

11C 3-14
CANADIAN CHEMICAL WARFARE LABORATORY

REPORT No. 44



GERMANY

6 JUNE 1945

GERMAN CHEMICAL AMMUNITION

SECTION I

1. General

Very considerable quantities of gas munitions have now fallen into the hands of the ALLIES and, since 8 Apr 45 when the first GERMAN gas shell captured in this war was forwarded for examination, every type of GERMAN gas shell, mortar bomb, rocket, mine and air-craft bomb so far known to exist has been subjected to laboratory examination.

2. Object

The object of this report is to describe in detail the markings and content of these munitions, in order that those concerned with their handling and with their supervision in depots may be in a position to determine quickly, by examination of the markings, their nature, contents and effect.

3. Layout of Report

As far as possible the necessary details are given in the attached diagrams. The paragraphs which follow give only a general introduction to the subject together with some explanatory matter.

Since the markings on different types of weapons, eg bombs and shell, are not necessarily the same, each type of weapon is dealt with separately.

SECTION II - SHELL

4. Shell Markings

The significant markings on gas shell are detailed below:-

- (a) A coloured ring (or rings) on the ogive and on the base which indicates the physiological effect of the shell.

Yellow - (Gelb - Gb)	Vesicant effect.	<i>Blasphämung</i>
Green - (Grün - Gr)	Choking, systemic or lung effect	<i>Wundtätig</i>
Blue - (Blau - Bu)	Sternutatory effect	<i>mit bl. Pulver</i>
White - (Weiss - W)	Lachrymatory effect.	<i>harmlos</i>

It should be noted that the colour band is NOT in itself a guide to the chemical charging of the shell. Thus, mustard may be found in either yellow ring or green ring shell; in the latter case the shell has a large burster and depends for its lung effect on the initial cloud of vapour and fine droplets.

Some shell have both Green and Yellow rings. While a completely satisfactory explanation for this combination is not forthcoming, it is believed that these shell, which are essentially of the Green ring variety (ie they have a large burster), have the yellow ring added to indicate that the shell is a potential source of vesicant effect should it become a leaker or break up after failure to detonate. Shell with both a Green and Yellow ring, if functioned normally, have a negligible vesicant effect.

- (b) An ARABIC numeral, of the same colour as the ring marking, which distinguishes the different gases or different shell having the same physiological effect.

This is illustrated in the complete key shown below:-

<u>GERMAN Name of charging</u>	<u>Ring Marking</u>	<u>ARABIC numeral</u>	<u>Nature of charging</u>
Celbring	One yellow ring	-	Mustard - arsenol mixture
Grübring Gelb	One green ring and one yellow ring	-	Mustard - large burster (see para 4 (a)).
Grübring	One green ring	-	Mustard - large burster
Grübring 1	One green ring	1	Nitrogen mustard - large burster
Grübring 3	One green ring (and one yellow ring, see Note (iii)).	3	Tabun
Blauring 1	One blue ring	1	DM with external burster
Blauring 2 (see Note (ii))	One blue ring	2	DA in arsenol with central burster.
Blauring 3	One blue ring	3	DM in base ejection generator-type shell
Weisaring	One white ring	-	CAP/HE

- NOTES: (i) The ARABIC numeral appears on both the body and on the base of the shell.
- (ii) It is probable that the order of the numbers is related to the chronological introduction of the shell into service. Thus Blue Ring 3 is a later development than Blue Ring 1 and similarly for the Green Ring numbers. No Green Ring 2 or Blue Ring 2 shell have been found, nor a shell with two yellow rings, although all are said by the GERMANS to exist.
- (iii) The markings on the body of the Grübring 3 shell are liable to be confused with the markings on the body of the Grübring Gelb shell, but in the case of the Grübring 3 the yellow ring is not in fact part of the code marking, but is actually detector paint. The two shell can easily be distinguished by the base markings.
- (c) A code letter (or letters) generally of the same colour as the ring marking which indicates the exact chemical nature of the shell charging

The key to this code, taken from a captured microfilm and dated 1 Jan 45, is given below:-

A	-	CAP
B	-	Thiodiglycol mustard-Arsenol 1:1 (Winterlost)
C	-	Thiodiglycol mustard-Chlorobenzene 4:1 (Winterlost)
D	-	Thickened mustard (made from B)
E	-	Thickened mustard (made from a mixture of homologous mustards)
F	-	Phosgene
G	-	Tabun
GA (or Ga)	-	Tabun with 20% Chlorobenzene

- K - Nitrogen mustard ie HN-3
- L - Thiodiglycol mustard - Anthracenöl, 2:1 (Winterloot)
- M - DM or DM with DA
- N - DA in Arsenöl, 40:60
- O - Thiodiglycol mustard (Sommerloot)
- P - Hydrogen cyanide

The code letter is sometimes by itself but may be combined with other letters or numbers, eg

Gb GA Bu I/M K O F-6184
G/B 39 wKh 38

In these examples the code letters are B, GA, M, K, O and F respectively.

NOTES: (i) This code is employed on mortar bombs, rockets and aircraft bombs as well as on shell

(ii) On bombs and occasionally on shell the code letter is painted in black.

(d) A number in black, just above or just below the coloured ring on the ogive, which indicates the type of HE burster employed in the shell.

The list of bursters employed together with a brief general description of each is detailed below:-

- 37 - The head burster of the 10.5 and 15 cm Yellow ring 39 shell. (PETN/Wax 50/50)
- 36/38 - The small burster in the earlier type Yellow ring ground contamination 10.5 and 15 cm shell and the 10 cm Yellow ring mortar bomb. (PETN/Wax - 60/40)
- 32 - The medium burster in the 10.5 and 15 cm Green ring shell. This number is also used to indicate the relatively heavy burster in the 15 cm Green ring yellow and Green ring 1 rockets, presumably because they are thin case weapons and need less explosive than a shell to gain the same effect (PETN/Wax - 90/10).
- 91 - The heavy burster in the Type 38 shell, 10.5 cm Green ring Yellow and 10.5 cm and 15 cm Green ring 1. (RDX/Wax - 95/5).
- 36 - DM/HE insert in the 15 cm Blue ring 1.
- 46 or 46A - DM/HE insert in the 10.5 cm Blue ring 1.
- 45 - CAP/HE insert in the 10.5 cm White ring.

NOTES: (i) The burster number does NOT refer to the size or shape of the burster charge but only to the identity of explosive used. Thus the same code number, 37, is used to indicate the head burster of both the 10.5 and 15 cm type 39 shell

(ii) In the case of the White Ring and Blue Ring 1 shell the number refers to the whole CW/HE insert.

(iii) The different types of gas shell body are dealt with in para 5.

(e) Other markings not of special significance

Detector paint applied to the welds and filling plug may be pink, brown or yellowish-green in colour and must not be confused with the coloured rings on the shell. For example, in the Green ring 3 shell a band of yellowish-green detector paint, which occurs on the ogival weld immediately below the Green ring must not be confused with colour coding ring, for example the yellow ring on the Green ring Yellow shell.

Other markings to be found on shell are the weight classification (large ROMAN numerals ie I II III or IV) and letters indicating the nature of the driving band (FES in white or KPS in red). These, of course, vary on different shell of the same type.

