|  |  |  |  |
| --- | --- | --- | --- |
| **STANDARD OPERATING PROCEDURE** | | | |
| **LAB NAME** | Drilling Fluids and Cementing | **LAB NUMBER:** |  |
| **EQUIPMENT NAME:** | Aging Cell | **PREPARED BY:** |  |

1. **EQUIPMENT SPECIFICATION**

|  |  |  |  |
| --- | --- | --- | --- |
| **Model** | **Electrical** | **Specifications** | Aging Cell, OFITE Style, 500 mL |
| **#175-30** | NA | Volume: 500ml; Maximum Temperature: 500°F (260°C) Maximum Pressure: 2,000 psi |

**Definition:** It a cylindrical vessel that enables drilling fluid samples to be subjected to higher temperature than the boiling point of water and still be maintained in a liquid state.

1. **OPERATION**
2. Before start of experiment, wear proper PPEs and then start inspecting the cell thoroughly.
3. 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.
4. 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. Be careful not to get fluid in the O-ring groove or on the O-ring. Do not overfill the cell.
5. 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.
6. 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.
7. Place the Aging Cell inside the oven and adjust to the desired temperature.
8. 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.
9. Loosen the set screws, unscrew the outer cap, and remove the inner cap.
10. Clean out the valve stem with water. Blow air through the stem to remove any residual water.
11. 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.
12. Thoroughly clean the entire cell with soap and water.
13. **RISKS INVOLVED USING THE EQUIPMENT**

* Explosion risk due to high pressure and high temperature
* Burning due to high temperature
* Leakage and spill

1. **SAFETY PRECAUTIONS**

* Wear the proper hand protection
* Use proper gloves and lab coat while working on equipment.
* Do not use nitrous oxide cartridges
* 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.
* Cool down first before depressurizing the cell then depressurize the equipment first before opening.
* Do not exceed the pressure (2000 psi) more than the limit of the cell.