

TECHNICAL BULLETIN

**PROCEDURES FOR OPERATING
155-MM HC WHITE SMOKE CANISTER D445
(NSN 1320-00-383-3890) DURING GROUND TRAINING**

Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY

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Headquarters
Department of the Army
Washington, D.C., 1 Nov 2000

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REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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SECTION I. GENERAL

1-1. General. The 155-mm HC White Smoke Canister, DOD Ammunition Code D445, NSN 1320-00-383-3890, has been tested and found safe for use in ground training exercises using MN60, Electric Match Igniter: M79, NSN 1375-01-353-1038, as the preferred ignition device or L599, Explosive Booby Trap Simulator, M118, NSN 1370-00-028-5257 as an alternative ignition device.

1-2. Purpose and Scope. The purpose of this Technical Bulletin is to provide operating procedures and safety instructions for using the smoke canister as a ground-training simulator. These procedures apply only to the subject smoke canister and ignition devices; no other ignition method has been approved for use with this smoke canister in ground training operations.

SECTION II. DESCRIPTION

2-1. Smoke Canister.

a. The Firemarker section uses the D445 smoke canisters to simulate large volumes of smoke for screening troop and vehicle movement. It is also used in conjunction with naphthalene to replicate secondary burns.

b. The D445 smoke canister is cylindrical in shape, 4.72 inches long by 4.5 inches in diameter and weighs about 7.4 pounds. It is filled with approximately 8-1/2 pounds of type C, HC smoke filler and emits smoke from exhaust ports located at the top and bottom of the canister. Burning time ranges between 60 and 240 seconds.

2-2. M79 Electric Match Igniter. Consists of a match and cable assembly sealed in a capped tube containing igniter composition and starter composition. The cable is attached to a lead wire and the electric match is activated by a 9-volt battery.

2-3. M118 Booby Trap Simulator. Provides an intense flame to start the canister smoking. Has a 20-foot trip wire to ignite the canister at a safe distance.

SECTION III – SAFETY

3-1. Safety Warnings. Refer to AR 385-63, *Safety Policies and Procedures for Firing Ammunition for Training, Target Practice and Combat*.

a. Eye protection and gloves are required.

b. Always stand to side and upwind of D445 smoke canister, never facing exhaust ports.

c. Initiation must be performed at maximum length of wire leads at a 90-degree angle from portholes.

d. Smoke canisters produce great heat when burning; precautions must be taken to prevent fires. Fire extinguishers are available. Do not ignite within 100m of helicopters, fuel points, and POL products.

e. Prolonged exposure to HC may cause lung and eye irritation. Personnel will make every attempt to stay upwind and out of smoke. In the event that personnel are in HC smoke the following will be enforced:

(1) Personnel remaining in even, low concentration of HC smoke for more than 5 minutes will wear field protection masks.

(2) In the event of an accident involving damage to property and/or injury to personnel, the operation in progress will be stopped immediately and the Safety Office, QASAS, will be notified of the incident. The supervisor in charge will investigate the accident; Safety and QASAS to determine all contributing causes and preventive measures which will eliminate or reduce accidents. In no event will equipment be repaired or removed in the area affected by the accident until approval has been obtained. Accidents, which do not cause property damage or injury to personnel, will be investigated so that preventive measures can be taken in the event of a similar set of circumstances resulting in a serious accident.

3-1. Safety Warnings. (Cont)

f. Ground emplacement of the smoke canisters for static initiation can be accomplished in a safe manner providing the canisters are not handled after the igniter is taped in place. Under no circumstances are individuals to hold the canisters in their hands, like a hand grenade, for igniting or while the canisters are burning.

g. Stacking or taping several smoke canisters together constitutes a greater fire hazard and produces a larger than normal volume of smoke. Normal burning of a single canister produces extremely hot particles of slag and flame from both ends. This hot slag and a flame are estimated to extend between 6 inches and 24 inches from the end of the canister. These smoke munitions will start fires if ignited in dry grass or near other flammable materials.

h. The initiation device is a pyrotechnic igniter and should be handled and stored in accordance with applicable DA documentation.

i. Electric initiators are subject to electromagnetic radiation (EMR) hazards from any RF emitter (i.e., radars, radios, etc.). Refer to FM 5-25, *Explosives and Demolitions*, to prevent electrostatic discharges or RF-induced currents from functioning the igniter during hookup or removal after a misfire.

3-2. First Aid. Refer to FM 21-11, *First Aid for Soldiers*.

SECTION IV – OPERATING PROCEDURES

4-1. Standing Operating Procedures (SOP).

a. Supervisors will ensure that all personnel are upwind and that no one is in the HC smoke.

b. Supervisors will ensure that a functioning fire extinguisher is in the area and that firemarkers are in radio contact with the JTOC in case of fire.