5. Types of Gas Shell Body

Six types of gas shell body had been accepted for service. They are described below:

- (a) The earlier type of ground contamination shell has a small central burster tube (filled HE/Wax 60:40) and is always marked Gb G/B. The "Gb" stands for Yellow ring gas (Gelbring Kampfstoff), the "G" for ground contamination (Gelandebelagung) and the "B" is the code letter for the chemical filling (see para 4. (c)). Natures are as follows:

10.5 cm F. H. Gr Gelbring
15 cm Gr 19 Gelbring

- (b) Differing from the above type only in the amount of HE in the burster tube (it is not so highly diluted with wax) is the earlier type of Green ring "initial cloud" shell marked Gb L/O (in green). Again the "Gb" represents Yellow ring gas (vesicant) but the fact that it is dissipated as a cloud by the heavier burster is indicated by the letter "L" (Luftkampfstoff - a cloud gas). The last letter "O" is again the code letter for the CW filling. Only two types of shell of this nature are known to exist, ie

10.5 cm F. H. Gr Grünring
15 cm Gr 19 Grünring

- (c) The new type of ground contamination shell which has a head burster and a plate between the HE and CW filling, is known as the "Zwischenboden" (separating plate) shell. It is identified by the large coloured number 39. Natures are as follows:

10.5 cm F. H. Gr 39 Gelbring
15 cm Gr 39 Gelbring

In addition, the Type 39 shell is also filled Green ring 3, the GERMANS having found that there was less decomposition of the Tabun filling with a head burster than with a central burster. Natures are as follows:

10.5 cm F. H. Gr Grünring 3
10 cm Gr 39 Grünring 3

- (d) In order to improve the "initial cloud" or choking gas effect with vesicants the Type 38 shell was developed. This shell has a very large burster (weiter Kammerfüllung - wide burster) relative to its size and is marked with the number

10.5 cm F. H. Gr 38 Grönring - Gelb
 10.5 cm F. H. Gr 38 Grönring 1
 15 cm Gr 38 Grönring 1

(e) A fifth design is used for the solid HE/OW chargings of the White ring and Blue ring 1 types. There are no special markings to distinguish these shells. Natures are as follows:

7.5 cm Jgr Weisaring
 10 cm Gr 19 Blauring 1
 10 cm 19 Weisaring
 10.5 cm F. H. Gr Blauring 1
 10.5 cm F. H. Gr Weisaring
 15 cm Gr 19 Blauring 1
 15 cm Gr 19 Weisaring

(f) The type 40 base ejection (AB - Ausstosabdrüse) generator shell, marked 40 and Bu L/M in blue. "Bu" indicates a Blue ring gas, "L" that it is a cloud gas (Luftkampfstoff) and "M" is the code letter for the filling. Also stencilled in black on the side near the base is 40 AB. The full title of this shell is:-

10.5 cm F. H. Gr 40 Blauring 3

SECTION III - 15cm ROCKET AMMUNITION

6. Markings

Markings on Rocket Ammunition have the same significance as those on shells. Three types have been examined and a fourth is believed to exist but has not yet been examined. They are as follows:-

Small burster - 15 cm Wgr 41 Gelbring
 Large burster - 15 cm Wgr 41 w Kh Grönring-Gelb
 " " - 15 cm Wgr 41 w Kh Grönring 1
 Not yet examined - 15 cm Wgr 41 w Kh Grönring 3

SECTION IV - CHEMICAL MINES

7. Two types of mine have been examined

10 litre Spruhdrüse 37 Gelbring (10 l Sp B4 37)
 10 litre Spruhdrüse 37 Doppel Gelbring (10 l Sp B4 37)

The chargings of these mines are mustard/arsenol and thickened mustard respectively.

The name of the mine is stencilled on the side in white, while the top bears one or two concentric yellow rings as well as the charging code letter (see para 4. (c)) and filling date.

When functioned, an inner container is projected from the mine after a delay of 1-5 minutes and explodes 10 - 20 feet in the air, scattering the contamination over a wide area.

SECTION V - MORTAR BOMBS

Only one mortar bomb is known to exist, the

10 cm Wgr 35 St Gelbring

The markings on this bomb have the same significance as on

SECTION VI - AIRCRAFT BOMBS

9. Markings on Aircraft Bombs

The overall colour of aircraft bombs is usually field grey but may be buff. The latter bombs presumably were destined for tropical service.

The markings on bombs appear to be much less systematic than on shell. The following markings will be found.

- (a) A coloured ring or series of rings around the nose and also usually around the centre of the bomb.

The colour of the rings, as on shell, indicates the physiological effect (see para 4 (a)).

- (b) The name of the bomb, eg KC 250 (Kampfstoff Cylinderische 250 Kg) also in the centre of the body.

NOTE: The standard GERMAN A/c bomb is the 250 Kg, a modification of the 250 Kg SC (thin case) type HE bomb. In addition there is a specially designed 50 Kg Blue Ring bomb. Trials have been carried out with 500, 1,000 and 1,800 Kg bombs but except for a few 500 Kg White ring bombs and Green ring bombs none have so far been found in Depots.

- (c) Charging Code Letter

See para 4. (c)

- (d) Design number

The charging code letter is usually placed beside the design number, eg G.6187. In this example "G" is the charging code letter and "6187" the design number.

- (e) Fuse number in a small circle

eg

55

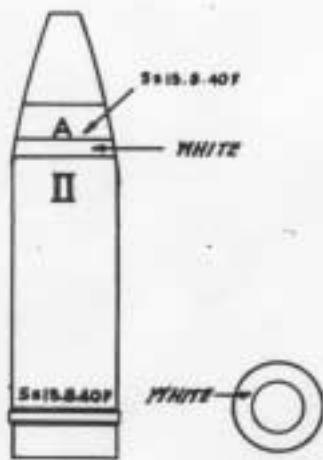
- (f) Code Number of HE Filling and weight of filling

eg 14 - 3.2 Kg. The number 14 indicates TNT and is the most usual filling. The number 2 indicates PICRIC acid.

NOTE: All markings on the bombs (except the coloured ring markings) are in black.

7.5 cm. Jgr. 18 WEISSRING

7



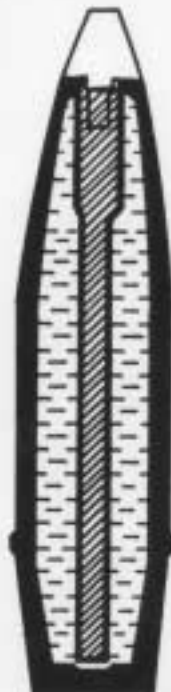
WEIGHT - 5.2 Kg

FUZE - L. Jgr. Z. 23 n.R.

FILLING 420 g CAP50-PETN38-Max12

REMARKS - HE/CY Filling inserted via the threaded-on head of the shell

10.5 cm FH.Gr. GELBRING



WEIGHT - 14 Kg.

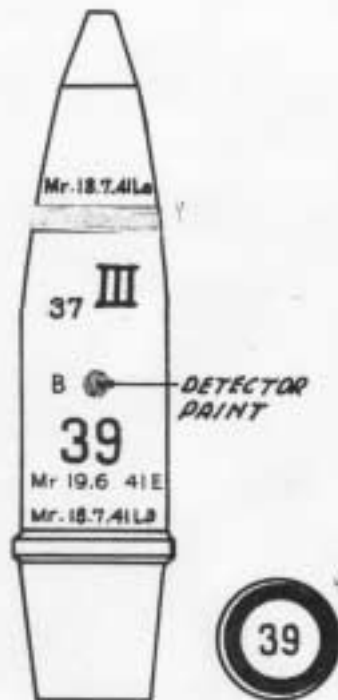
FUZE - KI. AZ 23 ND

CY FILLING 1250cc Mustard-

-Arainöl (Winterlost)

HE FILLING 94 g PETN/Max 60/40

REMARKS - For ground contamination

105 cm F.H.Gr. 39 GELBRING

WEIGHT - 13.3 Kg.
FUZE - KI. AZ 23 ND
CM Filling - 1160 cc Mustard -
 -Arsinöl (Winterlost)
HE Filling - 208 g PETN/Max 50/50
REMARKS - For ground contamin-
 ation.

