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REGULATIONS
FOR
ARMY ORDNANCE SERVICES
PART II

PAMPHLET No. 10

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**EXAMINATION AND TESTING OF GUN-
POWDER, GUNCOTTON, DYNAMITES
AND HIGH EXPLOSIVES**

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By Command of the Army Council,



THE WAR OFFICE,
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REGULATIONS FOR ARMY ORDNANCE SERVICES

PART II

PAMPHLET No. 10

EXAMINATION AND TESTING OF GUNPOWDER, GUNCOTTON, DYNAMITES AND HIGH EXPLOSIVES

SECTION I

GUNPOWDER

A. GENERAL INFORMATION

1. Gunpowder after manufacture is blended and issued in Lots in order to ensure uniformity and for identification purposes. Lots consist of varying quantities up to a maximum of 25,000 lb. Brands of gunpowder are made by blending two or more Lots together.

2. Gunpowders, other than mealed and sulphurless, fine grain, are designated by a letter and a numeral, denoting respectively the form and size of the gunpowders. The letter "P" indicates cut or pebble and "G" granulated.

E.g. P.3, G.20.

The only form of sulphurless granulated gunpowder approved for current manufacture is S.F.G.2, which approximates in size to G.12.

3. Each Lot is given a Lot number comprising the manufacturer's initials and a serial number. The Lot number is marked on all packages containing the gunpowder.

4. A classification of gunpowders and a table showing the gunpowders approved for future manufacture with the obsolescent types which they supersede will be found in Appendix I.

5. Gunpowder classified as "Blank" will always be used for making up blank cartridges, if available, except in the case of 3.7-in. and 4.5-in. howitzer cartridges, for which R.F.G.2 or G.12 will be used ; if not available, suitable service gunpowder of the earliest date of manufacture will be used.

6. Gunpowder from broken down ammunition and components will be sifted and reclassified if necessary before being returned to store, so that extraneous matter may be removed. Cut and pebble gunpowders will be picked over by hand.

B. METHOD OF PACKING AND MARKINGS ON PACKAGES

7. Gunpowders are packed in waterproofed bags contained in barrels or wood cases (M series). The nominal contents of these packages are 100 lb., 50 lb. and 25 lb. according to size of package, but these quantities may vary with the size of grain.

8. Gunpowder recovered from cartridges and fractional quantities on R.A.O.C. charge from which issues are to be made will be kept in serge or silk cloth bags each containing not more than 10 lb. Gunpowder for issue to the Royal Artillery will always be placed in serge or silk cloth bags and packed, either in waterproofed bags and barrels, or in Cases, powder, metal-lined.

9. Gunpowder barrels will be marked on the head in *black* paint, except when stated to the contrary, as follows (see Plate I) :—

- (a) Barrels containing Service gunpowders (Class I), or Blank (new).
 - (i) Contents, *viz* :—" Gunpowder." *
 - (ii) Nature of gunpowder *in red paint, e.g.* :—" G.12."
 - (iii) Lot numbers, comprising the manufacturer's initials and a serial number, except in cases where two or more Lots have been mixed together to form a brand.
 - (iv) Month and year of manufacture.
 - (v) Nett weight in lb. and oz. of the gunpowder in the barrel.
 - (vi) Tare weight of the barrel including the waterproofed bag.
 - (vii) Number of the barrel in the Lot.
- (b) Barrels containing Service gunpowder, Class I, which has been repaired or redusted will be marked as in (a) above with the addition of the word " Repaired " or " Redusted," as applicable. The date of repair, etc., will be marked diagonally across the head.

* If the gunpowder is contained in serge or silk cloth bags, the number of bags and the quantity of gunpowder in each will be added.

- (c) Barrels containing gunpowder which has been reduced to Class II or Class III (*see* Appendix I) will be marked as follows :—

- (i), (ii) but in *black* paint, and (iii) as in (a) above.
- (iv) "Black" or "Shell," as applicable, "P" "Q.F.," "L.G." or "F.G."
- (v) Date of reduction.

- (d) Barrels containing gunpowder reduced to Class V will be marked "condemned" in *white* paint across the previous markings, which should be left visible.

10. Cases, powder (M series) will be marked on the lid and sides in *yellow* paint, except where stated to the contrary, as follows (*see* Plate II) :—

- (a) *On the lid.*

The letters "O.D." in 2-in. stencilling when the cases have been oil dressed.

- (b) *On the sides.*

As in para. 9 (a), (b), (c) and (d).

11. Labelling.—The following labels are affixed to barrels and cases containing gunpowder :—

- (a) A Government Explosive and Classification of Explosives label.
- (b) Two Armaments Inspection Department (C.I.A.) or station labels over the junction of the head or lid and body.
- (c) A packer's label on the underside of the lid.

C. EXAMINATION AND TESTING

12. The inspection of gunpowder will be carried out annually by the Inspecting Ordnance Officer.

13. (1) Three per cent. of packages, with a minimum of one, will be selected from each Lot of gunpowder on charge and taken to the laboratory, examination room or tent (*see* R.A.O.S., Part II, Pamphlet No. 11).

(2) If a Lot is distributed over a number of magazines, care will be taken to select packages from each magazine.

(3) In the case of small quantities being held on charge, instructions regarding examination for the ensuing year will be issued by The Chief Inspector of Armaments, Royal Arsenal, Woolwich, on receipt of the army forms for the current year.

(4) The above percentage may be varied at the discretion of the Inspecting Ordnance Officer if there is reason to suspect

the condition of the gunpowder, or in the case of Lots recently manufactured, repaired or repacked. The reasons must be stated in the remarks column of the army form.

14. The following precautions in the laboratory, examination room or tent will be strictly enforced during the examination of gunpowder :—

- (a) The amount of gunpowder in the laboratory, etc., will not exceed 500 lb. at any one time.
- (b) Packages will only be opened under suitable hygrometric conditions (*see* R.A.O.S., Part II, Pamphlet No. 11 for hygrometric table), and when the air temperature is below 100° F.
- (c) Exits must be clear of obstructions.
- (d) No iron or steel articles of any description will be allowed in the laboratory, etc.
- (e) The floor will be covered with hides or wadmiltits, which must be dry and will be frequently shaken.
- (f) Earthed wires will be provided on an adequate scale, and all employees who are handling gunpowder will be instructed to touch an earthed wire periodically (at least every five minutes in very dry weather or when wearing rubber-soled shoes or goloshes).
- (g) The number of men employed in the laboratory, etc., will be a minimum.
- (h) Barrels containing gunpowder will not be rolled, but carried by hand or on barrows.
- (f) Spilt gunpowder will be swept up immediately, placed in a receptacle and thoroughly wetted.
- (h) Direct sunlight must not be allowed to fall upon the gunpowder.

It must be thoroughly understood by all persons employed on this work that grains of gunpowder are likely to explode if pinched between two hard surfaces or subjected to a blow, particularly a glancing blow.

15. Visual examination.—Each package will be opened in turn, a metal driver and wood mallet being used to unhead barrels, and the contents examined as follows :—

- (a) **For dust.**—A copper scoop, or the hands, will be inserted well into the centre of the gunpowder and a quantity withdrawn. This should be poured slowly back into the package in a good light, in order to detect the presence of dust.
- (b) **For foreign matter.**—If foreign matter is found or suspected, the gunpowder should be poured slowly from one package to another, the foreign matter being removed if possible.

- (c) **For deterioration by damp.**—The gunpowder should not be caked; the grains should be firm and crisp; the appearance will depend on the mode in which the gunpowder was originally finished, and whether dressed with graphite or not.

Gunpowder which has been tightly packed may have the appearance of being caked, but will return to its proper state when handled.

If white or light coloured specks or stains are found on the surface of gunpowder grains, they should be examined under a magnifying glass. Mildew or fungoid growth, which are not injurious, will then be readily distinguished from the crystalline appearance of an efflorescence or incrustation of saltpetre due to the continued action of moisture.

16. If no signs of deterioration are found at visual examination, the packages will be reclosed, the chime hoops of barrels being secured with wood pegs, stencilled "EXD" with the station monogram and date, and sealed with two station labels.

In reclosing packages, care will be taken to avoid pinching the waterproofed bag and to see that there are no grains of gunpowder in the grooves of barrels or on the lid seatings of cases.

17. If signs of deterioration are discovered, a further percentage of packages will be opened, at the discretion of the Inspecting Ordnance Officer, until a reliable estimate of the extent of the damage can be arrived at. In the case of deterioration by damp, real or suspected, the contents of a large proportion of packages must always be examined.

