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Artillery Ammunition



Artillery Ammunition

QF 25 PDR MK 2/1



This ammunition is fired with 25 PDR field guns MK-4 and produced in the following two types:

- a. HE
- b. Blank

Performance

Muzzle velocity (at charge 3)	457 m/s
Muzzle velocity (at super charge)	541 m/s
Average Chamber Pressure	3570 ± 80 kg/m ²
Maximum Range (at charge 3)	10,000 m
Maximum Range (at super charge)	12,000 m
Accuracy :	
PE (Range)	41 m
PE (Lateral)	7.8 m
Sound Level (Blank)	110-125 db

Technical Data

Cartridge case is made of drawn brass 70/30 and is filled as below:

- a. HE: (TNT)

Primer	No. 11 MK 4/3
Normal Charge	Triple base flash less propellant NQ 018 & NQ 050, weight 867 gm (Approx)
Super Charge	Triple base flash less propellant NQ/S 134-040, weight 1253 gm (Approx)

- b. Blank:

Primer	No. 1 MK 2
Charge	Gun powder G 12, weight 454 gm

Shell filling:

HE	TNT
Fuze	PDM - 557 M

Weight/length (approx):	HE	Blank
Complete round weight (kg)	14	2.550
Cartridge case length (mm)	293	293
Projectile weight (kg)	11.4	-
Projectile length (mm)	435	-

Packing (HE)

Inner:

Cartridges & shells sealed individually in polythene bags & plastic/chipboard containers

Outer

- i. 8 cartridge cases packed in a wooden box

Size of Box 60 x 32 x 38 cm

Weight of box 38 Kg

- ii. 4 shells packed in a steel box

Size of Box 48 x 21 x 20 cm

Weight of box 52 Kg HE

Packing (Blank)

- (i) 8 cartridge cases packed in a wooden box

Size of box 60 x 32 x 38 cm

Gross Weight of box 34 Kg

Colour & marking Service brown with yellow/white stencilling



Artillery Ammunition

105 mm HOW



This is a semi-fixed ammunition for various type of 105 mm Guns, namely: M1, M2A1, M2A2, M101/101A1, M102 & M106 & many others.

It is produced in following three versions:

- HE P4 MK-1:** Fired with normal bursting charge
- Smoke P2 MK-1:** Produces white smoke
- Blank P1A3:** Fired for ceremonial purposes and acclimatization

Performan: (HE & SMK)

Muzzle Velocity at full charge	494 m/sec
Average Chamber pressure	2500 kg / cm ²
Maximum range	11500 m

Accuracy (HE):

PE (Longitudinal)	34.5 m
PE (Lateral)	9 m
Sound Level (Blank)	110-125 db

Technical Data Weight

of complete round

HE	19.07 Kg
Smoke	19.77 Kg
Blank	3.75 Kg

Weight of Projectile

HE	15.2 Kg
Smoke	16.0 Kg

Shell Body Forged steel

Fuze (HE & Smoke) PD M557

Cartridge case Drawn Brass 70/30

Propelling charge

HE & Smoke Single base flash less & smokeless M1

Blank WM 017 double base Propellant

Primer P1 MK3

Packing

Shells and cartridges packed in chipboard container, two containers in a wooden/steel box:

Size of box	94.5 x 31.5 x 19.5 cm
Weight of box	55 Kg (HE & Smoke)
	30 Kg (Blank)
Colour & marking	Service brown with yellow/white stencilling

Artillery Ammunition

122 mm HOW HE (Type-54)



This is a semi-fixed ammunition for 122 mm Howitzer, type 1954

Performance: (at full service charge)

Muzzle Velocity at full charge	515 m/sec
Average Chamber pressure	2350 kg/cm ²
Maximum range	11800 m
Chamber pressure for performance proof tests.	
Strength	2580 ± 40 kg/cm ²
Charge stability	2580 ± 40 kg/cm ²
Detonation	2350 kg/cm ²
Accuracy:	
PE (R) / mean (R)	≤ 1/150
PE (Lateral)	≤ 15 m

Technical Data

Weight of complete round	27.36 Kg (Approx)
Weight of projectile	21.76 Kg
Shell body	Forged steel
Main charge	3.528 Kg TNT
Fuze	LIU-4 PD Type
Cartridge case	Drawn Brass 70/30
Propelling charge	This consist of nine charge system of single base propellant
Weight of propellant charge	2.10 Kg
Primer	P-304 A1 Percussion type or D-9

Packing

Each round packed in steel box, Fuze is packed separately in plastic container. Charge packed in a brass cartridge case and then packed in a chipboard container.