105 cm F.H.Gr. GRÜNRING

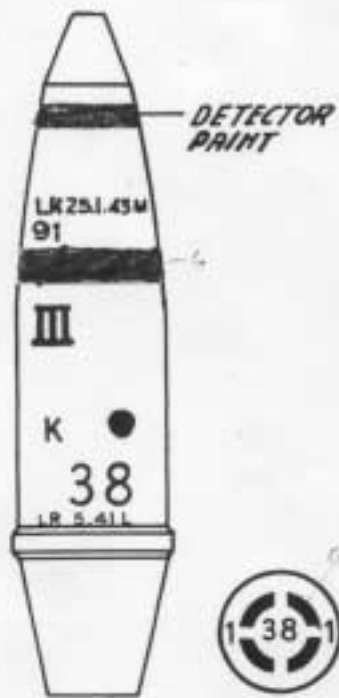
WEIGHT - 13.7 Kg
FUZE - KI AZ 23 ND
CM FILLING - 1250 cc Mustard-Arsinöl
 (Winterlost)
HE Filling - 125 g PETN/Max - 90/10
REMARKS - According to the code
 marking (a) the filling should be Mustard
 only, not Winterlost.

10.5 cm FH, Gr. GRÜNRING-GELB



WEIGHT - 13.7 Kg.
FUZE - KIAZ 23 Hb
CM FILLING - 1250 cc Mustard-Arsinid
 (Winterlost)
HE FILLING - 125g RDX/Max 95/5
REMARKS - According to the code marking (a) the filling should be Mustard only, not Winterlost.

10.5 cm. F H Gr38 GRÜNRING.I.

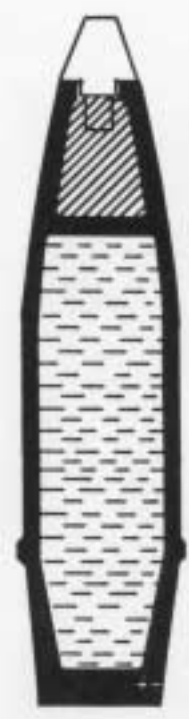
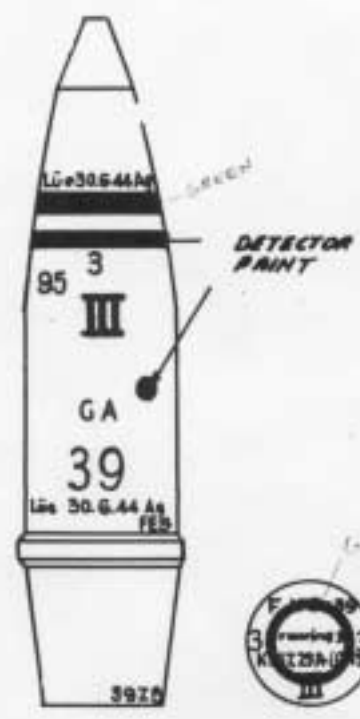


WEIGHT - 14.2 Kg.
FUZE - KIAZ 23 Hb
CM FILLING - 0.9 Kg of HN-3
HE FILLING - 0.6 Kg of RDX/Max(95/5)



FHR 38
 Grünring I

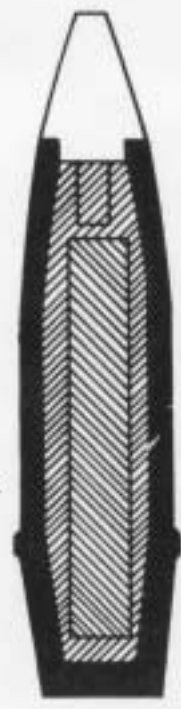
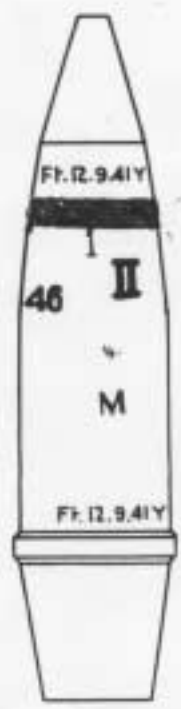
10.5cm F.H.Gr. 39 GRÜNRING 3



WEIGHT - 13.2 Kg.
FUZE - KI AZ 23 Pr (0.15)
CM FILLING - 1200 c.c. GA (Tabun + 20% Monochlorbenzene)
HE FILLING - 215g RDX/TNT-50/50
REMARKS -

- (1) The band of Detector Paint must not be confused with the Color coding.
- (2) This is also filled as a 10 cm shell, with double driving bands, for the Kanone 18.

10.5cm F.H.Gr. BLAURING 1

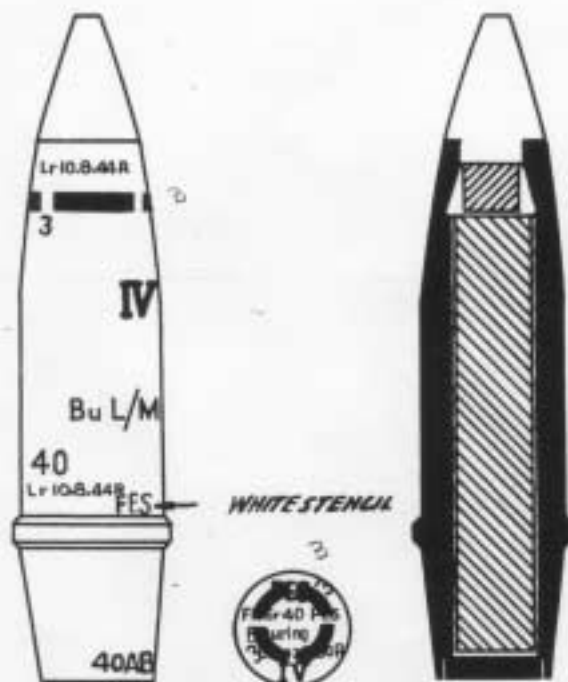


WEIGHT - 14.8 Kg
FUZE - AZ 23 umg (0.15)
FILLING - 550g of DM surrounded by 900g of TNT
REMARKS

- (1) CM/HE insert loaded via the threaded-on head
- (2) A similar round the Gr 19 Blauring for the 10cm Kanone 18 has also been found and examined. It has double driving bands.

10.5 cm FH.Gr. 40 BLAURING 3

11



WEIGHT - 14.1 Kg.

FUZE - Dopp. Z.S./60 FI

EJECTION CHARGE - 84 g gunpowder.

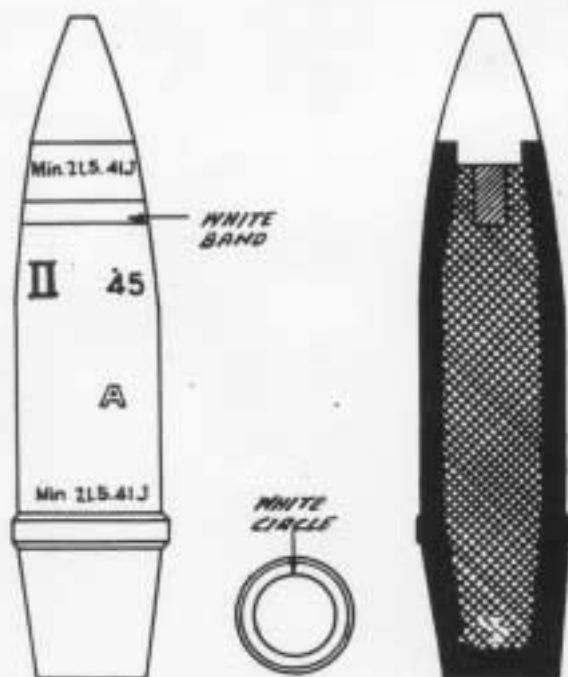
FILLING - 837g. DM/Nitrocellulose
- 50/50.

TIME OF EMISSION - 1 - 2 minutes

REMARKS - A Base ejection toxic
smoke generator

WHITE STENCILING
SUPERIMPOSED ON COLOR
MARKINGS

10.5 cm FH.Gr. WEISSRING



WEIGHT - 14.5 Kg

FUZE - AZ 23v (0-25)

FILLING - 1219 g CAP/PETH/Max
50/35/15

REMARKS

(1) The CM/HE Insert is loaded
via the threaded-on nose.

