**Engineering Test Procedure (ETP):**

**(Resistance to lint, dust, and oil accumulation)**

**Room Setup:**

1. Set Room Temperature to 60 ºF, open LDO Room door, allow both inside and outside test chamber to stabilize.
2. Check UltraMat 23 Condensate. Drain as required.
3. Calibrate and Zero UltraMat 23.
4. Remove Desiccant beads, place in Microwave for 10 minutes. Make sure the beads are blue in color. Reinstall the desiccant filter.
5. Check/Refill Corn Oil hopper.
6. Unplug Intellifauct, manually zero both valves by hand. Then re-plug Intellifauct.
7. Cycle Power on the Main PLC Control in front of Test Computer.
8. With no gas flow, zero the Alicat Gas Flow Meter
9. Vacuum all lint from conveyor hopper
10. Vacuum conveyor belt

**Loading Conveyor:**

1. Measure 100 grams of lint and 16 grams of dust
2. Place both lint and dust into the 1-gallon paint can. Shake vigorously.
3. Place contents into the lift sifter.
4. Place 10-inch-long tray underneath lint sifter and turn sifter “ON”
5. Dispense 12 grams of mixture into the 10-inch-long tray
6. Place contents onto the conveyor belt
7. Place 33 grams of dust into the same 10-inch-long tray. (Uniformly distributed)
8. Place the dust on top of the mixture that is currently on the belt.
9. Repeat until the belt is loaded

**Product Setup in Engineering Development Lab**

1. Fill water heater with 70 ± 2 ºF water
2. Drill main control to allow access to the manifold pressure adjustment port.
3. Light water heater and set thermostat to 135 ºF, you must use Vesta Software
4. With Burner “ON”, adjust inlet pressure to nominal inlet gas pressure (7 inches of water)
5. Perform the ANSI 15 Minute Rate Test at nominal inlet gas pressure (7 inches of water)
   1. Verify unit is ± 2% from the nameplate rating
   2. Verify AFCO does not exceed 0.04%
   3. Adjust manifold pressure to +/- 10% of rated nominal manifold pressure.
6. Once the 15 Minute Rate Test is completed, allow water heater to fully heat until the unit satisfies. While watching the Vesta Monitor, verify that the water heater ambient temperature on the PCB is **below 80 ºF at all times**.
7. Once the product has fully heated, verify in Vesta Monitor that the LDO Base Temperature is populated and that the BIN is set to +60F
8. Turn burner off, disconnect, drain, and move to LDO room.

**Product Setup in LDO Room:**

1. Install water heater per Figure 1
2. Place Flue Sample Tube into flue exhaust and connect to Siemens Ultramat 23 CO/CO2 Analyzer
3. Turn Pump “ON” for Siemens Ultramat 23
4. Connect manifold pressure sensor to product manifold pressure port.
5. Connect TCs for Inlet and Outlet water temperature.
6. Connect pilot voltage probe if not using Vesta Communications.
7. Turn blower “ON” and verify 80 ± 4 CFM
8. Verify oil injection atomizer nozzle extends into the room 5/8 +/- 1/8”
9. Fill water heater with 70 ± 2 ºF water
10. Verify water pressure while flowing is 40 PSI
11. Install 5 ft flue uninsulated stack
12. Light water heater and set thermostat to the highest setting
13. With Burner “ON”, adjust inlet pressure to nominal inlet gas pressure (7 inches of water)
14. Verify the main burner on the water heater is “ON”
15. On the Test Computer, verify:
    1. Gas Flow Rate
    2. Water Flow Rate
    3. Inlet Water Temperature while flowing
    4. Vesta monitor is reading in the test software
16. Press “Start” on the automated software

**End of Test:**

1. Export the ANSI 15 Minute Rate Test to a text file
2. Robocopy Full LDO Test Data to network.
3. Analyze Data Using the Water Heater Analysis Tool.
4. Attach results to Test Request System for Engineering Review
5. Clean Room, both Inside and Outside of test room.
6. Vacuum and clean lit mixer
7. Vacuum all lint from conveyor hopper
8. Vacuum conveyor belt

Diagram, schematic

Description automatically generated

**Figure 1:**