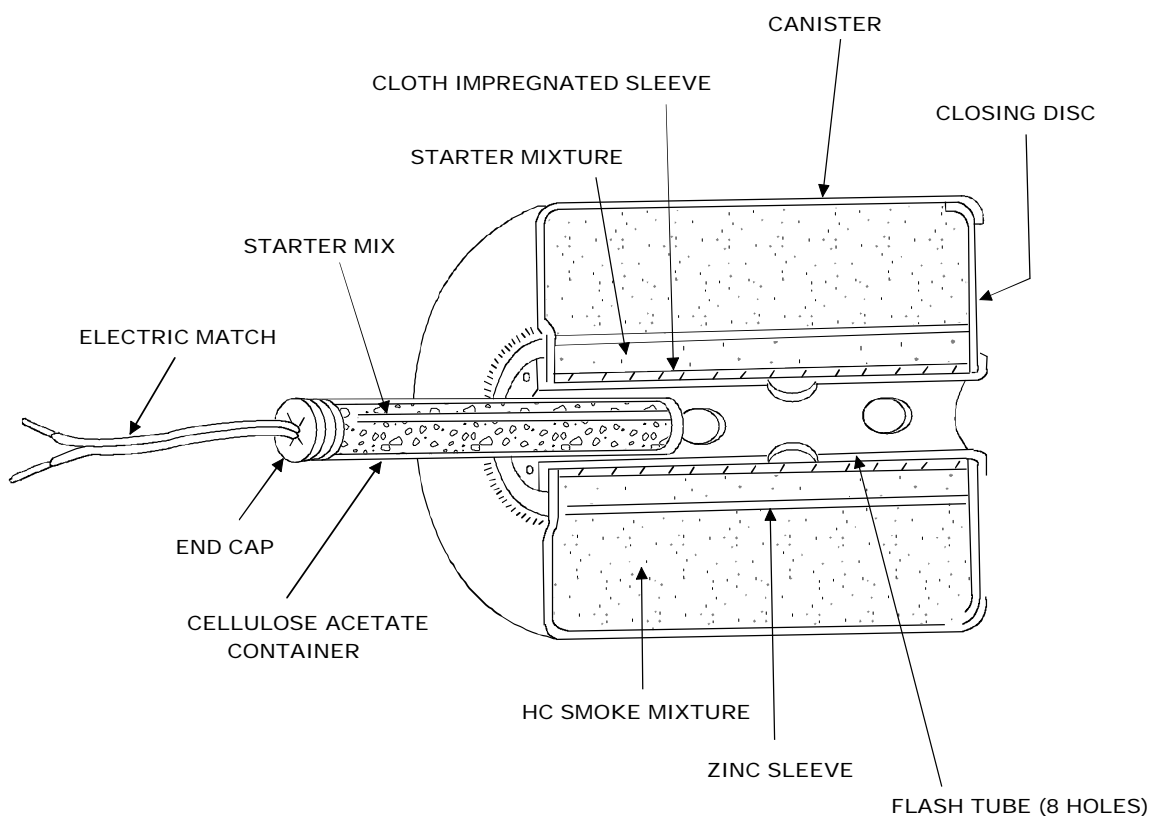
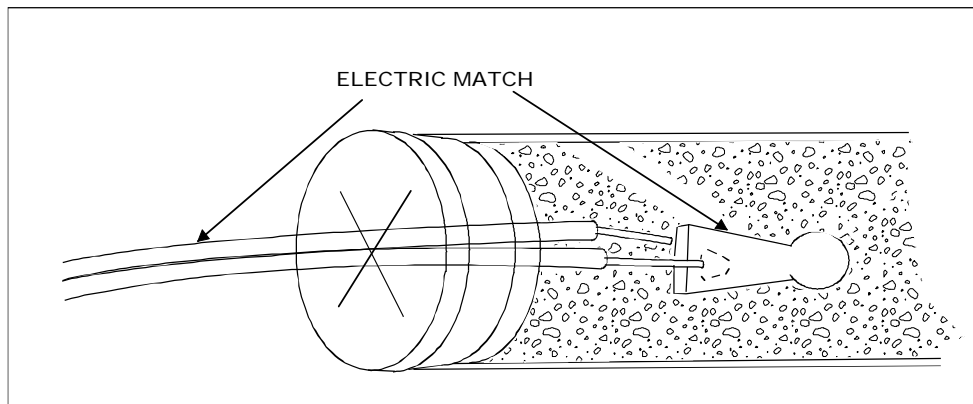
c. All firemarkers will be instructed on proper use, handling, emergency procedures and disposal. First aid kits will be available and firemarkers will have radio contact with the JTOC.

d. All persons, except those certified per AMC-R 350-4, and other authorized individuals, shall be prohibited at all times from touching or disturbing in any manner, dud ammunition or malfunctioned items. Duds will be handled and disposed of by EOD personnel only in accordance with AR 75-15, *Explosives Responsibilities and Procedures for Explosive Ordnance Disposal (EOD)*.

4-2. Operation of D445 Smoke Canister Ignited with the M79 Electric Match.

a. Primary Burn.