18. **Moisture test.**—If any signs of deterioration by damp are found at visual examination, or if it is suspected that the gunpowder has been subjected to damp or very dry conditions of storage, a sample of gunpowder in the worst condition, or samples from different packages, if necessary, will be tested for moisture as follows:—

- (a) Select a representative sample of the gunpowder and mix well.
- (b) Maintain the water oven at 160° F.
- (c) Weigh a pair of watch glasses, having one placed beneath the other and leave them on the balance pan.
- (d) Take about 1 oz. of the sample and crush rapidly in the mortar to a coarse powder.
- (e) Without delay weigh out 150 grains of the crushed powder into the top watch glass and record the total weight of the watch glasses and powder (A)

- (f) Place the top watch glass containing the powder in the water oven for $1\frac{1}{2}$ hours.
- (g) At the end of this period cover the heated powder with the other watch glass so that the ground edges of the watch glasses fit together accurately, remove from the water oven, adjust the clip and allow the apparatus to cool near the balance.
- (h) After 30 minutes' cooling, remove the clip and re-weigh the watch glasses containing the dried powder (B). The difference between the original and final weights (A—B) when divided by 1.5 is the percentage content of moisture in the gunpowder.

19. The limits for moisture content are :—

		Maximum	Minimum
E.X.E.		2.2 per cent.	1.3 per cent.
R.F.G.2		1.4 "	0.7 "
All others		1.5 "	0.8 "

20. **Sentencing.**—The results of examination and moisture test will be recorded on Army Form G 864, together with the sentence and a recommendation for a reduction in class, in accordance with the classification in Appendix I, if necessary. The completed army form will be forwarded, through the usual channels, to The Chief Inspector of Armaments, Royal Arsenal, Woolwich.

21. Gunpowder will be recommended for a reduction in class under the following circumstances :—

- (a) If grains and pebbles are found to be badly broken and chipped or the gunpowder is dusty.
- (b) If foreign matter is present which cannot conveniently be removed by hand picking.
- (c) If the gunpowder is visibly affected by moisture or if the moisture content is outside the limits given in para. 19.

22. When a recommendation for reduction in class is approved, the packages concerned will be stencilled in accordance with para. 9 (c).

23. A list of the apparatus required for the examination and testing of gunpowder will be found in Appendix II.

D. WETTING GUNPOWDER

24. Gunpowder may be rendered comparatively innocuous by wetting with water. A plentiful supply of clean, fresh water should be available and the process should be carried out as follows :—

- (a) Clean and thoroughly wet the inside of an old barrel.

- (b) Pour the gunpowder to be wetted slowly into the old barrel.
- (c) Keep a stream of water, from a watering can with rose, playing on the gunpowder and stir continuously with a stick so that all the grains may be wetted and prevented from floating on the top of the water.

About 3 gallons of water is sufficient for 100 lb. of gunpowder, but, if time is an object, the surest method of wetting is to continue pouring water until it rises to the top of the gunpowder.

25. Gunpowder which has been wetted will, on drying, recover some of its explosive properties. It should therefore be re-wetted when necessary.

26. Wetted gunpowder will be treated as an explosive and will not be retained on Royal Artillery charge.

E. DISPOSAL OF UNSERVICEABLE GUNPOWDER

27. Unserviceable or other condemned gunpowder will always be wetted before being destroyed.

28. Wetted gunpowders will not be allowed to accumulate, but will be disposed of as follows :—

- (a) Small quantities up to 10 lb. may be soaked thoroughly (for at least 12 hours) in water and then washed down a drain or into a pit with plenty of water. The drain should be well flushed after all signs of the gunpowder have disappeared.
- (b) If practicable, wetted gunpowder should be disposed of by dumping in deep water. The wetted gunpowder will be conveyed to a barge in its original packages, placed on board and taken out to sea. The usual safety precautions will be observed and magazine shoes will be worn by all persons on the barge.

Not more than 2,000 lb. of wetted gunpowder will be conveyed for dumping at any one time. Packages, when emptied, will be thoroughly washed out with water to free them from all traces of gunpowder.

- (c) When disposal as in (b) is not practicable, wetted gunpowder may be destroyed by burning, under the supervision of an officer, in quantities not exceeding 500 lb. at one time. The following procedure will be adopted :—

(For apparatus required, see Appendix II.)

- (i) The wetted gunpowder, in its original packages, will be conveyed to the burning-ground, which must be free from dry grass and other inflammable material and situated at a safe distance from buildings, public highways, etc.
- (ii) The ground will be well watered and the wetted gunpowder will be laid out in a train of 100 ft. for 500 lb.

The ground will be watered again after burning. At least 30 minutes must elapse between successive burnings on the same ground.

- (iii) Having ascertained that the ground and vicinity is clear and that the wires are disconnected from the battery, the operator will connect up the fuze and place it in a small pile of *dry* gunpowder in the train of gunpowder so that the direction of burning may be, as far as possible, against that of the wind. (This must be taken into consideration in laying out the train.) He will then retire under cover or to a safe distance (not less than 20 yards) and, when ordered to do so by the officer in charge, will connect the leads to the battery and fire.

All persons must be at a safe distance from the train of gunpowder before the firing key is actuated.

- (iv) Gunpowder which contains more than 30 per cent. of water may be difficult to ignite. If such is the case, some of the water should be allowed to dry out before destruction by burning is initiated.
- (v) Any solution left in the packages should be washed down a drain or poured into a pit dug in the ground. The packages will be thoroughly washed out.

SECTION II

GUNCOTTON AND TONITE

A. GENERAL INFORMATION

29. Guncotton after manufacture is blended into Lots in order to ensure uniformity. A Lot of pulped guncotton for the manufacture of wet slabs or dry primers does not, as a rule, exceed 8,000 lb. A Lot of guncotton yarn does not exceed 10 lb.

30. Each Lot of wet slabs or dry primers is given a Test number, which is analogous to the Lot number of other stores, but consists of a serial number only. The Test number together with the manufacturer's initials form the means of identification.

31. Each Lot of guncotton yarn is given a Lot number consisting of the manufacturer's initials and a serial number.

32. The Test number of the Lot is stamped on all guncotton, wet, slabs and dry primers in a mixture of copal varnish and finely divided graphite. Formerly, rose aniline dye was used for this stamping, but its use was discontinued owing to its tendency to become indecipherable.

The following additional information is impressed into wet slabs and may be found on some dry primers which are obsolete for future manufacture :—

Manufacturer's initials.

Weight.

Year of manufacture.

33. Guncotton is issued to the Service in the following forms :—

(a) Guncotton, wet, charges, field.

Consisting of slabs of wet guncotton contained in tinned-copper cases closed by bands soldered round lid and body and fitted with screwed closing, or re-wetting, plugs in the lids. These charges have primer holes in the centre and are ready for use as they stand.

(b) Guncotton, wet, slabs, field (15 oz. or 1 lb.).

(c) Guncotton, dry, primers.

(d) Guncotton, yarn.

(e) Tonite (a mixture of dry guncotton and barium nitrate).

34. Dry guncotton (primers and yarn) are considerably more sensitive than tonite and wet guncotton and require greater care in handling.

Earthed wires will be provided on an adequate scale, and all employees who are handling dry guncotton will be instructed to touch an earthed wire periodically (at least every five minutes in very dry weather or when wearing rubber-soled shoes or goloshes).

35. Destruction of unserviceable guncotton and tonite.

—Wet guncotton slabs, dry guncotton primers, guncotton yarn and tonite charges, sentenced unserviceable, may be destroyed by burning, in small quantities, under the supervision of an officer in accordance with the following instructions:—

- (a) The guncotton or tonite will be *thoroughly* wetted and conveyed in a covered receptacle to the burning-ground, which should be free from dry grass and other inflammable material and situated at a safe distance from buildings, public highways, etc.; stores are required as laid down for the destruction of gunpowder (see Appendix II), also a shallow iron tray.
- (b) Examine the guncotton or tonite to see that it is in a thoroughly wet state, and break up any large pieces by hand.
- (c) Mix the explosive by hand with lubricating oil in the proportion of 1 quart of oil to 12 lb. of explosive.
- (d) Arrange the mixture of explosive and oil, *not exceeding 40 lb. in weight*, on a bed of wood shavings in a shallow iron tray (lined with firebrick if possible). Spread out the mixture to give as large a surface as possible to facilitate burning and sprinkle with kerosene just before firing.
- (e) Wrap some quickmatch round a fuze, electric, No. 14, and fit the end of the fuze into a short piece of port-fire, securing it in position with a piece of twine.
- (f) Place the fuze thus prepared in the tray and, having ascertained that the ground is clear, retire under cover, or to a safe distance, connect up the cables and fire in the usual way.
- (g) Alternatively, a train of cordite sticks or a suitable length of safety fuze in conjunction with a small heap of gunpowder may be used to initiate the burning.
- (h) After each burning the tray and the ground in the vicinity must be well watered and carefully examined to see that no unburnt explosive remains.

B. WET GUNCOTTON

36. Method of packing.—

(a) Guncotton, wet, charges, field are packed sixteen in a wood box.