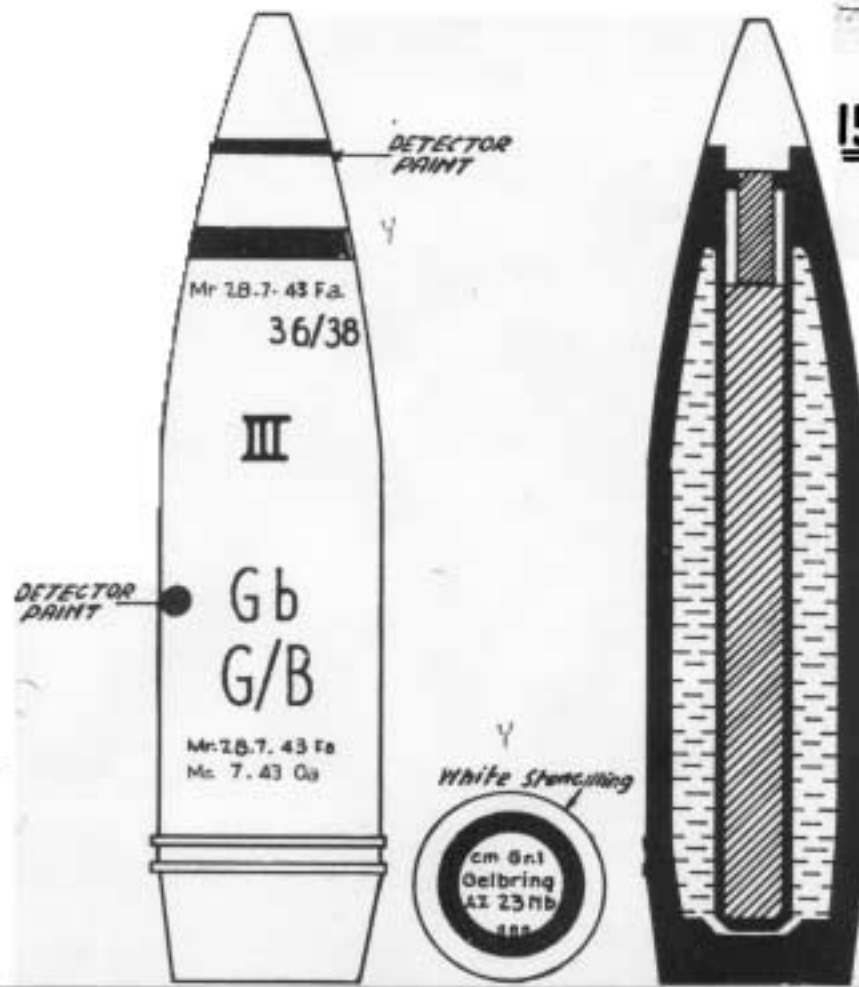
(2) A similar round, the Gr 19
Weissring for the 10cm Kanone
18 has also been found and
examined. It has double driving
bands.

15 cm. Gr.19 GELBRINGWEIGHT - 37.4 Kg.FUZE - AZ 23 NbCY FILLING - 3500cc. (4-Gkg)

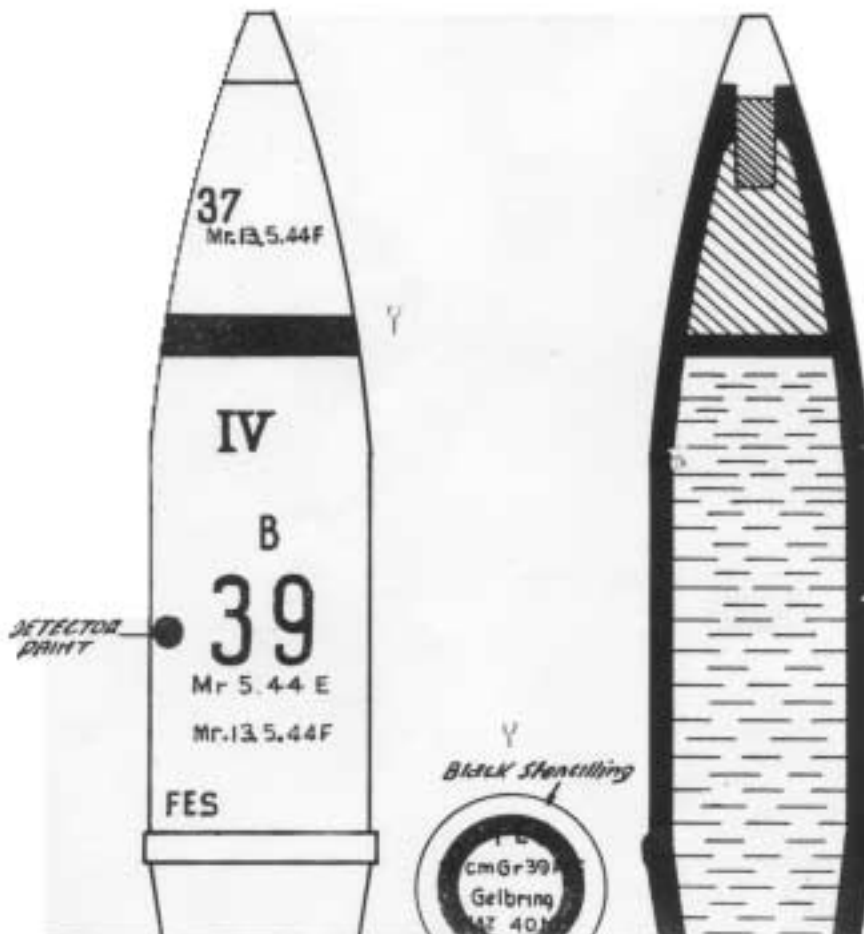
Mustard-Arsinöl (Winterlost)

HE FILLING - 572g PETN/Max

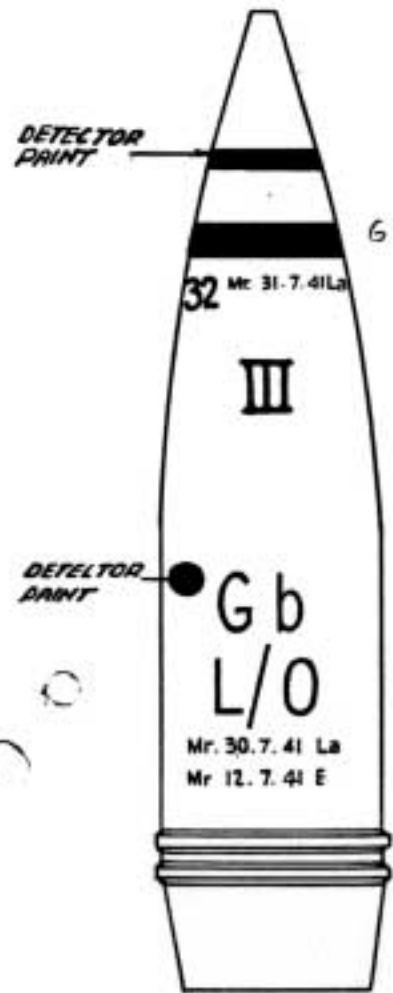
60/40

REMARKS - This shell is for
ground contamination.15 cm. Gr.39 GELBRINGWEIGHT - 35.9 Kg.FUZE - KI AZ 40 NbCY FILLING - Mustard-Arsinöl
(Winterlost)HE FILLING - 460g PETN/Max

