

To Maj Bonney

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JAPANESE AMMUNITION

C.I. AMM. TECHNICAL REPORT

No. 37

EXPLOSIVE BLOCKS AND PREPARED CHARGES FOR H. E. FIELD FILLINGS AND DEMOLITION WORK

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MAY 1945

EXPLOSIVE BLOCKS AND PREPARED CHARGES
FOR
H.E. FIELD FILLINGS AND DEMOLITION WORK

G E N E R A L

The Japanese make wide use of various sizes of explosive blocks and prepared charges. The former are used for demolition work and may be used as H.E. fillings, e.g. 2½-Kg. spigot charge (C.I.Amm. Technical Report No.33) or fillings for improvised bamboo torpedoes (C.I.Amm. Technical Report No.36). Prepared charges are presumably used for demolition work and pole charges etc.

2. Different types of explosive blocks and prepared demolition charges have been received during the past two months and this Report gives a detailed description of these items.

D E S C R I P T I O N

EXPLOSIVE BLOCKS

3. The general appearance and other details of four different types of blocks are shown in the photograph at Plate A.

Cylindrical Block (Item 1)

4. This is a cast cylindrical block of a mixture of R.D.X./T.N.T. in the proportion roughly of 60/40 and is wrapped in a varnished yellow paper the seams of which are doped with lacquer to render the wrapping waterproof. Japanese characters for TANO are stencilled in black ink on the paper wrapping. It is understood that the word TANO indicates an explosive mixture of R.D.X./T.N.T. The external dimensions of the block over wrapping are 4 7/16-in. long and 1 1/8-in. in diameter and it weighs 3.8-oz. A detonator recess is provided at one end which is 3/8-in. in diameter, and 2-in. deep. A black spot on the end of the paper indicates the position of the detonator recess in the block.

Rectangular Block (Item 2)

5. This consists of a pressed block of a mixture of R.D.X., ammonium nitrate, graphite and wax (see Chemical Analysis) and is covered by a light grey paper wrapping. The seams of this wrapping are doped with lacquer to render the wrapping waterproof. The Japanese characters for KAI-SHOKU are stencilled in black ink on the paper wrapping. It is understood that the word KAI-SHOKU in Japanese means an explosive mixture of R.D.X. and ammonium nitrate. The external dimensions of the block over wrapping are 2 1/16-in. x 2 1/16-in. x 1-in. and it weighs 3.33-oz. The block has a detonator hole 3/8-in. in diameter and 1 1/4-in. deep. The position of this hole in the block is indicated by a black spot on the paper wrapping. These blocks appear in some cases to have been prepared as sets and only one or two blocks of the set have the detonator recess.

Rectangular Block (Item 3)

6. Although this block was captured from the Japanese, it is of Dutch origin (Java). It is a rectangular block of cast T.N.T. covered with a yellowish brown paper wrapping and finally dipped in wax. The sample examined was stencilled in black ink PW 3-41. This is understood to be the monogram of the Pyrotechnische Werk Plaats (Army Pyrotechnical Workshop, Bandoeng, Java). The external dimensions of the block over wrapping are 2 3/4-in. x 2 1/16-in. x 1 5/8-in. and it weighs 8.07-oz. A detonator recess 0.28-in. in diameter and 1.2-in. deep is bored in one end of the block and indicated by a black spot on the paper wrapping.

Rectangular Block (Item 4)

7. This block is identical in all respects with the rectangular block described as Item 2 in para. 5 above. The explosive has been found, however, to be a mixture of R.D.X. and T.N.T. in the rough proportion of 50/50. Japanese characters for TANO are also stencilled in black ink on this block.

8. Another block, not shown in the Plate, has also been examined here which is identical, in dimensions, position of detonator recess, etc. with the blocks described in paras. 5 and 7 above. The explosive in this block was, however, picric acid. The paper wrapping of the block is yellow and Japanese characters for "Type '97 Square Yellow Powder" are stencilled on the wrapping. The block itself is stencilled with Japanese characters for "I-Yellow".

PREPARED DEMOLITION CHARGES1-Kg. and 5-Kg.