(b) Guncotton, wet, slabs, field are packed—

(i) Fourteen in a tinned-copper case fitted with a soldered tear-off lid and a screwed closing or re-wetting plug. This case is contained either in a wood box with a screwed plug in the lid to give access to the closing plug, or in a wood crate (*see* Plate III). The wood crate has superseded the wood box for future manufacture.

(ii) In a case, powder, metal-lined, half, C.120 (powder and wet guncotton). This case consists of a metal lining, with a bung secured by luting and fitted with a screwed closing plug, contained in a wood box. The bottom of the wood box is attached to the sides with screws to permit of easy removal. To expose the lining, turn the case on its side, remove the screws from the bottom, restore the case with the bottom in place to the vertical position and withdraw the wood box from the lining.

This case can be used for packing wet slabs taken from damaged packages. If required for transporting guncotton, spare space should be filled up with blocks or strips of wood coated with black lacquer.

(iii) In emergency, cases, powder, metal-lined, half, C.119, may be used for packing wet guncotton. The metal linings will be coated internally with black lacquer.

37. Labelling.—Packages are labelled as in para. 11 and, in addition, labels are affixed to guncotton charges and metal cases and linings containing wet slabs, giving the following information :—

(a) Designation, *e.g.*—"Guncotton, wet, charge, field, 15-oz. (Mark II)." Also quantity, where applicable.

(b) Gross weight and nett weight of charge, gross weight of metal case containing wet slabs.

(c) Limit for moisture as a percentage of the weight (for wet slabs only).

(d) Maker and year of manufacture.

(e) Test number.

A label giving directions for examination and re-wetting is also affixed to the underside of the lid of the wood box containing wet slabs and to the metal case, when crated, or metal lining of cases, powder, half.

Labels are affixed with shellac varnish and coated with shellac varnish.

38. Marking on packages.—Packages containing wet guncotton are stencilled in yellow, as follows (*see* Plate III) :—

- (a) Contents, including designation and number of charges or slabs.
- (b) Gross weight of package.
- (c) Manufacturer's initials and year of manufacture.
- (d) Test number.

39. Examination.—The examination of wet guncotton will be carried out by the Inspecting Ordnance Officer.

40. At tropical stations, 25 per cent. of the packages of each nature containing wet guncotton will be examined every six months. At all other stations, 50 per cent. of the packages will be examined each year. All wet guncotton held on charge will therefore be examined every two years.

41. Small quantities of gas (chiefly carbonic acid) may be evolved from wet guncotton owing to slight decomposition. If this gas is allowed to accumulate, it may exert sufficient pressure to cause a leak in the metal case or lining. To prevent this happening, the closing plugs of all charges and metal cases will be removed (to allow the escape of gas) and immediately replaced as follows :—

- (a) At tropical stations—once a year. The plugs may be removed from half the cases at each half-yearly inspection at the discretion of the Inspecting Ordnance Officer.
- (b) At all other stations—once a year at the annual inspection.

A certificate that this has been done will be added to the report of inspection, Army Form G 930.

42. Examination will be carried out as follows :—

- (a) Remove the charges or metal cases containing slabs from their boxes and examine the wood boxes and metal cases, etc.
- (b) Examine the closing plugs and the leather washers under them. Particular attention should be paid to this operation if there has been no escape of gas on removal of the closing plug. The plug and washer should make a good airtight joint.

(c) Weigh the charge or metal lining.

If within the specified limits of weight, it is serviceable in this respect.

If high to weight, a slight excess of moisture may be evaporated by removing the closing plug and standing the charge or metal case in a dry place until the weight has been reduced to within the specified limits. A greater excess of moisture may be reduced by exposing a larger surface of the wet guncotton to a dry atmosphere, *i.e.* by removing the tear-off lid of metal cases or the bung of linings. *The use of artificial heat for evaporating excess moisture is strictly forbidden.*

If low to weight, remove the closing plug and pour in carbolic acid solution, through a funnel, until the weight is within the specified limits, and then replace the closing plug.

Carbolic acid solution must be prepared at the time it is required by adding one ounce of carbolic acid to one gallon of fresh water and stirring for about 30 minutes.

(d) All charges and metal cases which are damaged externally or suspected of being no longer airtight, either by reason of the absence of gas on removal of the closing plug, or from other cause, will be tested for leaks.

Screw up the closing plug tightly and completely immerse the charge or case in *warm* water (about 20° F. above the temperature of the atmosphere). Press the sides of the charge or case with the hands, while under water. If bubbles issue from any part of a metal case, except the plug, the contents should be repacked and the case returned to Chief Ordnance Officer, Woolwich Arsenal, for repair. Leaky charges will be set aside for early use or destruction. If the plug is found to be leaky, the leather washer should be renewed and the charge or metal case retested.

(e) See that the particulars on the labels are correct. Replace charges and metal linings in the wood boxes or crates and reclose. Stencil the wood packages either "EXD" or "REWETTED" with the date and station monogram, and seal with two station labels.

43. Charges or wet slabs of which the Test number is unknown will be sentenced for early use or destruction.

44. Packages containing wet guncotton found at examination with labels defaced or detached, outside the specified limits of weight, leaky or otherwise damaged, will be rectified if possible and sentenced in accordance with the foregoing instructions, the circumstances being reported on Army Form G 930.

45. If the information given on the labels does not agree with that stencilled on the boxes and crates, the latter should be made to agree with the labels.

46. Wet slabs in defective metal cases should be repacked into cases, powder, metal-lined, half, C.120 (powder and wet guncotton), as described in para. 36. If these cases are not available, the guncotton, if required for early use, should be kept in the original cases and re-wetted at 3 monthly intervals ; otherwise it should be destroyed.

47. No soldering will be done, or heat applied in any way to packages containing wet guncotton. If the tear-off lid has been removed from a metal case and the contents not used up, the case will be closed by tape bands, covering the junction of the lid and body, affixed and coated with shellac varnish. The contents of such cases should be expended at the earliest opportunity.

48. Examination and re-wetting of guncotton will not be carried out during a severe frost.

49. **Sentencing.**—The results of examination will be recorded on Army Form G 930 together with the Inspecting Ordnance Officer's sentence and a report of any charges or linings found to be leaky and the action taken therewith. The completed army form will be forwarded, through the usual channels, to The Chief Inspector of Armaments, Royal Arsenal, Woolwich.

C. DRY GUNCOTTON (PRIMERS AND YARN)

50. Method of packing.—

- (a) Guncotton, dry, primers, field, 1 oz. are packed 10 in a tinned-plate cylinder, the interior of which is coated with black lacquer. Each primer is contained in its own shellacked paper cylinder. The latest pattern of cylinder is fitted with a screwed lid ; earlier Marks had a plain lid secured by a bayonet joint. Six cylinders are packed in a wood box.
- (b) Guncotton, dry, yarn is packed 2 oz. in a tinned-plate cylinder, black lacquered internally, the lid being secured by a bayonet joint. Eight cylinders are packed in a wood box.

51. Labelling.—Packages are labelled as in para. 11 and, in addition, labels are affixed to the lids of all cylinders containing dry guncotton giving the following information :—

- (a) Designation and quantity, *e.g.*—"Guncotton, dry, 10 Primers, field, 1-oz."
- (b) Maker and year of manufacture.
- (c) Test number or Lot number.

52. Marking on packages.—Packages containing dry guncotton are stencilled in yellow with particulars as for wet guncotton, *see* para. 38 and Plate IV.

53. Examination and testing.—The examination and testing of dry guncotton will be carried out by the Inspecting Ordnance Officer.

54. As far as possible, packages will be opened and examination conducted in a dry atmosphere, *see* hygrometric table in R.A.O.S., Part II, Pamphlet No. 11.

55. The contents of one cylinder from every package of dry guncotton primers on charge will be examined every three years, and one primer will be tested for acidity as laid down in para. 58 (a).

56. A sample from every package of guncotton yarn, and a sample from cartridges of each make and date containing guncotton yarn, held on charge, will be examined at least once every three years and tested for acidity as laid down in para. 58 (b).

57. The guncotton will be examined visually for signs of physical deterioration or discoloration.

58. Acidity test.—(For apparatus required, *see* Appendix II.)

(a) **Guncotton primers.**—To test the surface, place a piece of congo red paper which has been moistened with distilled water upon a face of the primer and press another primer on it for about half a minute. To test the interior guncotton, the primer is split across the perforation so that the two portions can be fitted together again. A piece of the moistened congo red paper is placed across the centre of the primer and pressed heavily between the two fitting portions. The material will be sentenced in accordance with the instructions given in para. 59. Tested primers will be destroyed.

(b) **Guncotton yarn.**—Sufficient of the yarn is taken to form a small pad, which is placed upon a clean hard

surface such as a glass plate. A piece of congo red paper moistened with distilled water is placed upon it and covered with another pad of the guncotton yarn. The pads are then pressed heavily together for about half a minute by means of a clean hard surface such as the bottom of a glass bottle. The material will be sentenced in accordance with the instructions given in para. 59. Tested yarn will be destroyed.