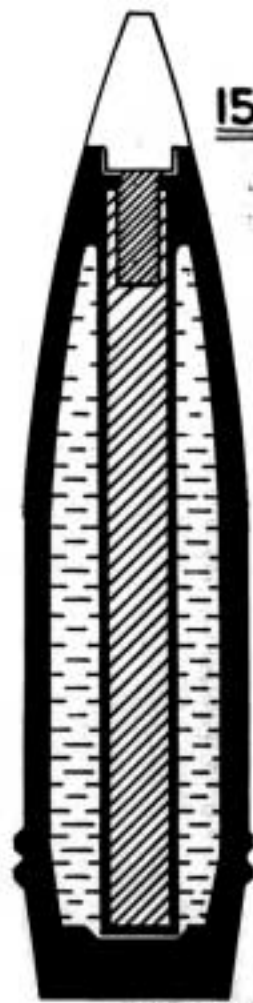
50/50

REMARKS - This shell is for
ground contamination

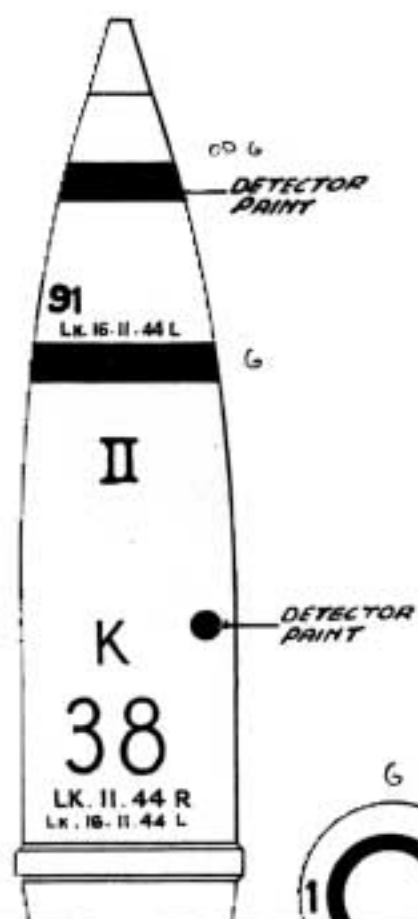
15cm. Gr.19 GRÜNRING



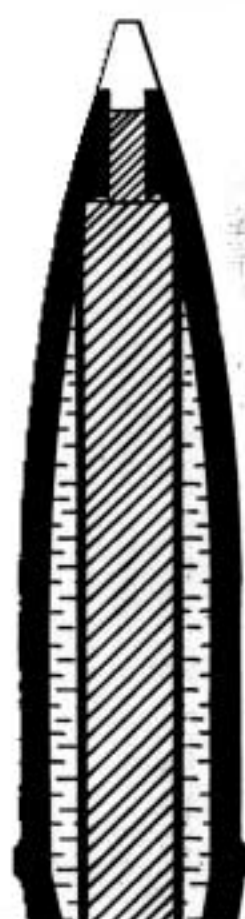
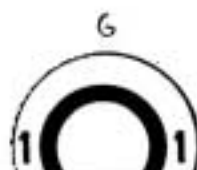
WEIGHT 36.8 Kg.
FUZE - AZ 23 Mb
CW FILLING - 3500 cc. Mustard
HE FILLING - 580g PETH/Max
 70/30



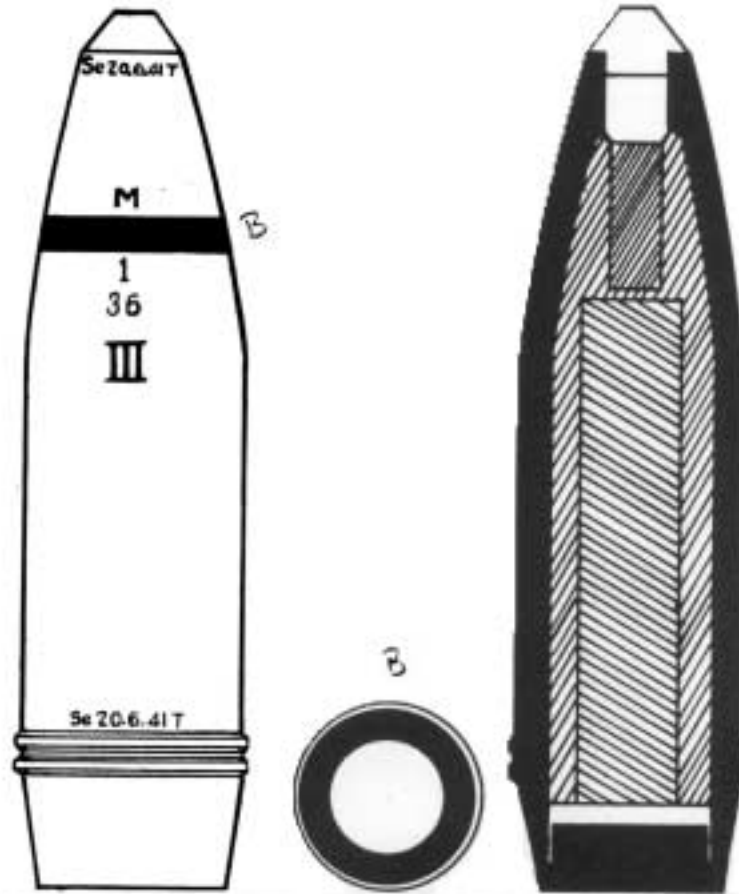
15cm Gr38 GRÜNRING 1.



WEIGHT - 38.1 Kg.
FUZE - K1 AZ 40 Mb
CW FILLING - 2.9 Kg of
 Nitrogen Mustard (HN-3)
HE FILLING 2.1 Kg of RDX/
 MAX 95/5

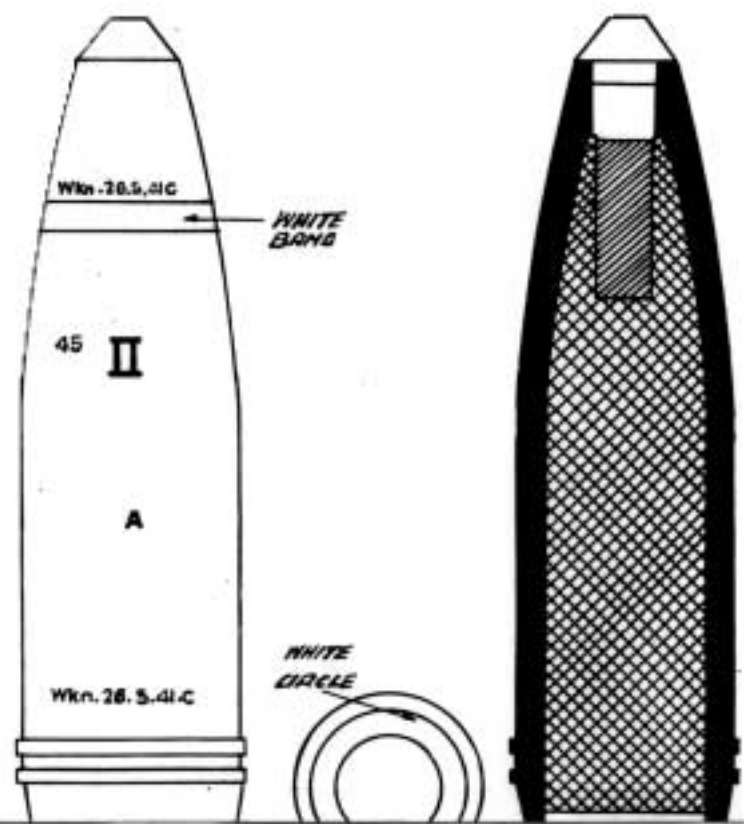


15cm.Gr.19 BLAURING 1.