9. The general appearance and other details of these two prepared charges and their components are shown in Plate B.

1-Kg. Charge

10. This consists of a cast picric acid block weighing approx. 2-lbs. and is contained in a waxed yellow cardboard container, the external dimensions over the paper container being 1.95-in. x 2.85-in. x 6.4-in. Two detonator recesses are formed in the block, one at the end and the other in the centre of the side of the block. It would seem that the cardboard container is formed and fitted with two stiff paper detonator pockets and molten picric acid poured in to form the block. The pocket in the end is 2-in. deep and 0.42-in. in diameter and that in the side is of the same diameter but extends right through the block i.e. forming a tube approx. 2-in. long. The pockets are intended to take two copper pockets described below. The cardboard container is stencilled in black ink with Japanese characters for OSHOKU (picric acid). The sample examined here was also stencilled with the monogram for the Tokyo Explosives Factory and was manufactured or assembled in February 1942. The inspection mark of Kamishi Arsenal was also stencilled on the container. The whole charge in its stiff paper or cardboard container fits in a 22 B.G. zinc container the overall dimensions of which was 6.5-in. x 2.95-in. x 2.05-in. This container is lacquered internally with a black

finish. After insertion of the explosive block in the zinc container a copper detonator pocket is inserted in the side of the container and secured by light soldering round the edges of the pocket flange. The explosive block is held snug in the zinc container by cardboard packing pieces and the container is finally closed by the lid which has already been fitted with the other detonator pocket, and secured to the container by light soldering all-round. The internal dimensions of the copper detonator pockets are 0.35-in. diameter and 2-in. length. In this way the zinc container is hermetically sealed.

11. It will be noticed from Plate B that two tapes are secured over each detonator pocket. The ends of these tapes are tied to small loops soldered on. Their intention is presumably to secure the detonator and fuze assembly to prevent accidental withdrawal from the demolition charge. The total weight of the charge complete in its zinc sheet container is 2.3-lb. and it is painted externally an olive drab colour.

5-Kg. Charge

12. This consists of a cast picric acid block weighing about 11-lb. and contained in a yellow waxed cardboard container. The external dimensions over the container are 3.9-in. x 5.84-in. x 8.4-in. The general construction, dimensions of detonator pockets and stencilling are identical to those described above for the 1-Kg. charge, except that in the sample 5-Kg. charge examined:-

- (a) The detonator pockets are made of brass.
- (b) The charge was manufactured or assembled in July 1943.
- (c) The characters for "5-Kg." are stencilled in white paint on the exterior of the zinc container.
- (d) The zinc container is lacquered internally with a greenish yellow lacquer and painted externally with a brown to khaki colour.

13. Tapes over each detonator pocket are similarly fitted but these were torn off in the sample received at Kirkee (but portions of the metal loop etc. still remained) and, therefore, do not appear in Plate B.

CHEMICAL ANALYSIS

(Chief Inspector of Military Explosives, Kirkee)

14. EXPLOSIVE BLOCKS

Cylindrical Block (Item 1 on Plate A)

A mixture of:-	R.D.X.	56.5%
	T.N.T. including wax	43.5%

Rectangular Block (Item 2 on Plate A)

A mixture of:-	Ammonium Nitrate	66.5%
	R.D.X.	26.2%
	Wax	5.6%
	Graphite	1.7%

Rectangular Block (Item 3 on Plate A)

T.N.T. (M.P. 80°C)

(Block coated with some varnish)

Rectangular Block (Item 4 on Plate A)

A mixture of:- R.D.X. 52.3%
 T.N.T. including wax 47.7%

Rectangular Block (Not shown in Plate)

Type '97 square yellow powder Picric acid

(See para. 8 of text)

PREPARED DEMOLITION CHARGES1-Kg. and 5-Kg. (Plate B)

Picric acid (M.P. 122°C)

A P P R E C I A T I O N

(Economic, manufacture and development aspects)

15. The blocks are well made generally and form a convenient method of issuing bulk explosives for general purposes. The use of picric acid and R.D.X./T.N.T. mixtures means that complete detonation of a number of charges should normally present little difficulty with reasonably good initiation.

16. The care which is taken by the Japanese in the case of prepared charges in regard to waterproofing and internal lacquering of the container is worthy of notice.

- (a) The explosive blocks and prepared demolition charges are in waxed paper containers and the detonator pockets are lined with paper, thus completely waterproofing the charge.
- (b) The metal container is made of zinc sheet lacquered internally and the brass or copper detonator pockets and lid are fitted and soldered in such a way as to prevent the ingress of any moisture to the container. The detonator pockets are also very thoroughly lacquered.
- (c) Small tests carried out indicate that the zinc sheet used and the copper or brass in the detonator pockets have an extremely low lead content.