59. Sentencing.—If there is no blue discoloration of the moistened congo red paper, the guncotton primers, yarn and cartridges (as regards the guncotton yarn only) will be sentenced serviceable. If any portion of the test paper becomes blue, the material is unserviceable and the following action will be taken:—

- (a) **Guncotton primers.**—The primers in the cylinder from which the test primer was taken will be sentenced for destruction. One primer from each of the remaining cylinders in the package will be similarly tested, the contents of the cylinder being sentenced on the results of this test. One primer from each package held on charge containing guncotton of the same Test number or Lot number will also be tested, and, if this is correct, the contents of the package will be sentenced serviceable; if it is incorrect, a primer from each cylinder in the package will be tested, the contents of the cylinder being sentenced on the result of that test.
- (b) **Guncotton yarn in cylinders.**—The yarn in the package from which the test yarn was taken will be sentenced for destruction. A sample of yarn from each package containing the same Lot number held on charge will be tested for acidity and, if further defective yarn is found, the whole of that particular Lot will be sentenced for destruction.
- (c) **Guncotton yarn from cartridges.**—The Lot of cartridges (*i.e.* of the same make and date) from which the sample for test was taken will be sentenced unserviceable.

60. After examination and test, the packages will be reclosed, stencilled "EXD" with the station monogram and date, and sealed with two station labels. At each subsequent inspection the sample for test will be taken from cylinders and packages of cartridges not previously opened as long as such exist, and afterwards in the order of date of previous inspections.

61. In the event of any cylinders being found broken or badly dented, one primer from each cylinder will be tested for acidity. If this is correct, the remaining primers will be repacked in serviceable cylinders; if it is defective, the primers will be sentenced for destruction.

62. When necessary, cylinders may be reclosed with a tape band affixed and coated with shellac varnish.

63. No soldering will be done, or heat applied in any way, to packages containing dry guncotton, except that a cylinder which has been tape-banded or closed with beeswax, and from which it is difficult to remove the lid, may be stood head downward on some cotton waste soaked in hot water in order to loosen the lid.

64. The results of test and visual examination together with the sentence will be recorded on Army Form G 931, which will be forwarded, through the usual channels, to The Chief Inspector of Armaments, Royal Arsenal, Woolwich.

65. Dry guncotton sentenced for destruction should be destroyed at once. If this is not practicable, it should be immersed in water and destroyed at the earliest opportunity.

D. TONITE

66. Tonite is a trade supply and will normally be issued in trade packages, which should be marked with the designation, manufacturer's initials and date of manufacture (month and year).

67. Tonite will be examined, tested and sentenced, etc., as laid down for guncotton, dry, primers, *see* paras. 53-55 and 57-65.

SECTION III

DYNAMITES

68. Packages and markings on packages.—Dynamite and gelatine dynamites, such as blasting gelatine and gelignite, are issued to the Service in trade packages marked with the following particulars :—

- (a) Trade designation.
- (b) Manufacturer's initials or trade mark.
- (c) Contents, weight or number of cartridges.
- (d) Lot number where applicable.
- (e) Date of manufacture.

69. Examination and testing.—The examination and testing of dynamites will be carried out annually by the Inspecting Ordnance Officer.

70. Visual examination.—Five per cent. of packages, with a minimum of one, from each Lot of dynamite or gelatine dynamite on charge will be opened and the contents visually examined as follows :—

- (a) **Dynamite.**—Remove the cartridges from the packages and examine for traces of exuded Nitro-glycerine. When the wrapper is removed from a cartridge, it should not show more than slight traces of nitro-glycerine on the inner surface. The dynamite should not feel greasy to the touch ; it should be smooth in appearance and not pasty ; when it is broken across, the fracture should have a granular appearance and show no visible traces of nitro-glycerine.
- (b) **Gelatine dynamites.**—Open the packages and examine the contents for signs of exudation of nitro-glycerine.

71. Dynamite and gelatine dynamites in a frozen condition lose their plasticity. No operation must be carried out while they are in this condition. The material must first be thawed in a pan, warming dynamite, or by exposure to a warm atmosphere in a position remote from any source of artificial heat.

72. Heat test.—The nitro-glycerine content of each Lot of dynamite and gelatine dynamite held on charge will be heat-tested annually in the following manner :—

(a) **Dynamite.**—

- (i) About 400 grains of dynamite, finely divided (by gently scraping a cartridge with a bone or

wooden spatula on a well-glazed porcelain tile or glass plate), are placed in a glass funnel (about 3-in. wide at the mouth, which should be plugged with a small tuft of cotton wool, glass wool or asbestos) and made to fill it as evenly as possible to not less than $\frac{1}{2}$ -in. from the top, the surface being smoothed by gently pressing with a wooden rammer.

- (ii) The funnel, so charged, is placed on the ring of a wooden filtering stand, and a small glass cylinder (about 3-in. high and 1-in. in diameter) placed under the stem of the funnel. Distilled water is then poured carefully over the surface of the dynamite and allowed to sink into it by its own weight, until a sufficient quantity of nitro-glycerine has been displaced and collected in the cylinder. The cylinder is then removed, and a second cylinder of similar size placed under the funnel to collect any remaining fluid. The contents of the *first* cylinder are used for the test.
- (iii) Should any water pass through with the nitro-glycerine (which will not happen if the operations are carried out carefully and the cylinder changed in time), it should be removed with a piece of filter paper and the nitro-glycerine, if necessary, filtered through a dry filter paper.
- (iv) The nitro-glycerine, thus obtained, should be tested by the heat test (at 160° F.) as laid down for testing cordite, *see* R.A.O.S., Part II, Pamphlet No. 7, Appendix I. Two ml. of the filtered nitro-glycerine are used for the test, which is carried out in duplicate.

(b) Gelatine dynamites.—

- (i) Fifty grains of the explosive are intimately incorporated with 100 grains of French chalk by gentle squeezing and rubbing in the mortar. The mixture is then gradually introduced into a test-tube of the dimensions prescribed for the cordite heat test (*see* R.A.O.S., Part II, Pamphlet No. 7, Appendix I), with the aid of gentle tapping upon the table between the introduction of successive portions of the mixture into the tube. The mixture is

pressed down with a glass rod until it occupies a length of $1\frac{3}{4}$ -in. in the tube.

- (ii) The test paper is then inserted and the test in duplicate is applied in the manner prescribed for the cordite heat test.

72A. Firing proof.—Gelatine dynamites tend to become insensitive to detonation on storage, particularly in warm climates, and a firing proof will therefore be carried out annually for each Lot of gelatine dynamites which has been stored for more than one year since manufacture. For proof, one cartridge of each Lot will be fired in the open by means of a No. 6 fulminate-chlorate detonator, with fuze attached. If this cartridge fails to detonate completely, as shown by the presence of fragments of unfired explosive after the test, two further cartridges of the Lot will be similarly and separately tested. These tests are defined as the first firing tests.

If complete detonation occurs in both the further tests above, special second firing tests will be carried out at the next inspection, and these will consist of the firing of three cartridges of the Lot separately.

A report of all firing tests will be made.

73. After examination and test, the packages will be re-closed, stencilled "EXD" with the station monogram and date, and sealed with two station labels. At subsequent inspections fresh packages will be chosen for examination as long as such exist, and afterwards in the order of date of previous inspections.

74. Sentencing.—Lots of dynamite giving a heat test result of less than 15 minutes, and Lots of gelatine dynamite giving a heat test result of less than 10 minutes, or showing incomplete detonation in the further tests in the first firing test or in any of the three second firing tests, will be sentenced "unserviceable," but will not be destroyed until the sentence is confirmed.

75. Blasting gelatine which has been stored in a tropical station for 3 years will be destroyed without reference to higher authority.

76. The results of visual examination, heat test and firing proof, together with the sentence will be recorded on Army Form G 847, which will be forwarded, through the usual channels, to The Chief Inspector of Armaments, Royal Arsenal, Woolwich.

77. Destruction of unserviceable dynamites.—Where facilities exist, dynamites may be disposed of by dropping in

deep water. If this is not practicable, they may be destroyed by burning, under the supervision of an officer, in accordance with the following instructions :—

- (a) Dynamites in the frozen state must not be destroyed by burning ; they must first be thawed in a pan, warming dynamite, or by exposure to a warm atmosphere remote from any source of artificial heat.
- (b) The quantity of dynamite or gelatine dynamite burnt at any one time will not exceed 5 lb.
- (c) The explosive in its original packages will be conveyed to the burning-ground, which must be free from dry grass and other inflammable material and situated at a safe distance from buildings, public highways, etc. Stores are required as laid down for the destruction of gunpowder (*see* Appendix II).
- (d) Remove the wrappers from cartridges, etc., cover the latter with thick lubricating oil and sprinkle with sufficient kerosene to enable the oil to be ignited. Lay a train of waste paper or wood shavings, together with the wrappers from the cartridges, etc., in the direction of the wind and place the cartridges in this train separated from one another by at least 6 in. Fill the gaps between the cartridges with oiled shavings in order to maintain the burning of the train.
- (e) Having ascertained that the ground is clear, retire, under cover, or to a safe distance, and ignite the train, so that the direction of burning is against that of the wind, either electrically, using fuze, electric, No. 14, or by means of a train of cordite sticks.
- (f) The ground must be well watered before and after each burning and carefully examined to see that no unburnt explosive remains.
- (g) Surplus paper wrappings and trade pattern wood boxes without linings will be destroyed by burning under precautions.

