

A-A-54520
12 November 1991

COMMERCIAL ITEM DESCRIPTION

THERMOMETER, SELF-INDICATING, BIMETALLIC

The General Services Administration has authorized the use of this Commercial Item Description in preference to Military Specification MIL-T-3452D which is cancelled.

This Commercial Item Description covers a pocket size dial type thermometer, for use in liquid temperature measurements, inspection of food products, and in determining the temperature of shell eggs.

Salient Characteristics:

Shall be a self-indicating dial type bimetallic thermometer with a 0 to 220 degrees Fahrenheit (F) scale range and increments of 2 degrees (F). The nominal overall length of the thermometer assembly shall be 5-1/2 inches. The thermometer shall be supplied with a carrying case that includes a pocket clip.

Shall be designed to indicate temperatures by the rotation action of a bimetallic element which turns a staff that is connected to a pointer. A calibration nut shall provide a means for recalibrating without disassembling the thermometer.

Shall be supplied ready for use by being preset to provide thermometer readings that have a +/- 2 degree (F) accuracy. The thermometer shall be tested for accuracy in accordance with the testing procedure indicated in the Quality Assurance Provisions of this document.

Shall be designed to respond rapidly to temperature changes. The time for a thermometer reading to rise from 50 degrees to 180 degrees (F) shall not exceed 10 seconds, after the thermometer is immersed in a 212 degree (F) liquid bath after being transferred from a 32 degree (F) liquid bath. The thermometer shall be tested for speed of response in accordance with the testing procedure indicated in the Quality Assurance Provisions of this document.

AMSC N/A

FSC 6685

DISTRIBUTION STATEMENT A: Approved for public release;
distribution is unlimited.

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Shall consist of a pointed metal stem that is attached to a metal case with a calibration nut. The stem, case, and calibration nut shall be fabricated from corrosion-resisting steel. The stem shall be positioned perpendicular to the center of the base of the case. The stem shall house a bimetallic heat-sensitive element.

Shall be supplied with a pointed metal stem with an exposed length of 4-3/4 to 5-1/4 inches. The outside diameter of the stem shall be at least 1/8 inches when measured at the midpoint of its axial length.

Shall be supplied with a metal case that encloses a graduated dial, a black pointer, and a protective window. The window shall be securely sealed to the case to provide a watertight thermometer. The dimensions of the case shall allow for at least a 7/8 inch diameter field view of the dial under the window.

Shall be supplied with an optically clear glass or plastic window. The dial crystal material shall be capable of being subjected to a 225 degree (F) temperature for a one hour period without exhibiting any evidence of discoloration or deformation.

Shall be supplied with a circular dial with graduations and numerals that are black on a white or silver background. The 0 to 220 degree (F) temperature range shall extend around the circular face to cover at least a sector formed by a 300 degree arc. A minimum 20 degree arc sector shall separate the positions for the 0 and 220 degree (F) readings. The graduations shall be divided in 2 degree (F) increments with each 10 degree (F) increment longer than the other increments. At least every 20 degree (F) increment shall include the appropriate Arabic number marking for a direct temperature reading. The graduation markings shall be permanent and clear. The dial shall also be marked to include the model number and name or registered trademark of the manufacturer or supplier. As an alternate the model number may only be indicated on the printed instructions that are to be supplied with the thermometer.

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Shall be provided with a pointer that is sufficiently dampened to provide a temperature reading that does not change more than 2 degrees (F) when the thermometer is subjected to the stability testing procedure indicated in the Quality Assurance Provisions of this document.

Shall be fitted with a calibration nut that allows the dial adjustments to be made by using a wrench (not required to be supplied with the thermometer) to grip and turn the nut. Turning the nut shall result in the case and dial being turned and repositioned under the pointer. The calibration nut fitting shall have sufficient friction to require a torque in the range of 15 to 68 inch-oz to be applied in order to turn the calibration nut. The thermometer shall be tested to determine the tightness of the calibration nut in accordance with the testing procedure in the Quality Assurance Provisions of this document.

