MILITARY SPECIFICATION
EXPLOSIVE, PLASTIC-BONDED, CAST PBX(AF)-108

This amendment forms a part of MIL-E-82898(NAVY) dated 30 December 1994, and is approved for use by the Department of the Navy, and is available for use by all departments and agencies of the Department of Defense. MIL-E-82898(NAVY) remains inactive for new design, however, the document is valid for acquisition when needed.

Page 6

Renumber existing paragraph 4.5.5 as paragraph 4.5.5.1.

Add new paragraph 4.5.5 as follows:

" **4.5.5 RDX composition test.** The RDX content shall be determined using the wet chemistry procedure described in 4.5.5.1 or the high pressure liquid chromatography (HPLC) procedure described in 4.5.5.2. "

Page 7

Add new paragraphs 4.5.5.2 through 4.5.5.2.4 as follows:

" **4.5.5.2 RDX composition test using HPLC.**

4.5.5.2.1 Reference preparation.

a. Prepare a stock solution of HMX by accurately weighing 0.16 gram of HPLC grade HMX reference, to the nearest 0.1 mg, into a tared 100-mL volumetric flask. Add spectral grade acetone, and swirl the flask to dissolve the HMX. Dilute to volume with spectral grade acetone and mix thoroughly.

b. Prepare a stock solution of RDX by accurately weighing 0.16 gram of HPLC grade RDX reference, to the nearest 0.1 mg, into a tared 100-mL volumetric flask. Add spectral grade acetone, and swirl the flask to dissolve the RDX. Dilute to volume with spectral grade acetone and mix thoroughly.

c. Prepare an internal standard stock solution by accurately weighing 0.16 gram of m-dinitrobenzene, to the nearest 0.1 mg, into a tared 100-mL volumetric flask. Add spectral grade acetone, and swirl the flask to dissolve the m-dinitrobenzene. Dilute to volume with spectral grade acetone and mix thoroughly. Note: The same internal standard stock solution should be used to prepare the working standard solution and the diluted sample solutions.

d. Prepare the working standard by transferring 1.0 mL of the HMX stock solution, 10.0 mL of the RDX stock solution, and 5.0 mL of the internal standard stock solution to the same 100-mL volumetric flask. Dilute to volume with spectral grade acetone and mix thoroughly. This solution is to be used for analysis.

Note: Each of the above solutions may be stored at 4°C. Allow to warm to room temperature prior to use.

4.5.5.2.2 Sample preparation.

a. Chop the sample into cubes of approximately 0.5 cm, or smaller, on a conductive mat. Accurately weigh 2.0 grams of sample to the nearest 0.1 mg into a tared paper thimble. Perform Soxhlet extraction using 250 mL of acetone. Reflux the sample for 24 hours.

b. After extraction, allow the extract solution to cool to room temperature. Quantitatively transfer this solution to a 250-mL volumetric flask. Dilute to volume using acetone and mix thoroughly.

c. Transfer 2.0 mL of sample solution and 5.0 mL of internal standard to the same 100-mL volumetric flask. Dilute to volume with spectral grade acetone and mix thoroughly. This solution is to be used for analysis.

4.5.5.2.3 Chromatographic conditions and approximate retention times.

a. Use the following chromatographic conditions:

System: Any appropriate HPLC system equipped with a pump, injector, ultraviolet detector, and recorder or data system.

Mobil phase: Milli-Q treated water/HPLC grade methanol (70:30)

Column: Waters RadialPak C-18, or equivalent

Flow rate: 4.0 mL/min

Injection volume: 25 ul

Detection wavelength: 254 nm

b. Approximate retention times.

HMX = 4.0 min
RDX = 8.0 min
Internal Standard = 25 min

4.5.5.2.4 Percent RDX/HMX calculation.

a. Calculate the RDX/HMX content as follows:

$$\%RDX = \frac{wt\ ref,\ g}{100mL} \times \frac{10.0mL}{100mL} \times \frac{100mL}{2.0mL} \times \frac{250mL}{wt\ sam,\ g} \times \frac{S.R.}{R.R.} \times (100)$$

$$\%HMX = \frac{wt\ ref,\ g}{100mL} \times \frac{1.0mL}{100mL} \times \frac{10.0mL}{100mL} \times \frac{100mL}{2.0mL} \times \frac{250mL}{wt\ sam,\ g} \times \frac{S.R.}{R.R.} \times (100)$$

where: S.R. = ratio of sample peak area to internal standard peak area
R.R. = ratio of reference peak area to internal standard peak area
Total% RDX = %HMX + %RDX

b. The average percent RDX of the triplicate determinations for each sample shall be within the limits specified in Table II.

Review activity:
Navy-AS

Preparing activity:
Navy-OS
(Project 1376-0046)