SECTION IV

HIGH EXPLOSIVES (AMATOL, AMMONAL, COMPOSITION EXPLODING, FUMYL, MIXTURES, EXPLOSIVE AND SMOKE, OPHORITE, PICRIC ACID, PICRIC POWDER, SHELLITE AND TROTYL)

78. High explosives in bulk are normally stored in ammunition depots and are seldom met with in commands or stations.

79. **Packing and packages.**—Hygroscopic explosives, such as amatol and ammonal, are packed in strong wood boxes provided with tinned-plate linings. Other explosives, such as picric acid and trotyl, are packed in calico or rubber-proofed bags contained in strong wood boxes. In the past, picric acid and picric powder have been packed in water-proofed bags contained in gunpowder barrels. Both service and trade pattern packages may be met with.

80. All metals used in the construction of packages for picric acid, picric powder, dinitrophenol and shellite are tested for freedom from lead. Lead picrate is very sensitive to friction and percussion, and it is *essential* that explosives containing picric acid should be prevented from coming in contact with any substance containing lead.

81. Pure trotyl has little or no action on metals. This explosive, however, especially if not pure, in contact with certain metallic compounds such as lead oxide, may form sensitive substances analogous to the picrates. "Lead free" conditions in handling and packing, etc., although not so imperative as in the case of picric acid, should be observed if there is any possibility of contact.

Contact with free alkalis leads to discoloration and affects the stability of the trotyl, and should be avoided.

82. Wood packages containing high explosives are unpainted, painted white or painted yellow. All paint used for picric acid, picric powder, dinitrophenol and shellite packages must be "lead free."

83. If a package has been used for storing or transporting one type of high explosive, it will, on no account, be used for any other type of high explosive, except that picric acid packages may be used for packing dinitrophenol or shellite.

84. If packages containing high explosives are found to be damaged, they should be kept apart from serviceable packages and the circumstances reported, through the usual channels, to The Chief Inspector of Armaments, Royal Arsenal, Woolwich.

85. Labelling.—Packages are labelled as in para. 11, except that "W.D. Chem." labels will normally be used instead of Armaments Inspection Department (C.I.A.) labels.

86. Marking on packages.—Packages containing high explosives are stencilled in black as follows :—

- (a) Nature of contents.
- (b) Contract number under which supplied.
- (c) Distinctive number of Lot.
- (d) Contractor's initials or recognized trade mark.
- (e) Date of supply.
- (f) Net weight of contents.
- (g) Tare weight of package.

87. Storage.—Dry conditions of storage are desirable for all high explosives and essential for the hygroscopic types, *e.g.* amatol and ammonal.

88. Examination and testing.—With the exception of the moisture test for ammonal the testing and sentencing of all high explosives held in bulk at home and abroad is carried out by the W.D. Chemist, Royal Arsenal, Woolwich. Moisture tests (*see* paragraph 90A) are carried out by the Inspecting Ordnance Officer at all stations except Bramley, Hereford and Woolwich, where the test is carried out by the W.D. Chemist as part of his inspection. Army Form G 847 will be prepared for all depots, stations, etc., where high explosives (except shell exploders) are held in bulk, to cover the ensuing year. The form will then be forwarded, through the usual channels, so as to reach The Chief Inspector of Armaments, for transmission to W.D. Chemist, by 31st December each year.

89. In the case of home stations, on receipt of the army form, the W.D. Chemist, in conjunction with The Chief Inspector of Armaments, will arrange for the examination of the explosives and their packages and record the sentences.

90. In the case of stations abroad, the Inspecting Ordnance Officer will carry out an annual visual examination of 10 per cent. of all packages containing high explosives in bulk. These packages will be opened under suitable atmospheric conditions (*see* hygrometric table in R.A.O.S., Part II, Pamphlet No. 11) and the contents examined; they will then be carefully closed, stencilled "EXD" with the date and

station monogram, and sealed with two station labels. Any visible deterioration, discoloration or damage to the contents and packages will be recorded in the remarks column of the army form. In the event of the quantities held on charge being small, instructions regarding the opening of packages and examination will be furnished to Inspecting Ordnance Officers by the Chief Inspector of Armaments. On receipt of the army form, the W.D. Chemist will record his sentences or, if necessary, ask for samples to be forwarded for chemical tests. The packages will be sentenced by The Chief Inspector of Armaments.

Note.—For the moisture testing of picric powder exploders, see R.A.O.S., Part II, Pamphlet No. 1.

90A. Ammonal—moisture tests.—A moisture test will be carried out on a sample taken from each of 10 per cent. of all packages, including at least one package from each separate Lot of ammonal held in bulk. Particular attention will be paid to packages which are suspected of having been exposed to damp conditions or which have been opened previously, and to any packages in which the ammonal, on visual examination, appears to have deteriorated. A moisture test will be carried out on a sample taken from each of such suspected packages.

The moisture test will be that given for gunpowder in paragraph 18, except that only light pressure will be required to reduce the sample to powder.

The limiting moisture content for serviceable ammonal will be taken as 1.0 per cent.

The results of the examination and moisture test will be recorded on A.F. G 847, together with the sentence, and the completed form will be forwarded as directed in paragraph 88.

91. Precautionary measures.—The following measures will be taken to safeguard the health of all persons handling or examining exposed trotyl, composition exploding and explosives containing not less than 5 per cent. of trotyl (*e.g.* amatol and ammonal):—

- (a) A medical inspection once a month.
- (b) Insistence on frequent washing and provision of all necessary washing facilities.
- (c) Prohibition of the consumption of any food or drink, and the use of chewing gum, or chewing sweets in any place where such work is in progress.
- (d) Provision of suitable respirators or filter pads for wear by the workers.
- (e) Provision of special clothing.

- (f) Insistence on clean working conditions and avoidance of dust, etc., and contamination of the skin.
- (g) The supply of a mild aperient drink, if considered desirable by the medical officer.

92. A record will be kept of any persons who are susceptible to T.N.T. poisoning or are affected by composition exploding, and it will be impressed on all persons employed on this work that it is in their own interests to comply strictly with the above precautions.

93. Destruction of unserviceable and waste high explosives.—

(a) **Picric powder.**—Quantities not exceeding 1 lb. may be dissolved in water, in the proportion of 1 lb. of picric powder to 1 gallon of water, and poured into a drain, which should afterwards be flushed with at least 2 gallons of water. Larger quantities will be destroyed as laid down in (c) below.

(b) **Composition exploding, Fumyl, Mk. III and Ophorite.**—Quantities not exceeding 10 lb. may be destroyed by burning, as follows :—

(i) Place the explosive under lubricating oil for 4 hours and then mix it thoroughly with an approximately equal quantity of sawdust, using a wooden spatula.

(ii) Spread the mixture on shavings in a shallow iron tray (lined with firebrick, if possible), sprinkle with kerosene and then proceed as laid down in para. 35 for the destruction of wet guncotton.

(c) Picric powder, not exceeding 10 lb.				
Ammonal	}	,,	,,	40 lb.
Picric acid				
Shellite				
Amatol	}	,,	,,	60 lb.
Fumyl, Mk. I or II				
Mixtures, explosive and smoke Nos. 4, 5 and 7				
Trotyl				

Each nature to be dealt with separately.

may be destroyed as follows :—

- (i) Steep the explosive in water before conveying it to the destruction ground.

- (ii) At the destruction ground, drain off the surplus water, place the explosive in wooden vessels and mix well with lubricating oil in the proportion of 1 gallon of oil to 50 lb. of explosive, using a wooden spatula.
- (iii) Spread the mixture, when thoroughly mixed, on shavings in a shallow iron tray (lined with firebrick if possible), sprinkle with kerosene and proceed as laid down in para. 35 for the destruction of wet guncotton.
- (d) The use of iron trays which have been painted or have overlapping joints is prohibited as a bed for the explosives.

APPENDIX I

(Referred to in para. 4.)