Shall be supplied with a pocket size carrying case that includes a pocket clip which is suitably protected against corrosion. The carrying case shall be fabricated from a hard rubber or a rigid plastic. The thermometer, after insertion in the carrying case shall be held in place by a frictional spring clip type support located within the cavity of the case. The pocket clip-on case shall be designed for alternate use as a handle for the thermometer by allowing the thermometer stem to be inserted into a loop or gap in the pocket clip.

Shall be provided with printed instructions, on either a product box or separate enclosure, that indicate the proper use and care of the thermometer. A cautionary statement shall be included that indicates that the thermometer is being supplied to be accurate within 2 degrees (F), unless damaged by shock or temperature extremes, but can be adjusted to a 1 degree (F) accuracy at any point on the dial scale by carefully recalibrating at that specific temperature. The cautionary statement may be supplied on an insert that is separate from the other instructions.

Workmanship. The thermometer and carrying case shall be free from defects which detract from their appearance or impair their serviceability.

Unit. Each (EA). One thermometer, as specified, constitutes one unit.

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Quality Assurance Provisions.

Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

Records. Records of examinations and tests performed by or for the contractor shall be maintained by the contractor and made available to the Government upon the Government's request, at any time, or from time to time, during the performance of the contract and for a period of three years after delivery of the supplies to which such records relate.

Inspection. Inspection, as used herein, is defined as both examination (such as visual or auditory investigation without the use of special laboratory appliances or procedures) and testing (determination by technical means of physical and chemical properties) of the item.

Tests. Tests shall be conducted in accordance with commercial practice to determine compliance with the specification requirements. Sampling for the tests shall be in accordance with commercial practice. Additional testing shall be conducted in accordance with procedures hereinafter indicated, to determine compliance with the specification requirements. Where feasible, the same sample may be used for the determination of two or more test characteristics. The unit of product for sampling shall be the individual thermometer.

Accuracy testing. The thermometer shall be tested against a standard thermometer at 32 degrees (F) and at two additional temperature points. The calibration of the standard thermometer shall be traceable to the National Institute of Standards and Technology (NIST). There shall be at least a 50 degree (F) difference between the middle temperature and each of the other two temperature points. Sampling for the accuracy testing shall be in accordance with MIL-STD-105 and an S-3 inspection level. The rejection number shall be two (2). Any thermometer that does not provide all temperature readings within +/- 2 degrees of the standard thermometer readings shall be cause for rejection.

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Speed of thermometer response. The stem of the thermometer at room temperature shall be immersed in a liquid bath having a 32 degree (F) temperature. After the thermometer dial registers 32 degrees (F), the thermometer shall be removed from the liquid bath and immediately immersed in a liquid bath having a 212 degree (F) temperature. The time for the dial to reach 180 degrees (F) from the 50 degree (F) reading shall be determined and recorded. Sampling for the testing shall be in accordance with MIL-STD-105 and an S-1 inspection level. The rejection number shall be two(2). Any thermometer whose time response exceeds 10 seconds shall be cause for rejection.

Stability of temperature reading. The thermometer stem shall be immersed in a liquid bath having a temperature within a range of 2 to 200 degrees (F). The thermometer dial reading of the bath shall be recorded after the dial setting has stabilized for at least two minutes. The thermometer shall be removed from the bath and then subjected to vibration in accordance with the following:

The thermometer is mounted so that its dial is either normal or parallel to the direction of vibration.

The thermometer is subjected to two one hour vibration cycles (two hours total vibration time). Each cycle shall consist of the vibration frequency being progressively increased from 500 to 3000 cycles per minute during the first half hour and then progressively decreased back to 500 cycles per minute during the next half hour.

After the thermometer has completed its two cycles of vibration, it shall again be immersed in a liquid bath having the same temperature as that obtained for the initial reading. The thermometer dial reading of the water bath shall be recorded after the dial setting has stabilized for at least two minutes. Sampling for the testing shall be in accordance with MIL-STD-105 and an S-1 inspection level. The rejection number shall be two(2). Any thermometer whose temperature reading changes from its original reading by more than 2 degrees shall be cause for rejection.

Tightness of calibration nut. The thermometer calibration nut shall be subjected to a torque test to determine the externally applied force that is necessary to turn the calibration nut that controls the dial setting. The thermometer shall be held in a rigid position with the dial housing prevented from turning. The torque necessary to turn the calibration nut shall be determined by one of the following methods:

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Using a calibrated torque wrench.