SUMMARY OF DATA17. EXPLOSIVE BLOCKS

Cylindrical Block
(Item 1 on Plate A)

R.D.X./T.N.T.

4 7/16-in. long x 1 1/8-in. dia.

Weight 3.8-oz.

Rectangular Block
(Item 2 on Plate A)

Ammonium Nitrate / R.D.X. Weight 3.33-oz.

2 1/16-in. x 2 1/16-in. x 1-in.

Rectangular Block
(Item 3 on Plate A)

T.N.T. (Dutch)

2 3/4-in. x 2 1/16-in. x 1 5/8-in.
 Weight 8.0-oz.

Rectangular Block
(Item 4 on Plate A)

R.D.X./T.N.T.

2 1/16-in. x 2 1/16-in. x 1-in.
 Weight 3.68-in.

Rectangular Block
(Not shown in Plate)

Type '97 square yellow

powder - Picric acid

2 1/16-in. x 2 1/16-in. x 1-in.

Weight 3.66-oz.

PREPARED DEMOLITION CHARGES

1-Kg. Charge

Picric acid

6.5-in. x 2.95-in. x 2.05-in.

Weight 2.3-lb.

5-Kg. Charge

Picric acid,

4.1-in. x 6.1-in. x 8.55-in.

Weight 11.5-lb.

RESTRICTED

SIZE :-

$4\frac{7}{16} \times 1\frac{1}{8}$ DIA.
 DETONATOR HOLE - $\frac{3}{8}$ DIA. $\times$ 2" DEEP.

WEIGHT :-

3.8 OZS.

SIZE :-

$2\frac{1}{16} \times 2\frac{1}{16} \times 1$ "
 DETONATOR HOLE - $\frac{3}{8}$ DIA $\times$ $1\frac{3}{4}$ DEEP.

WEIGHT :-

3.33 OZS.

UNCOVERED

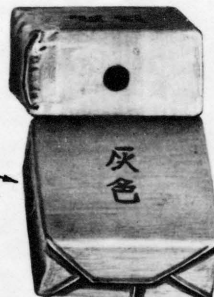
①



IN YELLOW -
 PAPER WRAPPING

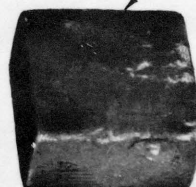
IN LIGHT
 GREY PAPER-
 WRAPPING.

"TANO" (R.D.X. & T.N.T.)
 (YELLOW COLOURED)



②

UNCOVERED.



"KAI-SHOKU" { R.D.X., AMMONIUM - NITRATE
 GRAPHITE & WAX.
 (BLACK COLOURED)

SIZE :-

$2\frac{3}{4} \times 2\frac{1}{16} \times 1\frac{1}{8}$ "
 DETONATOR HOLE - $\frac{28}{16}$ DIA. $\times$ 1.2" DEEP.

WEIGHT :-

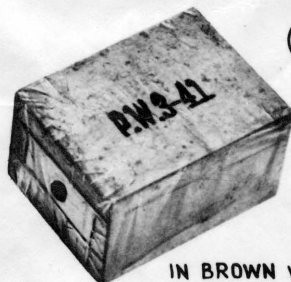
8.07 OZS.

SIZE :-

$2\frac{1}{16} \times 2\frac{1}{16} \times 1$ "
 DETONATOR HOLE - $\frac{3}{8}$ DIA $\times$ $1\frac{3}{4}$ DEEP.

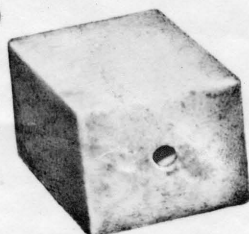
WEIGHT :-

3.68 OZS.



③

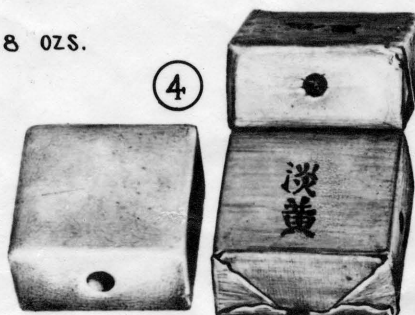
IN BROWN WAXED
 PAPER WRAPPING



UNCOVERED

T.N.T. (DUTCH MANUFACTURE)

④

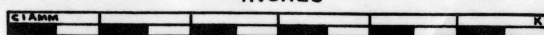


UNCOVERED

IN YELLOW PAPER
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"TANO" (R.D.X. & T.N.T.)