CLASSIFICATION OF GUNPOWDERS

Class	Designation		Description and remarks
	General	Detail	
I	Service	E.X.E. P S.P. R.L.G.2 R.L.G.4 R.F.G.2 Pistol Rifle Pistol S.M.1. S.M.2	} Obsolete for future manufacture } All new gunpowders and other gunpowders which are found to be fully serviceable on examination.
		P.3 G.7 G.12 G.20 Mealed S.F.G.2 Sulphurless Mealed	
II	Blank *	Blank, L.G. reduced Blank, L.G. new Blank, L.G. converted Blank, F.G. reduced Blank, F.G. new Blank, F.G. converted Blank G.12	R.L.G.2, in bulk ; too dusty or broken in grain for Class I. Gunpowder, specially manufactured as L.G. L.G. made from other descriptions of gunpowder. R.F.G.2, G.12 and pistol, too dusty or broken in grain for Class I. Gunpowder, specially manufactured as blank F.G. F.G. made from other descriptions of gunpowder. G.12 found on examination to be broken in grain or dusty.

* Blank L.G. and F.G. are suitable for Shell L.G. and F.G. respectively.

CLASSIFICATION OF GUNPOWDERS—*continued*

Class	Designation		Description and remarks
	General	Detail	
III	Shell	Shell P	(1) P. and S.P. gunpowder in bulk, too dusty or broken in grain for Class I.
			(2) Gunpowder specially manufactured as shell P.
		Shell P converted	Gunpowder converted from black and brown powders.
		Shell, Q.F.	Q.F.1 gunpowder in bulk which has deteriorated, or is no longer required in Class I.
		Shell, L.G.	E.L.G.2, in bulk, too dusty or broken in grain for Class II, R.L.G.4, in bulk, too dusty or broken in grain for Class I.
		Shell, F.G.	R.F.G.2, G.12 and pistol, too dusty or broken in grain for Class II.
		Q.F. shell, F.G.	Gunpowder specially manufactured for bursting charges of 3-pr. and 6-pr. Q.F., shell.
		Shell, Q.F., F.G., converted	Gunpowder made from other descriptions of gunpowder for bursting charges of 3-pr. Q.F. shell.
		P.3 G.7	} Found on examination to be broken in grain or dusty.
IV	Doubtful		All gunpowder awaiting examination.
V	Condemned		All gunpowder found unfit for any of the above purposes, but available for :—
		R.L.G.2 R.L.G.2 and upwards	Blasting purposes, puffs or bombs in connection with field firing ; Sale.
VI	Unserviceable		Wetted gunpowder obtained from common and A.P. powder filled shell and dry gunpowder from shrapnel shell, which is to be wetted immediately.

COMPARISON OF NEW AND OLD GUNPOWDERS

Gunpowders approved for future manufacture	Gunpowders obsolete for future manufacture
P.3	P. S.P. Shell P. and converted. R.L.G.2. R.F.G.2. Blank F.G. new, reduced and converted.
G.7 G.12	" L.G. Shell, Q.F., F.G. and "converted." " Shell, F.G. Shell, Q.F. Shell, L.G.
G.20	Pistol. Rifle Pistol. S.M.1.

APPENDIX II

(Referred to in paras. 23, 28, 58 and 72.)

APPARATUS

1. Inspection of Gunpowder.

The following appliances are required for the inspection of gunpowder :—

Apparatus testing gunpowder.

Balance ...	...	...	...	...	...	...	...	1
Glass, reading, No. 1 ...	...	...	...	...	...	...	...	1
*Lamp, spirit	} forming also part of apparatus for heat test							
*Methylated spirit, bottle of								1
Mortar and pestle ...	...	...	...	...	...	...	...	1
Oven, water, with stand ...	...	...	...	...	...	...	...	1
Sieves, powder, copper, sets ...	...	...	...	...	...	...	...	1
Spatulas ...	...	...	...	...	...	...	...	2
Thermometers, Mk. II ...	...	...	...	...	...	...	...	2
Watch glasses, 65 mm. diameter with clip ...	...	...	...	...	...	...	pairs	6
Weights and forceps, in box ...	...	...	...	...	...	...	set	1

2. Destruction of gunpowder by burning.

The following appliances are required for the destruction of gunpowder by burning :—

Buckets, water ...	...	...	...	...	...	...	...	2
Cable, electric, E.I, Mk. II ...	...	...	...	...	...	...	As required	
Cans, watering ...	...	...	...	...	...	...	...	2
Cells, inert, "A" ...	...	...	...	...	...	...	As required	
Fuzes, electric, No. 14 ...	...	...	...	...	...	...	" "	
Shovels ...	...	...	...	...	...	...	...	2
Suitable firing key or switch ...	...	...	...	...	...	...	...	1
Tools for opening packages ...	...	...	...	...	...	...	As required	

3. Inspection of dry guncotton and tonite.

The following appliances are required for the inspection of dry guncotton and tonite :—

Paper, congo red ...	...	...	...	...	...	...	...	1 box
Water, distilled ...	...	...	...	...	...	...	...	1 bottle

4. Heat testing of dynamite.

The following appliances, in addition to those laid down in R.A.O.S., Part II, Pamphlet No. 7, are required for the heat testing of dynamite and gelatine dynamites :—

Cylinders, glass (1-in. diameter 3-in high) ...	...	...	...	...	...	...	...	2
Filter paper ...	...	...	...	...	...	...	a supply	
French chalk ...	...	...	...	...	...	...	a "	
Funnel, glass (3-in. diameter at top) ...	...	...	...	...	...	...	...	1
Rod, glass ...	...	...	...	...	...	...	...	1
Spatula, wood or bone ...	...	...	...	...	...	...	...	1
Stand, filtering ...	...	...	...	...	...	...	...	1
Tile, porcelain, glazed (or glass, common, 3-in. square) ...	...	...	...	...	...	...	...	1
Cylinder, glass (5-ml. graduated) ...	...	...	...	...	...	...	...	1

* Only required when gas is not available.

LIST OF PLATES

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I	Markings on Gunpowder barrels (typical). (Containing <i>New</i> Gunpowder.)
II	Markings on Gunpowder cases (M. Series) (typical). (Containing <i>New</i> Gunpowder.)
III	Markings on Crate, guncotton, wet, field, 14 slabs (15-oz. or 1-lb.) (typical).
IV	Markings on Box, guncotton, dry, primers, field, 1 oz. (typical).

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TYPICAL FOR:- BARRELS, POWDER.
(CONTAINING NEW GUNPOWDER.)

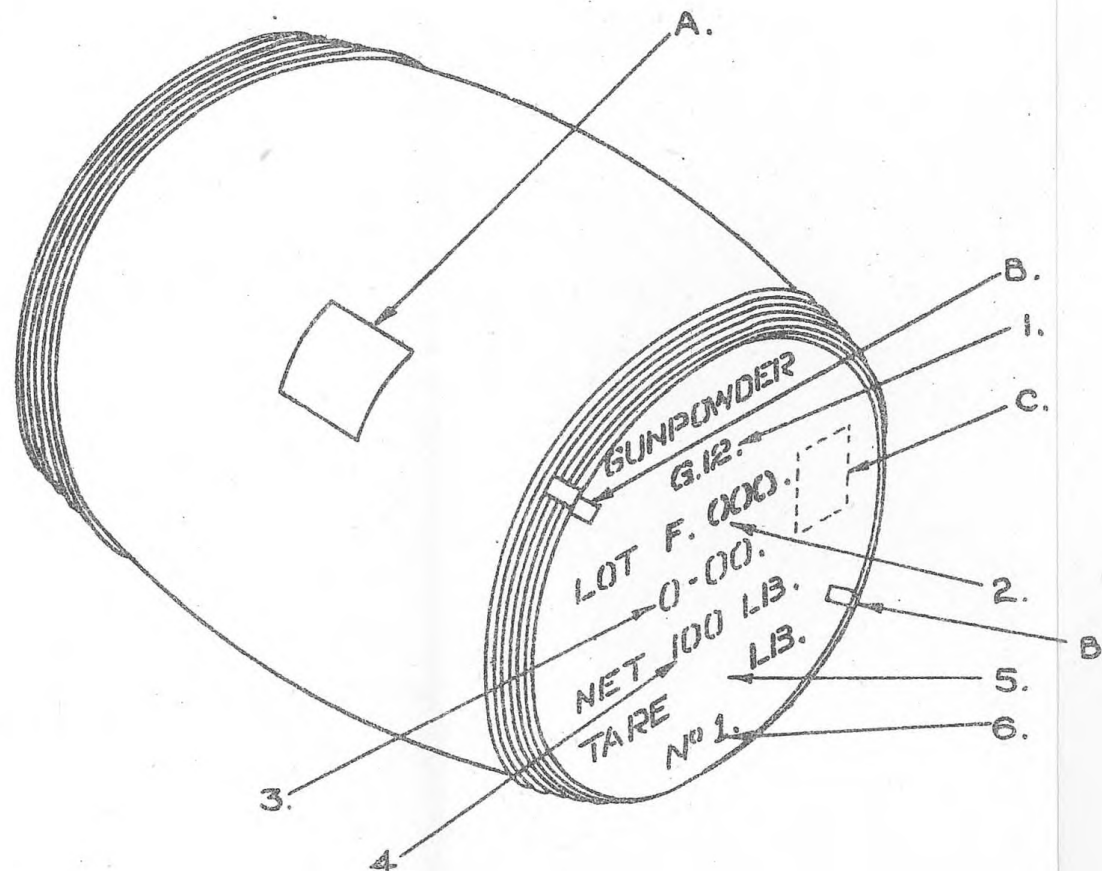


PLATE I

NOTES

BARREL UNSTAINED OR UNPAINTED
STENCILLING IN BLACK, EXCEPT
WHERE OTHERWISE STATED, ON
LID.