Applying a series of weights to the free end of a wrench that is attached to the calibration nut of the thermometer while both the thermometer stem and wrench are in horizontal positions. Weights are increased until the calibration nut turns. The torque that is necessary to turn the calibration nut shall be determined by calculation as being the product of the total of the applied weights and perpendicular distance between the line of force and the axis of rotation.

Sampling for the testing shall be in accordance with MIL-STD-105 and an S-4 inspection level. The rejection number shall be two(2). Any thermometer whose turning torque is not within a 15.0 to 68.0 inch-oz range shall be cause for rejection.

Metric products. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch-pound units, providing they fall within the tolerances specified using conversion tables contained in the latest revision of Federal Standard 376, and all other requirements of this document are met. If a product is manufactured to metric dimensions and those dimensions exceed the tolerances specified in the inch/pound units, a request should be made to the contracting officer to determine if the product is acceptable. The contracting officer has the option of accepting or rejecting the product.

Contractor certification. The contractor shall certify that the product offered meets the salient characteristics of this description and conforms to the producers' own drawings, specifications, standards, and quality assurance practices. The Government reserves the right to require proof of such conformance prior to first delivery and thereafter as may be otherwise provided for under the provisions of the contract.

Regulatory requirements.

Federal Food, Drug and Cosmetic Act. If the product covered by this document has been determined by the U.S. Food and Drug Administration to be under its jurisdiction, the offeror/contractor shall comply, and be responsible for compliance by its subcontractors/suppliers, with the requirements of the Federal Food, Drug and Cosmetic Act, as amended, and regulations promulgated thereunder. In addition, the offeror/contractor shall comply, and be responsible for compliance by its subcontractors/suppliers, with the requirements of all other applicable Federal, State, and local statutes, ordinances and regulations.

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Recovered materials. The offeror/contractor is encouraged to use recovered material in accordance with Federal Acquisition Regulation Subpart 23.4 to the maximum extent practical.

Preservation, packaging, packing, labeling, and marking. Unless otherwise specified, preservation, packaging, and packing shall be to a degree of protection to preclude damage to containers and/or contents thereof under normal shipping conditions, handling, etc., involving shipment from the supply source to the receiving activity, plus reshipment from receiving activity, and shall conform to applicable carrier's rules and regulations. Intermediate and exterior package quantities and labeling and marking shall be as specified in the contract and/or order.

Other publications. The following documents form a part of this specification to the extent that is specified herein. Unless otherwise indicated, the effect on date of invitation for bids or request for proposals shall apply.

MILITARY STANDARD

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.

(Unless otherwise indicated copies of military standards are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099).

NOTE: The following National Stock Number is covered by this document.

<u>NATIONAL STOCK NUMBER</u>	<u>ITEM IDENTIFICATION</u>
6685-00-444-6500	THERMOMETER, SELF-INDICATING, BIMETALLIC

Ordering data. (Intermediate/exterior package quantities, labeling, and marking must be specified in the contract and/or order.)

MILITARY INTERESTS:

PREPARING ACTIVITY:

Custodians:

DLA-DM

Army - MD
Navy - MS
Air Force - 03

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CIVIL AGENCY COORDINATING ACTIVITIES:

VA-OSS
PHS

Project Number: 6685-0874

Location: ENABLE/THERMCD2/S31

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

RECOMMEND A CHANGE:		1. DOCUMENT NUMBER A-A-54520	2. DOCUMENT DATE (YYMMDD) 12 November 1991
3. DOCUMENT TITLE THERMOMETER, SELF-INDICATING, BIMETALLIC			
4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)			
5. REASON FOR RECOMMENDATION			
6. SUBMITTER		7. ORGANIZATION	
a. NAME (Include Area Code)		b. TELEPHONE (Include Area Code)	
		(1) Commercial (2) AUTOVON	
c. ADDRESS (Include Zip Code)			
ATTN: DPSC-MSE			
2800 S. 20th Street			
Philadelphia, PA 19101			
8. PREPARING ACTIVITY		IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:	
a. NAME		Defense Quality and Standardization Office	
Defense Personnel Support Center		5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466	
		Telephone (703) 756-2340 AUTOVON 289-2340	