WEIGHT - 42.3 Kg.
FUZE AZ 23 umg.(0.15)
CM FILLING - Central core of 1485g DM 90%
HE FILLING - 2338g PETN/Max - 75/25 Surrounding the DM
REMARKS - CM/HE insert loaded via the threaded-on base plate

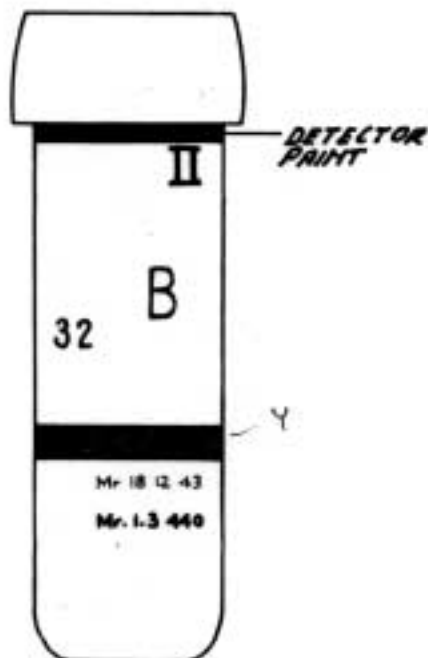
15cm.Gr.19 WEISSRING



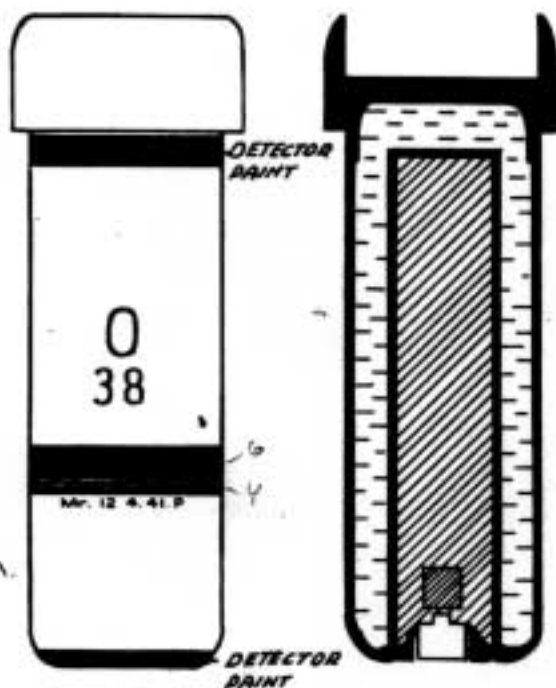
WEIGHT - 42.5 Kg
FUZE - AZ 23 umg.(0.15)
FILLING - 3.5 Kg CAP-50%
PETN 35
MAX 15
REMARKS - CM/HE insert loaded via the threaded-on base plate

10cm Wgr. 35 St. GELBRING

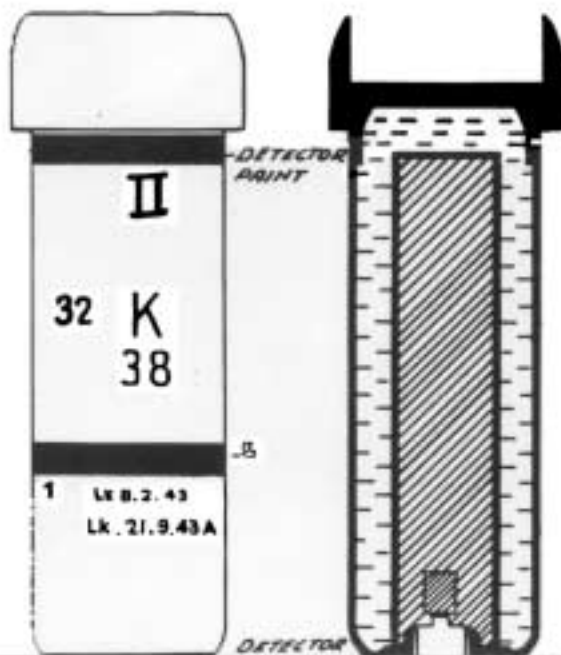
WEIGHT - 6.8 Kg
EUZE - Wgr Z.38
CM FILLING - 1.5Kg Mustard
 Arsinöl (Minterlost)
H.E. Filling - 50g PETH/Max 60/40

15 cm. Wgr. 41 GELBRING

WEIGHT - With Motor 34.3Kg.
 Less Motor 15.0Kg
EUZE - Bd Z. Dov.
CM FILLING 3250cc Mustard-
 Arsinöl
HE FILLING 112 g PETH/Max
 90/10
REMARKS - Shown Without
 Rocket Motor

15cm. Wqr. 4l w. Kh GRÜNRING-GELBHEIGHT -FUZE -CY FILLING - 2350 cc MustardHE FILLING -

REMARKS - Only unfused heads without bursters have been found but presumably the weight, fuze and burster are similar to the Grünring I rocket

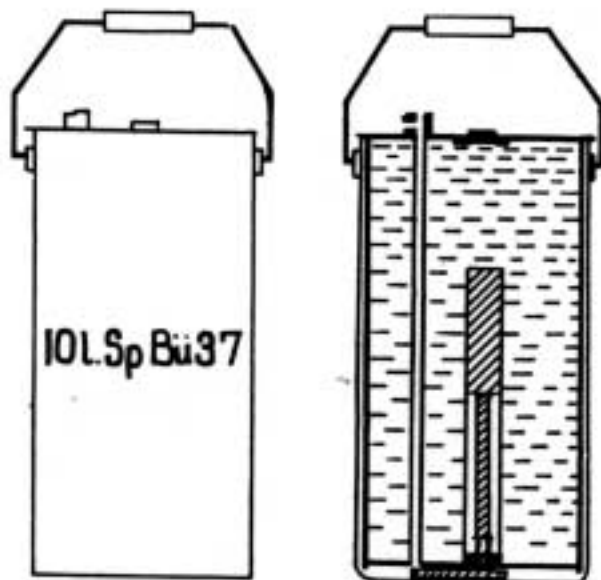
15cm. Wqr 4l w. Kh GRÜNRING I

HEIGHT - 34.4 Kg (with motor)
15.1 Kg (without motor)

FUZE - Bd. Z. Dov.CY FILLING - 2370 cc Nitrogen Mustard (HN-3)HE FILLING - 1.41 Kg PETN/Max 90/10

REMARKS - This round may be found marked K instead of K.
MKh 38

10.1 Sp. Bü 37 GELBRING

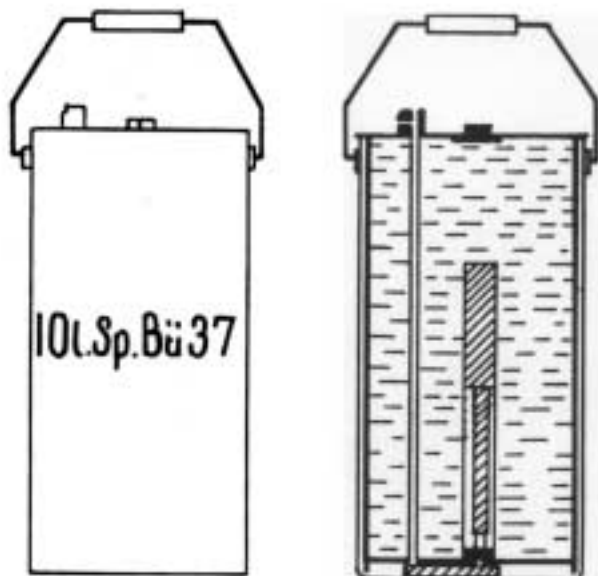


Scale 1:7

- WEIGHT - 19.75 Kg
- FUZE - Zt. Z. f. Sp. Bü 37
- CY FILLING - 13.6 Kg Mustard
- HE FILLING - 35g TNT
- EJECTION CHARGE - 30g Gunpowder

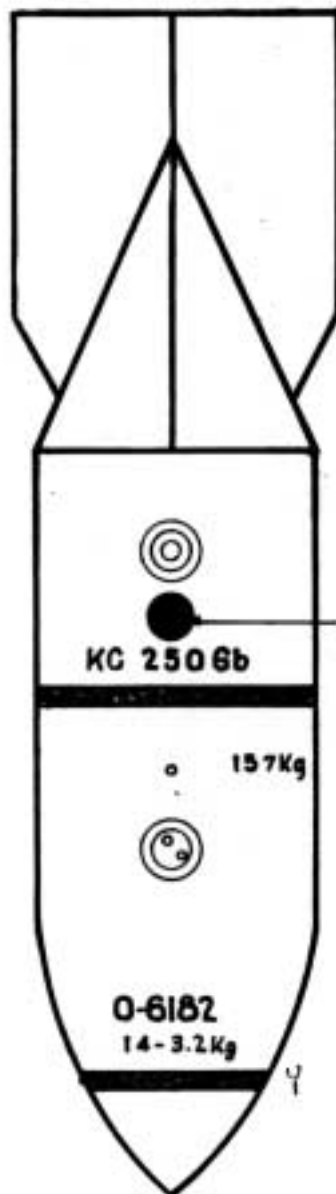


10.1 Sp. Bü 37 DOPPEL GELBRING



- WEIGHT -
- FUZE -
- CY FILLING - 10.4 kg Thickened Mustard
- HE FILLING -
- EJECTION CHARGE -
- REMARKS - The burster etc. is presumed to be the same as in the Single Yellow Ring Mine.