ITEM

1. NATURE OF POWDER, AS
APPLICABLE, RED LETTERS.
2. LOT NUMBER, AS APPLICABLE
3. DATE OF MANUFACTURE.
4. NETT WEIGHT. } AS APPLICABLE.
5. TARE " }
6. NUMBER OF BARREL IN THE
LOT OF GUNPOWDER.

LABELS

- A. GOVERNMENT EXPLOSIVE
LABEL N°L1601. (GROUP I).
 - B. 2 STATION LABELS AFFIXED
OVER JUNCTION OF LID AND
BODY.
 - C. PACKERS LABEL N°L566.A.
AFFIXED TO UNDERSIDE OF LID
- LABELS ARE AFFIXED TO
BARREL WITH SHELLAC AND
THOSE ON EXTERIOR ARE
COATED WITH SHELLAC
AFTERWARDS.

TYPICAL FOR CASES, POWDER.
(CONTAINING NEW GUNPOWDER.)

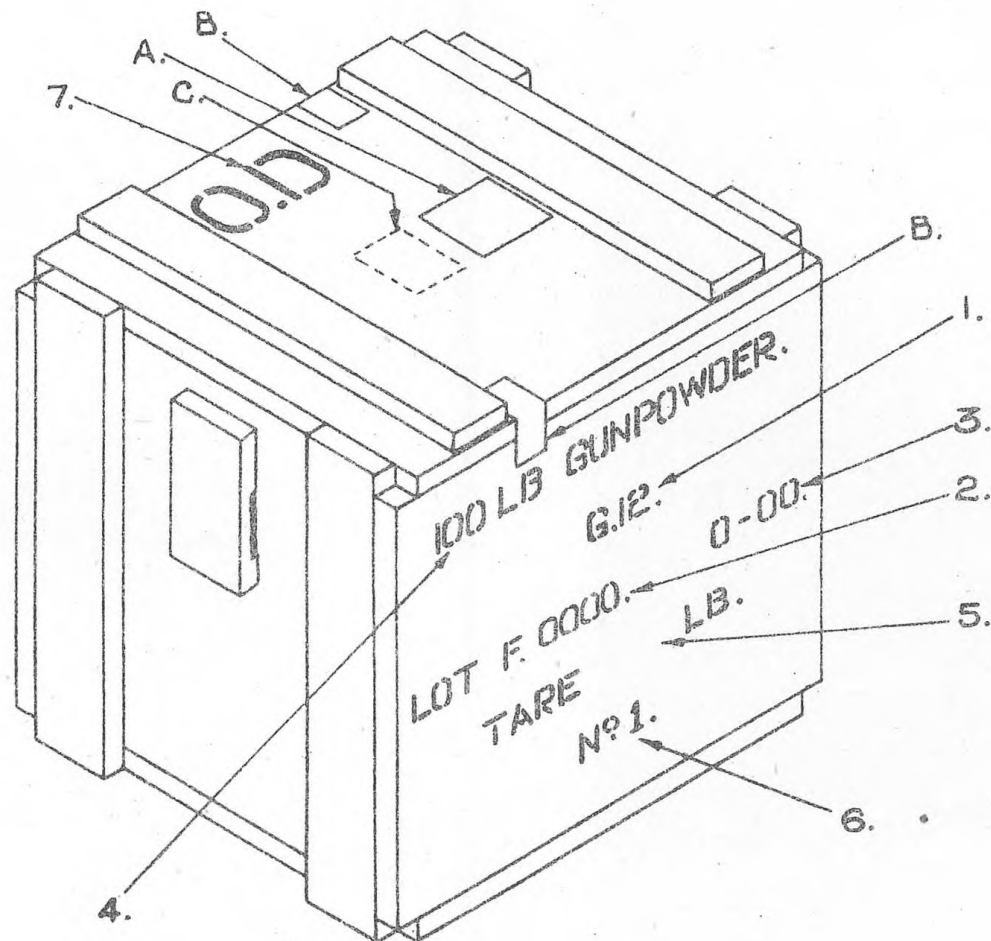


PLATE II

NOTES

CASE STAINED VANDYKE BROWN.
STENCILLING IN YELLOW, EXCEPT
WHERE OTHERWISE STATED, ON ONE
SIDE.

ITEM

1. NATURE OF POWDER, AS APPLICABLE
RED LETTERS.
2. LOT NUMBER, AS APPLICABLE.
3. DATE OF MANUFACTURE.
4. NETT WEIGHT
5. TARE " } AS APPLICABLE.
6. NUMBER OF CASE IN THE LOT
OF GUNPOWDER.
7. ONLY STENCILLED WHEN BOX
HAS BEEN OIL DRESSED.

LABELS

- A. GOVERNMENT EXPLOSIVE LABEL
N° L1601. (GROUP I).
- B. TWO STATION LABELS AFFIXED
OVER JUNCTION OF LID & BODY
- C. PACKERS LABEL N° L566A
AFFIXED TO UNDERSIDE OF
LID.
- LABELS ARE AFFIXED TO CASE
WITH SHELLAC, & THOSE ON
EXTERIOR ARE COATED WITH
SHELLAC AFTERWARDS.

TYPICAL FOR CRATE G.C. WET SLAB, FIELD, 15 oz OR 1 LB.

PLATE III

NOTES

CRATE AND METAL CASE
PAINTED SERVICE COLOUR.

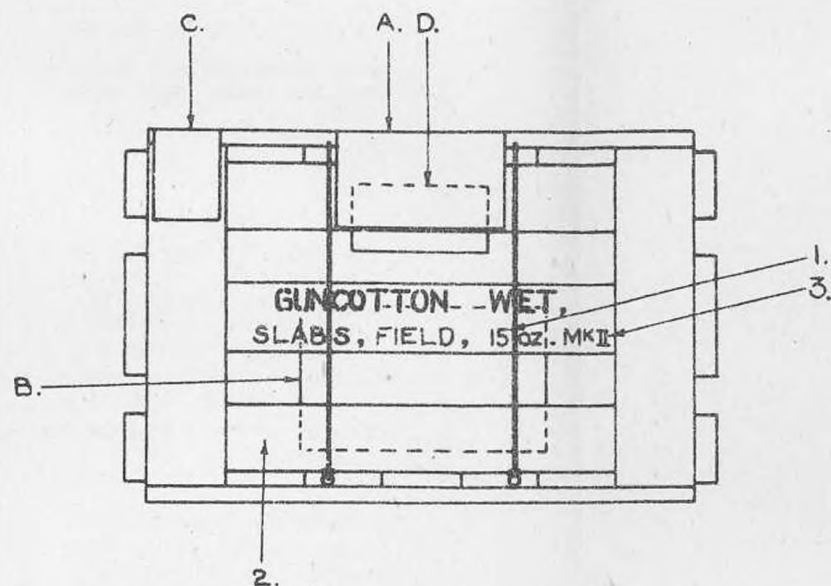
STENCILLING IN YELLOW.

ITEM

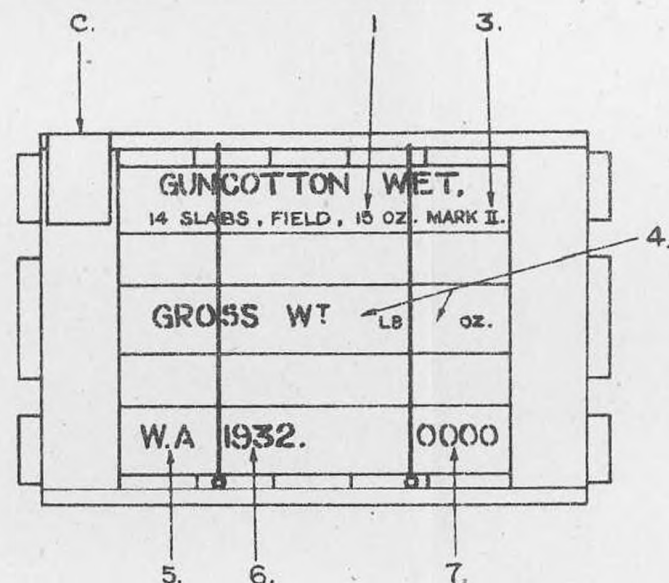
1. WEIGHT, AS APPLICABLE.
2. WHEN RE-WETTED THE FOLLOWING IS STENCILLED ON SIDE:-
 RE-WETTED
 W - / - / -
 DATE OF RE-WETTING
 MONOGRAM OF STATION.
3. MARK, AS APPLICABLE
4. GROSS WEIGHT, AS APPLICABLE.
5. MONOGRAM OR INITIAL OF MANUFACTURER.
6. YEAR OF MANUFACTURE.
7. TEST NUMBER.

