®</sup>
- #175-05 Washer, for Inner Cap
- #175-09 O-ring, for inside of Aging Cell, Viton<sup>®</sup>
- #175-10 Inner Cap, Brass
- #175-12 Outer Cap, Brass
- #175-14 Set screw, 3/8 " for pressurized Aging Cells
- #175-15 Wrench, for 3/8" Set Screw
- #175-16 Valve Stem, for pressurized Aging Cells

## AGING CELLS, STAINLESS STEEL, GRADE 303

### No. 175-25 AGING CELL, 303 S.S., 260 ML, PRESSURIZED WITH VALVE

### No. 175-30 AGING CELL, 303 S.S., 500 ML, PRESSURIZED WITH VALVE

#### Components:

- #170-17 O-ring, Viton, for Valve Stem, Viton®
- #175-05 Washer, for Inner Cap
- #175-09 O-ring, for inside of Aging Cell, Viton®
- #175-14 Set screw, 3/8" for Pressurized Aging Cells
- #175-15 Wrench, for 3/8" Set Screw
- #175-16 Valve Stem, for Pressurized Aging Cells
- #175-18 Inner Cap, 303 stainless steel

## AGING CELLS, STAINLESS STEEL, GRADE 316

### No. 175-50 AGING CELL, 316 S.S. 500 ML, PRESSURIZED WITH VALVE

#### Components:

- #170-17 O-ring, Viton, for Valve Stem, Viton®
- #175-05 Washer, for Inner Cap
- #175-09 O-ring, for inside of Aging Cell, Viton®
- #175-14 Set screw, 3/8" for Pressurized Cells
- #175-15 Wrench, for 3/8" Set Screw
- #175-16 Valve Stem, for Pressurized Aging Cells

### No. 175-40 CORROSION TEST CELL, GRADE, 303 STAINLESS STEEL, 500 ML

#### Components:

- #175-30 Aging Cell, 303 stainless steel, 500 ml, with Valve for Pressuring
- #175-45 Inner Cap, with Coupon Holder

### No. 175-60 LINER, TEFLON, For 500 ML AGING CELLS, COMPLETE

- #175-62 O-Ring, Viton®, for Teflon® Lid Liner Plug
- #175-63 O-Ring, Viton®, for Teflon® Liner Lid (Piston)

#### **PARTS AND ACCESSORIES FOR AGING CELLS:**

##### ***CAPS***

- #175-05 Washer, for Inner Cap
- #175-10 Cap, Inner, Brass, for Pressurized Aging Cells
- #175-18 Cap, Inner, 303 S.S., for Pressurized Aging Cells
- #175-12 Cap, Outer, Brass, for Pressurized Aging Cells

##### ***O-RINGS AND GASKETS***

- #170-17 O-Ring, Viton, for Valve Stem, Viton®
- #175-04 Gasket, Teflon®, for Fann® style inner Cap
- #175-09 O-Ring for inside of OFITE Aging Cell, Viton®
- #175-09-1 O-Ring for inside of OFITE Aging Cell, Teflon®
- #175-46 O-Ring for outside of Aging Cell, Teflon®
- #175-54 O-Ring for outside of Aging Cell, Buna N

##### ***SET SCREWS and WRENCHES***

#175-06	Set Screw, 5/8", for Non Pressurized Cell
#175-14	Set Screw, 3/8", for Pressurized Aging Cells
#175-08	Wrench, Allen, for 5/8" Set Screw
#175-15	Wrench, Allen, for 3/8" Set Screw

***VALVE STEM***

#175-16	Valve Stem, Short, for Aging Cells
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**Procedure - Non-Pressurized Cells**

1. Carefully inspect the o-ring for defects and place in the groove in the cell body. Replace the o-ring if it is hard or if cuts and nicks are present.
2. Pour the fluid sample into a clean aging cell to within one-half inch of the lip. This will allow sufficient void space for the expansion of the fluid due to heating. Avoid getting fluid in the o-ring groove or on the o-ring.
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, and using the Allen wrench, tighten the center set screw in the middle of the outer cap.
4. Place the aging cell inside the oven and adjust to the desired aging temperature. (See table no. 1)
5. After the desired aging time has elapsed, remove the cell from the oven and cool the cell to a temperature below 150° F (65° C). Loosen the set screw, unscrew the outer cap and remove the inner cap.
6. Observe the condition of the aged fluid and report as fluid, gelled, plastic or hard, etc. The aged fluid may also be tested for viscosity, shear or gel strength or filtration control.

**Procedure - Pressurized Cells**

1. Carefully inspect the o-ring for defects and place in the groove in the cell body and the valve stem o-rings. Replace the o-ring if it is hard or if cuts and nicks are present. Make sure the valve stem is not plugged by blowing air through the stem.
2. Determine a safe volume and safe initial pressure for the temperature at which the sample will be tested. Place the correct volume of fluid into the cell and **DO NOT OVERFILL THE CELL**. (See table no. 1) Avoid getting fluid in the o-ring groove or on the o-ring.
3. Clean any spilled fluid from the edge of the cell and carefully place the inner cap onto the cell body o-ring so that it seats in place. Hand tighten the outer cap in place and with the Allen wrench, tighten the three set screws on top of the outer cap. Insert the valve stem with the o-rings in place into the inner cap and tighten all the way down. To pressurize the cell, loosen the valve stem approximately one half turn, and pressurize according to table no. 1.
4. When the proper pressure is reached, close the valve stem by tightening with the wrench. To ensure there are no leaks, the cell should be immersed in water and checked for any bubbles that might originate from the valve stem or cap.

5. Place the cell into a heating oven or chamber and heat to the desired temperature for the desired time interval.
6. Remove the cell from the heating chamber and air cool until the sample temperature has been reduced to 300° F (149° C) or less. The cell may then be either air or water cooled. The sample temperature must be at ambient temperature before the pressure is released and the cell is opened. Clean out the valve stem with water and blow out any residual water from inside the stem.
7. Observe the condition of the aged fluid and report as fluid, gelled, plastic or hard, etc. The aged fluid may also be tested for viscosity, shear or gel strength or filtration control.

**Aging Cells  
Mud Volume and Pressure for High Temperature Aging**

<b>Aging Volume Temperature</b> <b>° F (° C)</b>	<b>Water Vapor Pressure</b> <b>PSI</b>	<b>Coef. of Expansion for Water</b>	<b>Suggested Applied Pressure, PSI</b>	<b>Mud Volume ml, in</b> <b>260 ml Cell</b>	<b>Mud ml, in</b> <b>500 ml Cell</b>
212 (100)	14.7	-----		25	225 ----
250 (121)	30	-----		50	225 ----
300 (149)	67	-----		100	200 ----
350 (176)	135	-----		150	200 ----
400 (204)	247	1.16	250	----	350
450 (232)	423	1.20	300	----	350
500 (260)	680	1.27	375	----	350
550 (287)	1100	1.36	500	----	350
600 (315)	1543	1.47	580	----	300

**CAUTION:**

Nitrous Oxide cartridges should not be used as pressure sources for high pressure, high temperature (HPHT) filtration. Under 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.

Carbon dioxide and Nitrous oxide cartridges are pressurized to approximately 900 psi at 1 atmosphere (sea level). Therefore they should never be placed on airplanes, without proper packaging, due to the possibility of cabin de-pressurizing which may result in an explosion.

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