

Wet vs Dry Coating Strip Force Measurement Method



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Scope

This information describes the reference measurement method used to report the mean peak strip force obtained by mechanically removing coatings from optical fibers in both wet and dry conditions.

General

This test was developed to measure the relative consistency of the force required to mechanically strip the coating from optical fiber. The test measures the peak mechanical strip force required to remove optical fiber coating before and after exposure to water.

Measurement Method

Two sets of fibers are conditioned for the strip-force test. One set is stored for 14 days in lab conditions while the second set is stored in a deionized (DI) water bath (see measurement conditions).

For the water soak, the fiber is coiled loosely with an inside diameter greater than 21 centimeters; this provides a repeatable measurement condition. The coiled fiber then is placed in a storage container filled with deionized water.

Immediately after exposure, the peak strip force is measured under laboratory conditions. One end of the fiber is threaded through the guide tube of the stripping tool while the other end is wrapped around a capstan using very low tension and secured (see Figure 1). The stripping tool is closed around the coated fiber penetrating the coating. Tensile loading is applied by pulling the stripping tool along the fiber axis at a constant rate. A tensile load cell attached to the capstan measures the tension developed during coating removal. The maximum tensile load is displayed on a peak and hold meter.

Measurement Conditions

Water Immersion

- Temperature $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$
- Test duration 14 days

Lab Conditions

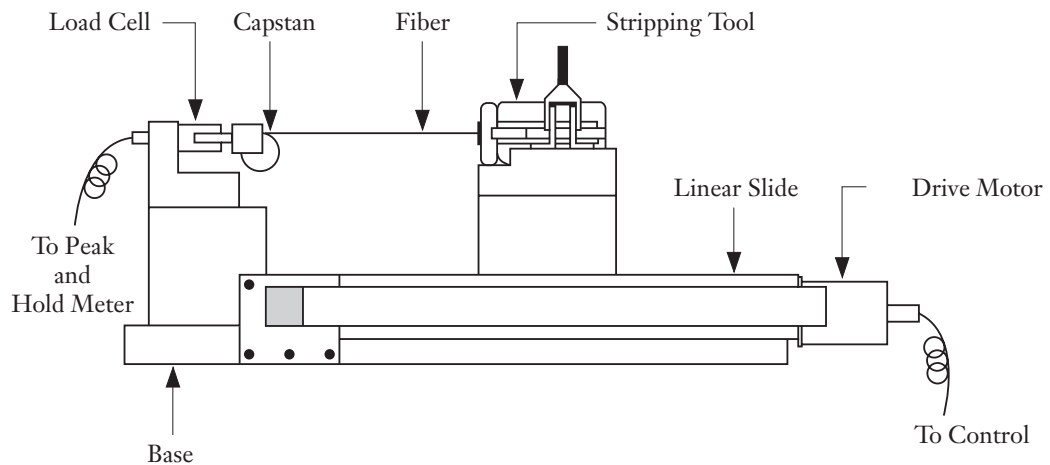
- Temperature $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$
- Relative humidity 30% to 60%
- Test duration 14 days

Strip Force

- Slide Assembly Traverse Rate $50.0 \text{ cm/min (20.0 inch/min)} \pm 10\%$ for $245 \mu\text{m}$ OD coating
 $1.3 \text{ cm/min (0.5 inch/min)} \pm 10\%$ for $500\text{-}900 \mu\text{m}$ OD coating
- Length of Coating Stripped $3.0 \text{ cm (1.2 inches)} \pm 10\%$ for $245 \mu\text{m}$ OD coating
 $1.5 \text{ cm (0.6 inches)} \pm 10\%$ for $500\text{-}900 \mu\text{m}$ OD coating
- Stripping tool Commercially available mechanical optical fiber stripper with blades on same plane

Apparatus to Measure Coating Strip Force

Figure 1 shows the apparatus used to measure peak strip force.



References

EIA/TIA-455-178 (FOTP-178), Measurements of Strip Force Required for Mechanically Removing Coatings from Optical Fibers.

EIA-455-75 (FOTP-75), Fluid Immersion Test for Optical Waveguide Fibers.

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