LABELS

- A. GOVERNMENT EXPLOSIVE LABEL NO L1804 FOR L.S. OR NO L1617 FOR A.S.
 - B. LABEL NO L1390 PLACED ON METAL CASE SO THAT DIRECTIONS FOR EXAMINATION ARE VISIBLE THROUGH CRATE
 - C. 2 STATION LABELS AFFIXED OVER JUNCTION OF LID AND BODY.
 - D. PACKERS LABEL NO L566.A. AFFIXED TO UNDERSIDE OF LID.
- LABELS ARE AFFIXED TO CRATE AND METAL CASE WITH SHELLAC, AND COATED WITH SHELLAC AFTERWARDS.



- ONE SIDE -



- OPPOSITE SIDE -

TYPICAL FOR - GUNCOTTON, DRY, PRIMERS, FIELD, 1 oz.

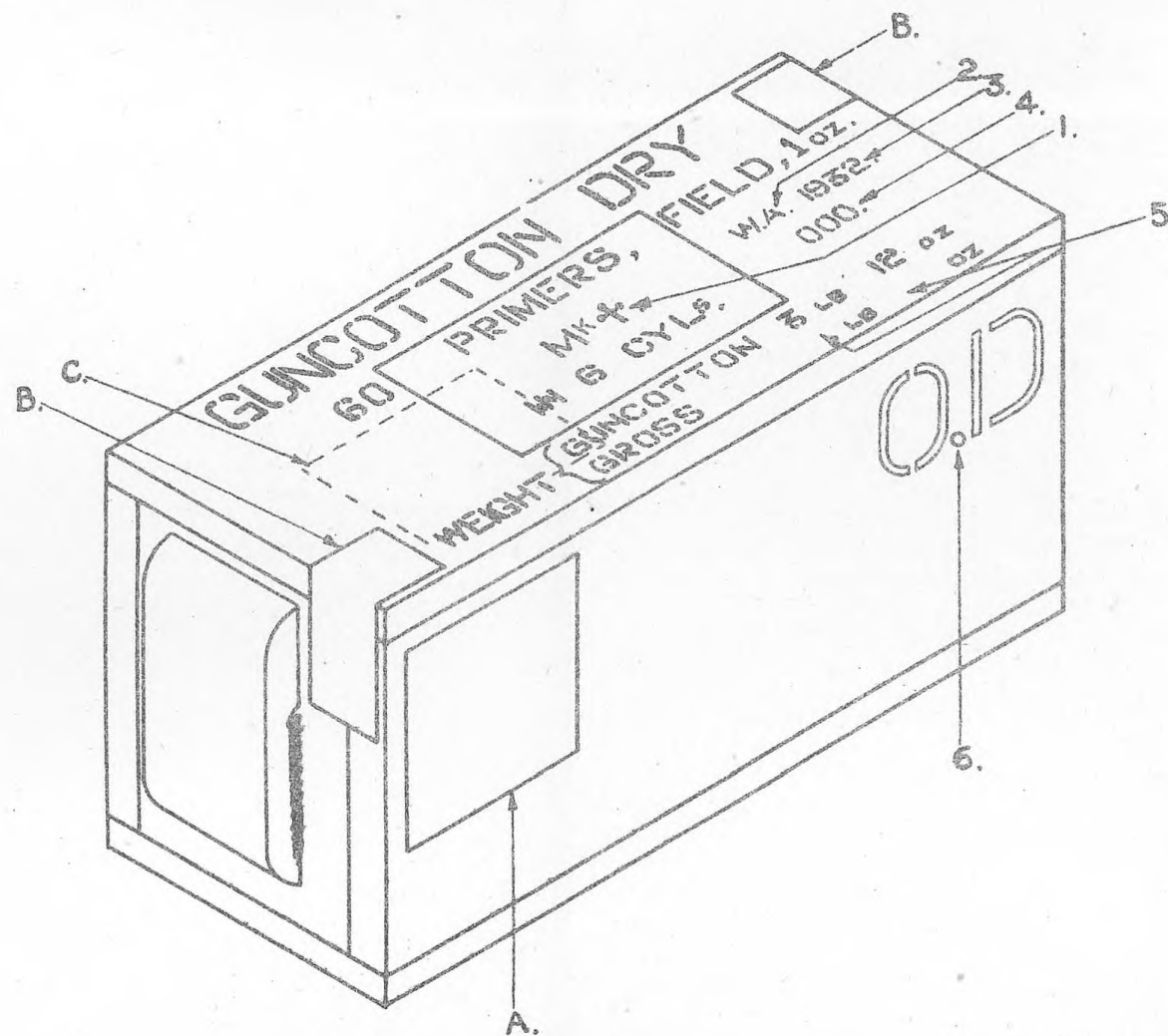


PLATE IV

NOTES

BOX PAINTED SERVICE COLOUR
STENCILLING IN YELLOW.

ITEM

1. MARK, AS APPLICABLE.
2. MONOGRAM OR INITIALS OF MANUFACTURER
3. YEAR OF MANUFACTURE.
4. TEST NUMBER, AS APPLICABLE.
5. GROSS WEIGHT, AS APPLICABLE
6. ONLY STENCILLED WHEN BOX HAS BEEN OIL DRESSED

LABELS

A. GOVERNMENT EXPLOSIVE LABEL.

NºLIG02 FOR L.S. } GROUP II.
NºLIG15 " AS. }

B. 2 STATION LABELS
AFFIXED OVER JUNCTION OF
LID AND BODY.

C. PACKERS LABEL NºL566.A.
AFFIXED TO UNDERSIDE OF
LID.

LABELS ARE AFFIXED TO
BOX WITH SHELLAC,
AND THOSE ON EXTERIOR
ARE COATED WITH
SHELLAC AFTERWARDS.

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Regulations
2106

**REGULATIONS FOR ARMY
ORDNANCE SERVICES, PART II**

PAMPHLET No. 10, 1934

AMENDMENTS (No. 1A)

1. SECTION III.

Heading. *After* "DYNAMITES" *insert* Amdt. 1A
", GELATINE DYNAMITES AND GEL- July, 1941
IGNITES".

Para. 70, sub-para. (b). Heading. *After* "dynamites" *insert* "and gelignites".

Para. 71. Line 1. *For* "and gelatine dynamites" *substitute* "gelatine dynamites and gelignites".

Para. 72. Line 2. *For* "and gelatine dynamite" *substitute* ", gelatine dynamite and gelignite".

Para. 72. Sub-para. (b). Heading. *After* "dynamites" *insert* "and gelignites. (For testing of Ammon Gelignites, see para. 72B.)"

Insert new para. :—

26
Regulations
2106

72B. With ammon gelignites, the result of the Amdt. 1A
heat test, if carried out as prescribed in para. 72 (b), July, 1941
is liable to be masked by traces of ammonia evolved
by the explosive during the test, so that no positive
result is obtained in the test.

With ammon gelignites it is therefore necessary to
proceed as follows :—

After the explosive, admixed with the french chalk,
has been introduced into the test tube as laid down in
para. 72 (b) (i), the surface is covered with 60 grains

of french chalk, followed by 60 grains of boric (boracic) acid, each in the form of a continuous layer. The boric acid should previously have been dried either by heating for 2 hours at 160° F. in the water oven (see para. 18 and Appendix II (1)) or by exposure of a thin layer for a day to a warm atmosphere, the material being protected from dust. The test paper is then inserted and the test carried out in the usual way.

Para. 74 (as promulgated by Amendments (No. 30), notified in Army Order 123 of 1937). Line 3. *After "dynamites" insert "and gelignites"*.

Para. 75. Line 1. *After "gelatine" insert "and gelignites"*.

2. SECTION IV.

Para. 88. Lines 4, 8 and 9, and 15.

Para. 89. Line 2.

Para. 90. Line 15.

For "W.D. Chemist" substitute "Chief Chemical Inspector" in each case.

3. APPENDIX II.

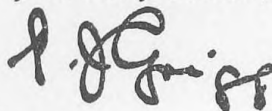
Para. 4.

Against "French chalk" insert "†".

Add footnote :—

26 Regulations 2106	† Supplied by Chief Chemical Inspector, Trinity Court, Cambridge, on application.	Amdt. 1A July, 1941
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By Command of the Army Council,



THE WAR OFFICE,
30th July, 1941.

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REGULATIONS FOR ARMY ORDNANCE SERVICES, PART II

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Para. 72. Sub-para. (b). Heading. *After* " dynamites " *insert* " and gelignites. (For testing of Ammon Gelignites, *see* para. 72B.) "

Insert new para. :—

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Regulations
2106

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