PAINT

KC 250 Gb.KC 250 GbWEIGHT - 157 Kg.FUZE - E1 AZ 26CY FILLING - 100 Kg MustardHE FILLING - 3.2 Kg TNT.REMARKS - May be filled 'O' or 'B'

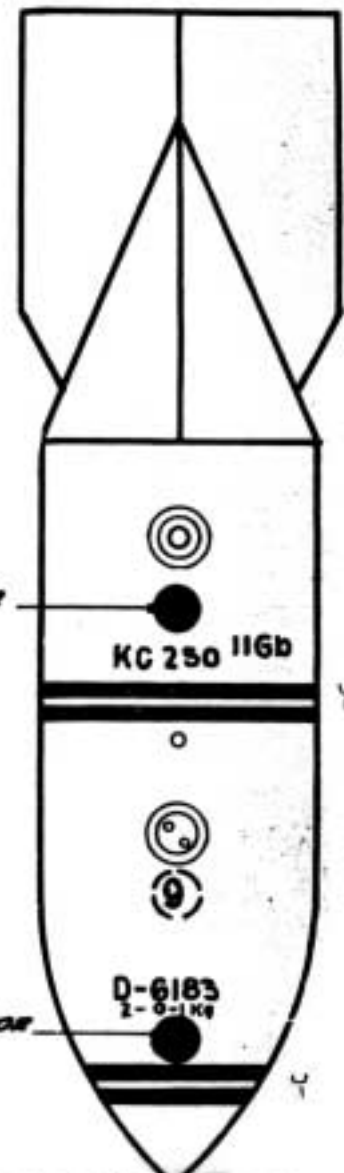
KC 250 Gb

DETECTOR
PRINT

157Kg

O-6182

14-3.2Kg

KC 250 II GbKC 250 II GbWEIGHT - 160 Kg.FUZE - E1 AZ 9 or 59 aCY FILLING - 100 Kg Thickened MustardHE FILLING - 0.1 Kg Picric AcidREMARKS - May be filled 'O' or 'E'

KC 250 II Gb

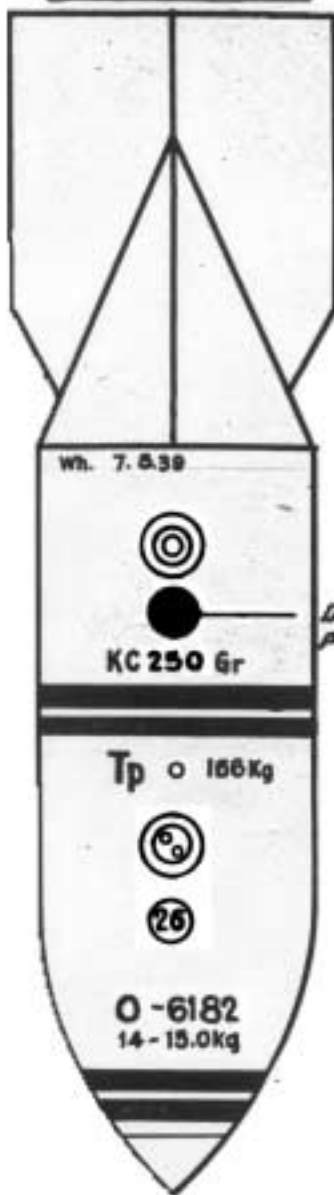
DETECTOR
PRINT

O-6183

1-0-1Kg

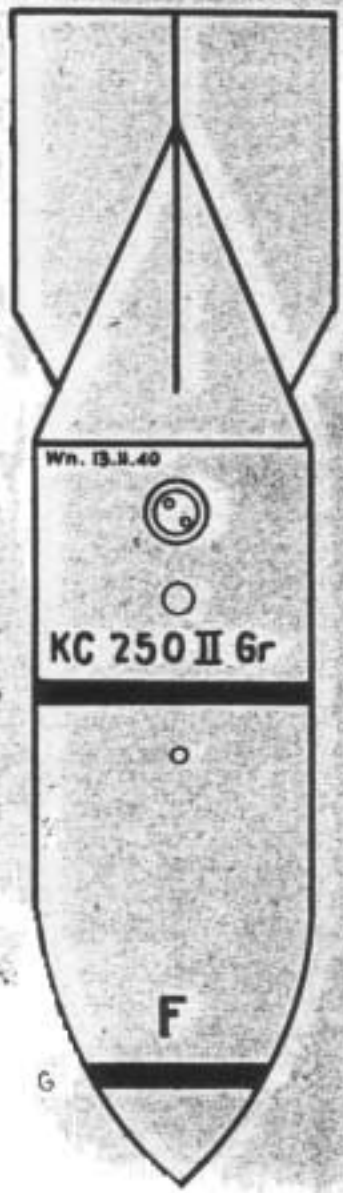
DETECTOR
PRINT

KC 250 Gr.

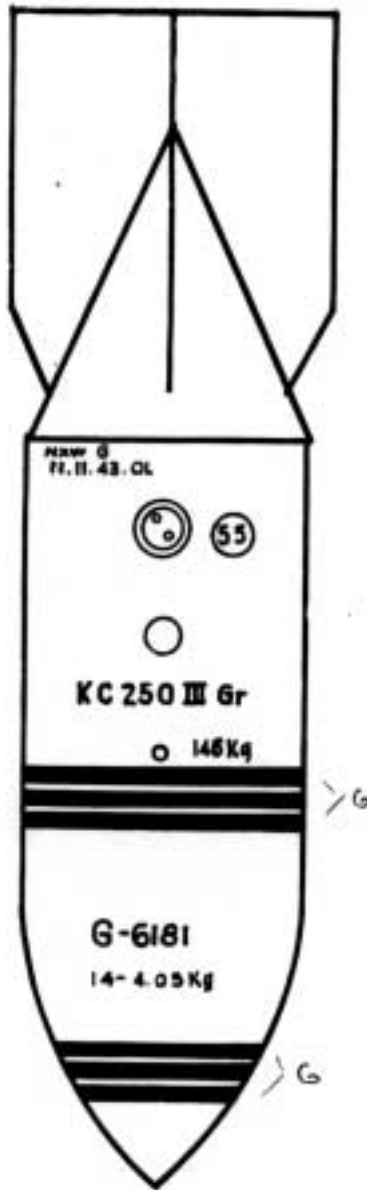
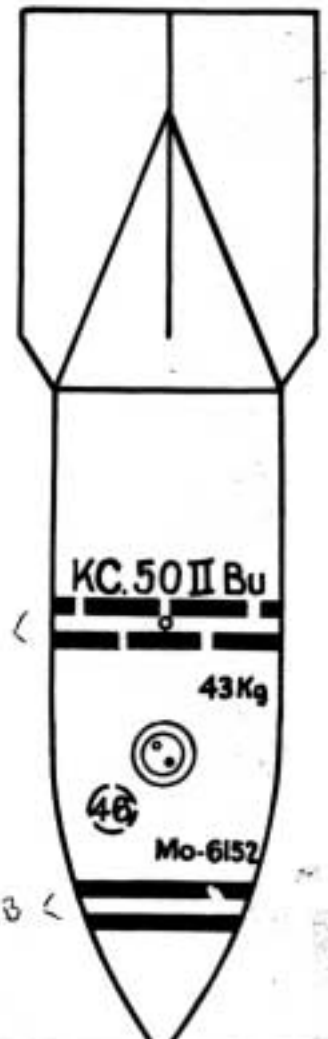