INCHES

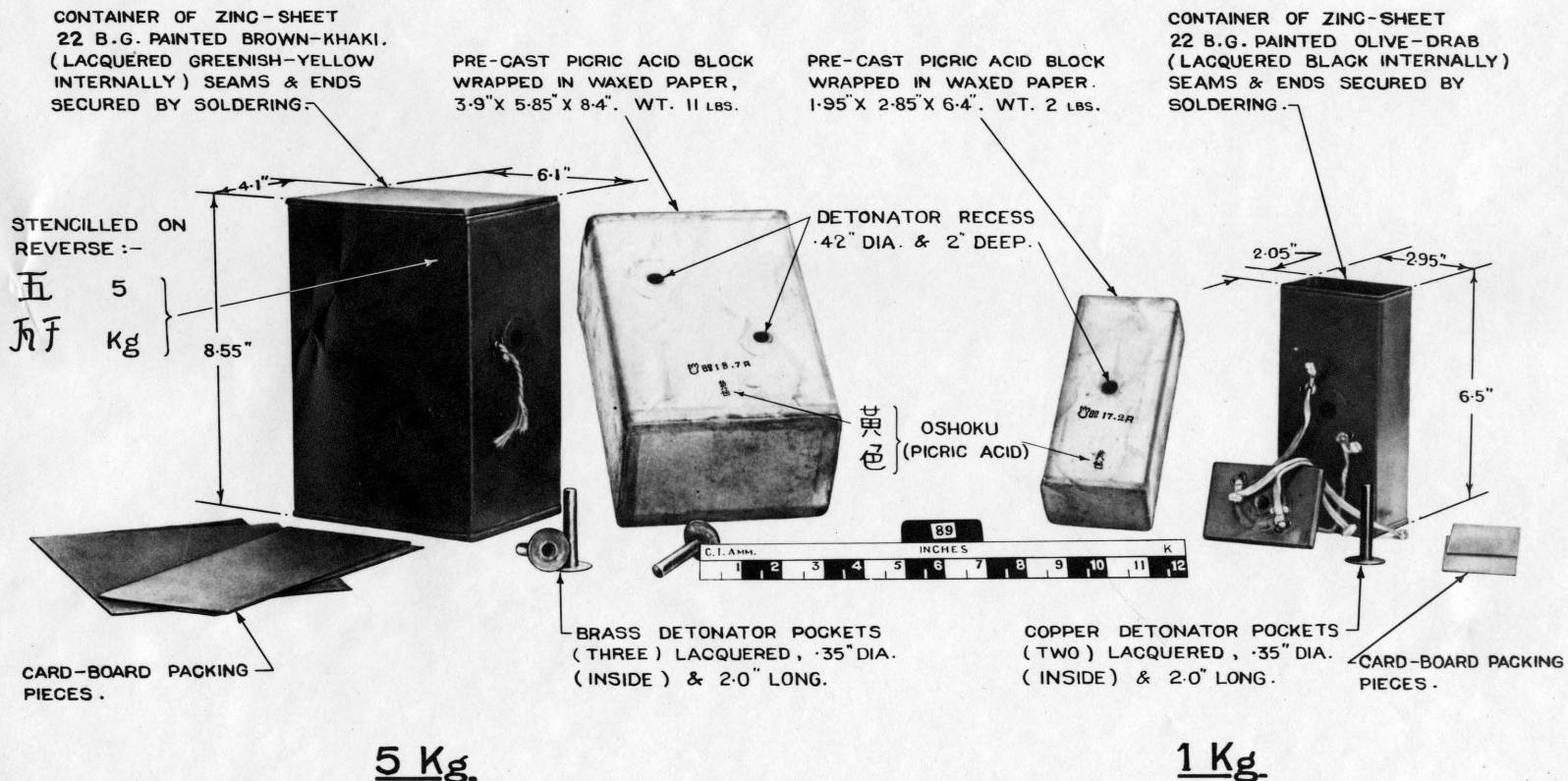


— JAPANESE EXPLOSIVE BLOCKS —

— USED FOR —

— H.E. FIELD FILLINGS & DEMOLITION WORK —

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JAPANESE PREPARED DEMOLITION CHARGES

1 Kg & 5 Kg