Core Chuck Chew-Out Strength
Tubes and Cores

OBJECTIVE

This test measures the chew-out strength of the tubes and cores when driven by a chuck.

MATERIAL AND EQUIPMENT

An apparatus is required to hold the test components in line. This is potentially made up of six components. See fig. 1 for example.

1. A fixture is required to hold the tube or core in such a manner that the tube or core longitudinal axis remains straight and undistorted. This apparatus must be set with jaws to hold the tube or core in place.

2. A torque wrench with a torque indicator or a driven socket with a dynamometer is required. If a torque multiplier is used, then its influence must be recorded on the total torque load.

3. Some chucks require a thrust load in order to extend the jaws. If that is the kind of chuck being tested, then a thrust load must be generated by the test frame in line with the chuck.

4. The chuck that is to be tested is required.

5. A metal sleeve which its ID fits the OD of the tube or core to prevent it from opening when the chuck is loaded on may be required. This sleeve simulates the paper roll on the tube or core. This sleeve must be as long as the penetrating length of the chuck in the core.

6. A core plug which its OD fits the ID of the core may also be required. This core plug is placed in the tube or core to prevent it from crushing on itself by the action of the jaws on the holding apparatus.

PROCEDURE

Condition specimens to equilibrium moisture content at 73 °F ± 3.5 °F (23 °C ± 2 °C) and 50 ± 2 percent relative humidity prior to testing when practical. If conditioning is not practical, moisture content should be determined (CT-111).
Tube and core specimens shall be tested in length of 16 ± 2 inches (406 ± 51 mm) unless specified otherwise. Specimens shall be cut on an angle of 90 degrees.

If a sleeve is used, it shall be on the tube or core before the chuck is loaded with a press in case of a mechanic chuck. If the chuck chew-out resistance to test is an expandable chuck, place the chuck to the correct position and then expand the chuck jaws.

A core plug shall be inserted into the tube or core before the holding jaws are clamped. Once the specimen is set, use the torque wrench or the driven socket to apply a torque. The torque wrench rotational speed shall be 45°/min ±10°/min. Once the reading reaches a maximum but the torque is still applied, the tube or core may be chewing and the paper plies are tearing. Record this value as the Chew-out resistance of the tube or core.

**REPORT THE RESULTS**

1. Conditioning history and/or moisture content (CT-111).
2. Type of chuck used for testing.
3. Wall thickness of the specimens (CT-101).
4. Inside diameter and outside diameter (CT-102 and CT-103).
5. Maximum torque resistance reached until the plies slip.