KC 250 Gr
WEIGHT-166Kg
FUZE-EL AZ 26
CW FILLING-100 Kg Mustard
HE FILLING-15.5 Kg TNT.
REMARKS-May be filled O or B

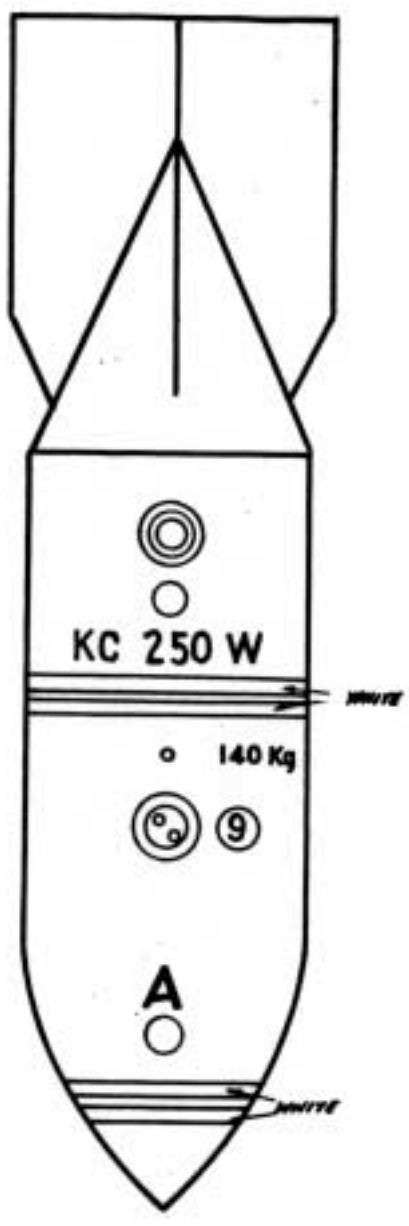
KC 250 II Gr.



KC 250 II Gr.
WEIGHT-160 Kg
FUZE EIA 53
CW FILLING-100 Kg Phosgene
HE FILLING-0.9Kg TNT
REMARKS Nose of Bomb
may be marked F6184
14-09Kg

KC250 III Gr.KC 250 III GrWEIGHT - 146 KgFUZE - EI. AZ 55DM FILLING - 86 Kg TabunHE FILLING - 4.05 Kg TNTREMARKS - May be filled 6 or 6aKC 50 II Bu.KC 50 II BuWEIGHT 43 KgFUZE - EI AZ 46FILLING - 13 Kg DM / Nitrocellulose 50/50TIME OF EMISSION - 4-6 MinutesREMARKS - A tail emission toxic smoke generator which functions on impact

KC 250W



KC 250 W
WEIGHT - 140 Kg.
FUZE - EI AZ 9
CY FILLING - 100 Kg CAP
HE FILLING - 0.15 Kg PICRIC ACID
REMARKS - Nose of bomb may be
MARKED A-6183
2-015 Kg

SECRET

Copy No. 65...

SI A.Gc/4630/Ord.4

21 Army Group Ammunition Bulletin No. 57

Item 732 - 736

This bulletin is concerned with German C.W. amm only. Attention is drawn to the following item which has been previously published, ref Bulletin 36, item 710.

John L. Foye Lt Col
Brigadier,
D.O.S.

Crd,
Rear HQ, 21 Army Gp,
E. M. A.
27 May 45.

Distributions: Limited to IOCs and I2s.

ITEM 732 EMPLOYMENT OF GAS SHELLS

The following has been extracted from the "German Field Manual - Employment of Gas Shells, All Arms" dated 22 April 1942.

Gas shells are divided into two types:

- (a) Chemical shells with considerable HE effect; Gas/HE shell.

The splinter effect of these shells may amount to or even exceed 50% of that of a pure HE shell. They contain approximately equal amounts of explosive and gas. Both non-volatile agents are dispersed in clouds and are non-permanent agents. The cloud is carried by the wind and, in place of shattering upon the wind, it can remain effective for many hours. The loud noise of the explosion is almost indistinguishable from that of an HE shell, its actual gas nature is largely concealed.

- (b) Chemical shell with slight HE effect; true gas shells.

Usually the gas clouds are faintly visible. However, climatic conditions and the type of the shell considerably limit this visibility.

Notes of action

Shell blue ring (DC). Delay on putting on respirator, which may arise as a result of the delayed action (latent effect) leads to vomiting and may make the continued wearing (of the respirator) impossible. It may may thus be left open for choking gases.

Employment

In the case of surprise attacks (Vergewerbungen) and harassing bombardments (Belagerungsschiessen) blue ring and green ring (mottled ring bombardment - Belagerungsschiessen), and blue ring or green ring, can be fired; yellow ring shells only be fired if there is no intention of an advance by our own troops or if during the attack the target area can be avoided. When commencing a "mottled ring" shoot, blue ring amm should as principle be fired before the green since the enemy should be surprised with the blue ring and harassed in the wearing of the respirator during the subsequent bombardment.

STOUSA.

/ITEM 732

INSTR 710

MARKING OF GERMAN GAS AMM

The following markings of German gas amm have been obtained from G(T) & CW, 21 Army Gp and through Ord channels.

When munitions suspected of containing gas are located the following procedure will be followed.

- (1) The location, markings and descriptions and any other relevant details will be notified immediately to formations concerned with copy to DCS 21 Army Gp.
- (2) Pending the inspection of this amm by an officer of a Chemical Warfare Section, it will not be moved and the area will be suitably marked with "Signs warning gas".
- (3) Disposal instructions will be issued later.

German Gas Amm

1. Shell

<u>Calibre</u>	<u>Basic Colour</u>	<u>Marking</u>	<u>Charging</u>	<u>Remarks</u>
(a) 35 mm	Clive green	1 white ring	tear gas (CAP)	
(b) 150 mm	" "	" " "	" " "	
(c) 150 mm	" "	1 blue ring	nose gas (DM)	
(d) 150 mm	" "	1 green ring	phosgene	
(e) 150 mm	" "	1 yellow ring	mustard gas	Unthickened
(f) 105 mm	" "	1 white ring	tear gas (CAP)	
(g) 105 mm	" "	1 blue ring	nose gas (DM)	
(h) 105 mm	" "	1 green ring	phosgene	
(i) 105 mm	" "	1 yellow ring	mustard gas	Unthickened
(j) 105 mm	" "	1 green ring & 1 yellow ring	- -	Green ring on base of shell and lettering: F.I. Gr. CHEVRING } Kl. A.Z.23 Pr. II

(k) 75 mm " " 1 white ring tear gas (CAP)

Note: The ring markings on these shell are ogival bands, approximately 1/2" in width and painted with bright paint.

2. Aircraft bombs

<u>Size</u>	<u>Marking</u>	<u>Charging</u>	<u>Remarks</u>
(a) 250 kg	2 white rings (MC 250 M)	tear gas (CAP)	
(b) 250 kg	1 green ring (MC 250 Gr)	phosgene	
(c) 250 kg	2 green rings (MC 250 11 Gr)	diphosgene	
(d) 250 kg	1 yellow ring (MC 250 Kb)	mustard gas	Unthickened
(e) 200 kg	2 yellow rings (MC 250 11 Gb)	mustard gas	Thickened
(f) 50 kg	2 white rings (MC 50 W)	tear gas (CAP)	
(g) 50 kg	2 blue rings (MC 50 B.v.)	nose gas (DM)	

Notes.....