INCH-POUND

MIL-T-46938C (AR)
AMENDMENT 1
20 December 1996

MILITARY SPECIFICATION

TETRACENE

This Amendment forms a part of Military Specification MIL-T-46938C (AR), dated 16 May 1994, and is approved for use by the U.S. Army Armament Research, Development and Engineering Center and is available for use by all Departments and Agencies of the Department of Defense.

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3.2 Table I.

	Characteristics	Requirement	Test method
Delete:	"Melting and explosion point	127 deg ± 3 deg C	para 4.5.3"
and substitute:	"Decomposition point/ purity	127 deg ± 3 deg C 97% min	para 4.5.3"

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4.3 Table II.

	Examination or test	Requirement para	Inspection method
Delete:	"Melting point (decomposition)	3.2	4.5.3 or 4.5.3.1"
and substitute:	"Decomposition point/purity	3.2	4.5.3"

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4.4.2.1 Classification major.

Delete: "102 Melting point (decomposition)....." in its entirety and substitute:

"102 - Decomposition point/purity - 4.4.3.3 - 3.2 - 4.5.3"

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4.4.3.3 Test for lot acceptance. Delete from line 10: "melting and explosion point" and substitute: "decomposition point/purity"

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4.5.3 Delete paragraphs 4.5.3 and 4.5.3.1 in their entirety and substitute the following paragraphs:

"4.5.3 Decomposition point/purity. Prepare a 7% sulfuric acid solution and label 'Blank Solution'. Place approximately 0.1000+/-0.0050 grams of tetracene in a 100 ml volumetric flask. Add about 70 ml of the 7% sulfuric acid solution to the volumetric flask and sonicate with cooling until the tetracene dissolves completely. Make up to volume with the 7% sulfuric acid and label 'Stock Solution'. Pipette 10 ml of the Stock Solution into a 100 ml volumetric flask, dilute to volume with the 7% sulfuric acid, and label 'First Dilution Solution'. Pipette 10 ml of the First Dilution Solution into a 100 ml volumetric flask, dilute to volume with the 7% sulfuric acid, and label 'Working Solution'. Use an ultraviolet spectrophotometer to measure the absorbance at 278 nm using a 1 cm silica cell of (1) a sample of the Blank Solution (7% sulfuric acid), and (2) a sample of the Working Solution. Calculate the purity of the tetracene as:

$$\text{Tetracene \%} = \frac{(12.39)\,(\text{Abs net})}{(W)}$$

Abs = absorbance
W = weight of sample in grams, (see 6.5)
Abs net = Abs of the working solution minus the Abs of the 7% sulfuric acid solution

4.5.3.1 Alternate decomposition point/purity (method #1). Place 0.5 - 1.0 mg of dry tetracene obtained in 4.5.1 into a melting point capillary tube or, alternatively, fill the capillary tube according to standard practice, tapping lightly to fill the bottom of the tube to a height of 5 to 10 mm. Put on a safety mask and determine the melting point in a Vanderkamp apparatus or equal.

4.5.3.2 Alternate decomposition point/purity (method #2). Determine the melting

(decomposition) point by means of any commercially available melting point apparatus which uses samples packed in capillary tubes and whose temperature rise can be controlled to at least 0.3 degrees C per minute. In determining this property of tetracene, prepare a capillary tube sample in accordance with good laboratory practice or according to instructions accompanying the instrument. Rapidly bring the temperature of the instrument to the initial temperature of 120 degrees C and equilibrate until there is no fluctuation when held for at least 10 minutes at this temperature. Insert the sample of tetracene and raised the temperature at 0.3 degrees C per minute. The temperature at which the material first forms a meniscus in the capillary is the melting (liquefaction) point. The accuracy and precision of the instrument shall be periodically determined by means of certified standards melting in the vicinity of the liquefaction point of tetracene. Due caution must be exercised when heating this primary explosive. Samples may decompose with explosive force if heat is applied too rapidly and can cause operator injuries or instrument damage (6.5 applies)."

Custodian:
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Preparing activity
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