1. Remove tape covering exhaust ports on D445 smoke canister.
2. Lay D445 smoke canister on its side in a cleared area 20 feet in diameter.
3. Place M79 electric match in either exhaust port (top or bottom hole) of D445 smoke canister.



4. Hook wire of M79 electric match to at least 10 feet lead wire or mine hit clacker. Ensure other end of lead wire is shunted.
5. Extend wire to full length.
6. Unshunt wire and touch ends of wire to 9V battery terminals (wire).

4-2. Operation of D445 Smoke Canister Ignited with the M79 Electric Match. (Cont)

a. Primary Burn. (Cont)

7. Activate switch (MF clacker).
8. If D445 smoke canister does not ignite, reignite using the above procedure.
9. Allow a minimum of 2 hours for cooling before recovery.

b. Secondary Burn.

WARNING

Always stand to side of D445 smoke canister when operating, never at ends.

1. Place mothballs at either side of D445 smoke canister.
2. Ensure no fire hazards at ends of D445 smoke canister.
3. Ensure wire on M79 electric match is shunted when placing in D445 smoke canister.
4. Ensure lead wire is shunted when hooking up to M79 electric match.

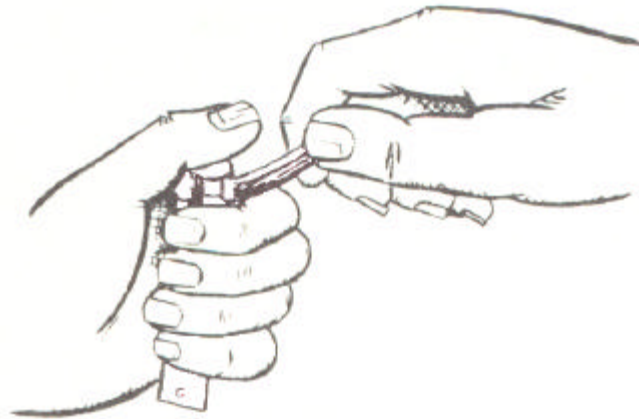
4-3. Operation of D445 Smoke Canister Ignited with the M118 Booby Trap Simulator.

1. Remove tape covering both holes of the D445 smoke canister.
2. Remove M118 booby trap simulator from box.

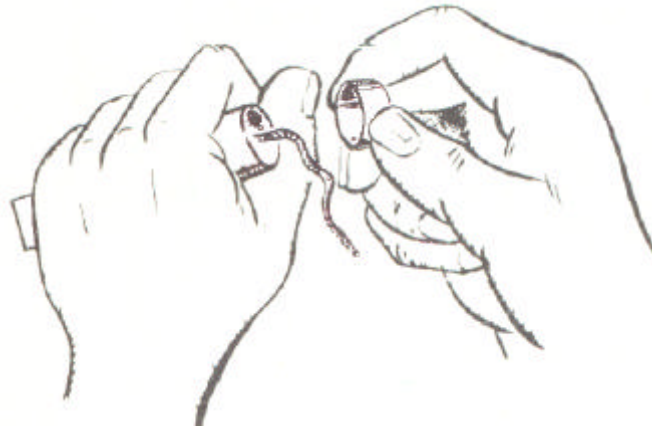
WARNING

Do not initiate any booby trap simulator while holding in hand.

3. Remove tape while holding cap firmly in place.



4. Remove cap carefully and make sure pull cord is free of cap.



5. Thread trip wire, from M118 booby trap simulator, through center hole of D445 smoke canister.
6. Make a loop with trip wire and tape down to the side of the D445 smoke canister.
7. Carefully push excess string and trip wire into top hole.
8. Using two people, tape M118 booby trap simulator directly over top hole of D445 smoke canister. One person holds M118 booby trap simulator and D445 smoke canister securely while the other tapes the M118 booby trap simulator to the D445 smoke canister.

WARNING

Do not pull M118 booby trap simulator ignition string.

9. Tie end of M118 booby trap simulator ignition string to trip wire.
10. Place D445 smoke canister in a cleared area 20 feet in diameter. Carefully unreel trip wire 10 to 20 feet.

NOTE

Sparks will eject 8 feet from both canister holes.

11. Ignite D445 smoke canister by pulling trip wire at a distance of 10 feet or more from canister. D445 Smoke canister will produce smoke within 15 seconds and burn for 5 minutes.
12. Let D445 smoke canister residue cool for 30 minutes before touching.

4-4. Duds.

1. Mark item.
2. Notify supervisor of location and type.
3. Notify EOD.

APPENDIX A – REFERENCES

AR 75-15 Explosives Responsibilities and Procedures for Explosive Ordnance Disposal (EOD)

AR 385-63 Safety Policies and Procedures for Firing Ammunition for Training, Target Practice and Combat

FM 5-25..... Explosives and Demolitions

FM 21-11 First Aid for Soldiers

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ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON <i>(Provide exact wording of recommended changes, if possible).</i>	
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