National Institute of Standards & Technology

Certificate

Standard Reference Material 2096

Certified High-Energy Samples for Charpy V-Notch Testing Machines

This Standard Reference Material (SRM) consists of five 10x10x54 mm bars of 4340 alloy steel which are intended for the certification of Charpy V-notch testing machines. The bars were fabricated from vacuum melted, vacuum arc-remelted steel rods. The bars were cut to finished lengths, machined and heat treated to a hardness near 32 HRC, within a lot tolerance of ± 1 HRC.

Prior to testing a Charpy V-notch testing machine, the machine should be checked to assure compliance with Sections 4 and 5 of ASTM Standard E-23. Specimens are to be tested at -40 °F (-40 °C) and in accordance with the testing procedures of Sections 11.2.1 and 11.2.3.1 of E-23. An accurate machine will produce values within 1.0 ft-lb or 5 percent of the certified mean value, whichever is greater. The certified mean value for series is

ft-lb

J

m-Kg .

Because the cause or causes of erroneous values at one energy level may not be the cause at another energy level, calibration or correction curves should not be used.

The National Institute of Standards and Technology (NIST), if requested, will evaluate the results of your tests and will return a report of its findings to your facility. If your machine produces acceptable values, this report will certify the conformance of your machine. If your machine produces values outside the nominal values, this report will suggest changes in machine design, repair or replacement of machine parts, changes in testing techniques, etc. Facilities desiring this evaluation must return the broken specimens and completed questionnaire to Charpy Program Coordinator, NIST-Code 430, 325 Broadway, Boulder, CO 80303. A plastic, self-locking bag is provided for the return of broken specimens. Tape broken pieces together as described in the wrapping instructions.

Shipping charges for the return of broken specimens are the responsibility of the customer. The mailing label which is provided must be used to expedite shipping and, especially for overseas shipments, clearance by U.S. Customs. Note to international customers: overseas shipments must be sent by airmail so that after the packages have been cleared by U.S. Customs, they will be directly forwarded to NIST-Boulder. If a more rapid means of shipment is necessary, choose an overnight delivery service which will handle U.S. Customs clearance and will deliver directly to NIST-Boulder. Unless you assure delivery, airfreight packages may be returned to the customer by U.S. Customs instead of being forwarded to NIST-Boulder.

If your machine is moved or undergoes any major repairs or adjustments, the current certification becomes invalid and the machine must be rechecked. Removal of the pendulum, replacement of the anvils or adjustment of the height of drop are examples of such major repairs or adjustments. If a specimen requires over 80 percent of the machine capacity to fracture, the machine should be checked to assure that the pendulum is straight, the anvils or striker have not been damaged and that all bolts are still tight. The certification is valid for one year from the date of the test.

Gaithersburg, MD 20899
December 20, 1989
(Revision of certificate dated 8-31-89)

William P. Reed, Acting Chief
Office of Standard Reference Materials

This SRM is anticipated to have an indefinite shelf-life under normal use and storage conditions. The SRM as-received is coated with oil, wrapped in a corrosion inhibiting paper, and sealed within a plastic envelope. We recommend that the SRM be retained in this package to protect it from moisture until it is used. The protective oil coating should be wiped from the SRM just prior to testing .

The overall direction and coordination of the technical measurements leading to certification of test specimens and machines, evaluation of test results and issuance of the report on machine conformance are under the direction of D. A. Shepherd, Fracture and Deformation Division, NIST.

Technical and support aspects concerning the preparation, certification of the material and issuance of the Standard Reference Material were coordinated through the Office of Standard Reference Materials by J. Falco.