

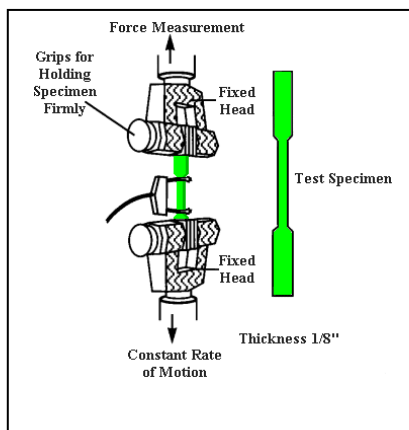
# NNS Material Engineering Quality Alert

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Dear Valued Supplier,

Tensile testing is a critical step in the validation process of most materials used for load bearing applications in shipbuilding. ASTM E8/E8M (Standard Test Methods for Tension Testing of Metallic Materials) is the specification typically required for non-ferrous products. The most recent revisions of this specification (2009 and later) added control methods and limits for the rate of testing during the tensile test. While there are different control rates allowed during specific phases of the test, the most critical portion of the test, when yield strength is determined, has specific rate controls that test-laboratories need to be aware of and follow. These control methods and rates are detailed in paragraph 7.6.3 of the 2009 and later versions of ASTM E8/E8M. The test laboratory should take the following steps for each test:

1. Verify which revision of ASTM E8/E8M is invoked prior to performing any tests and if the 2009, or later revision is employed insure that the changes as discussed in this alert are understood and adhered to.
2. Review the material specification for requirements related to tensile test speed limits. Some materials, such as high temperature alloys and titanium, have specific control limits that supersede ASTM E8/E8M in the base material specification.
3. Select a control method as defined in ASTM E8/E8M for the rate of testing to determine the yield strength: A – Rate of Stressing, B – Rate of Straining, or C – Crosshead Speed Control. Once yield properties are determined, other control methods (and rates) may be used in accordance with ASTM E8/E8M for determining the ultimate tensile strength.
4. Select a target speed that meets the limits specified for the control method selected in ASTM E8/E8M.



Test laboratories are still required to ensure the control methods and rates selected are suitable for the material being tested, that the equipment is capable to operate within the limits selected and that repeatable results can be obtained for homogeneous material. The control methods and rates used are not required to be reported when the requirements of ASTM E8/E8M are followed, but any deviation from these requirements should be reported and agreed to with the laboratory's customer.

Note: this Quality Alert was generated after it was determined that a laboratory had selected one test control method and rate that was considered "conservative" for all cases, but outside the recommended ASTM E8/E8M limits.