Size of box (L.W.H)	109.5 x 16.5 x 21cm
Gross weight	42.7 Kg
Color & marking	Service brown with yellow/white stencilling



Artillery Ammunition

122 mm HOW HE D-30 (RRC)

This is semi-fixed ammunition for 122 mm Howitzer, D-30



Performance: (at full service charge)

Muzzle Velocity	690 m/s
Average Chamber pressure	2500 Kg/cm ²
Maximum range	15300 m
Chamber pressure for performance proof tests:	
Strength	2760 ± 40 Kg/cm ²
Charge stability	2760 ± 40 Kg/cm ²
Detonation	2500 Kg/cm

Accuracy:

PE (R) / mean (R)	≤ 1/425
PE (Lateral)	≤ 12 m

Technical Data

Weight of complete round	28.5 Kg (approx)
Weight of projectile	21.76 Kg
Shell body	Forged steel
Main charge	3.528 Kg TNT
Fuze	LIU-4, PD type
Cartridge case	Drawn Brass 70/30
Propelling charge(RRC)	This consists of five charge system of single base propellant

Weight of propellant

Reducable Reduce Charge	2.5 Kg
Full Service Charge	3.5 Kg
Primer	D-5

Packing

Each round packed in steel box, Fuze is packed separately in plastic container. Charged packed in a brass cartridge case and then packed in a chipboard container.

Size of box (L.W.H)	109.5 x 16.5 x 21 cm
Gross weight	43.76 Kg (Approx)
Colour & Marking	Service Brown with Yellow / White Stencilling.



Artillery Ammunition

130 mm "G" HE



This is a long range separate loading variable charge ammunition to be fired through Soviet M46 and Chinese type 59 and 59-1 guns.

Performance (at full Service Charge)

Muzzle Velocity	930 m/sec
Average Chamber Pressure	3150 kg/cm ²
Max. range at full charge	27490 meters
Chamber pressure for performance proof tests:	
Strength	3560 + 50 kg/cm ²
Charge stability	3560 + 50 kg/cm ²
Detonation	3150 kg/cm ²
Accuracy:	
PE (R) / mean (R)	≤ 1 / 220
PE (Lateral)	≤ 18 m

Technical Data

Weight of Complete Round	60.0 Kg (Approx)
Weight of filled projectile	33.4 Kg
Projectile	Forged steel shell
Main Charge	3.44 Kg TNT (Approx)
Fuze	LIU-5 PD type or Proximity PF-1A
Cartridge case	Drawn Brass 70/30
Propelling charge	This ammunition is fired using either a full or reduced charge. The full variable charge as two charge zones, while the reduced variable charge has three zones
Charge weight:	
i. Reducible Reduce charge (RRC)	6.7 Kg (Approx)
ii. Reducible Full charge (RFC)	12.90 Kg (Approx)
Primer	D -5 Percussion type

Packing

Each round packed in steel box, Fuze is packed separately in plastic container. Charge packed in a brass cartridge case and then packed in a chipboard container.

Size of box	93 x 41.6 x 21.5 cm
Weight of box	81 kg (RRC), 88.5 kg (RFC)
Colour & marking	Service brown with yellow/white stencilling



Artillery Ammunition

155 mm HOW HE M 107



This is separate loading ammunition which is fired from Howitzer M1, M1A1, M114, M-198 & M-109 A2

Technical Data

Weight of projectile	43.2 kg (as fired)
Weight of filling	6.62 kg TNT
Fuze	PDM557 or Proximity PF-1A
Propelling charge	Single base propellant M1SP, MIMP & M6
Green bag (Charge - 5)	M3A1 (Range 10000 m)
White Bag (Charge - 7)	M4A2 (Range 14600 m)
Charge 8W (Charge - 8)	M119A2 (Range 18100 m)
Primer	M-82 Percussion type

Performance (With charge M119A2 - white bag) with Gun M198

Muzzle Velocity	684.3 m/sec
Average Pressure	2350 kg/cm ² (Max Pressure 2630 ± 50 Kg/cm ²)
Max Range	18100 m
Chamber pressure for performance proof tests:	
Strength	2630 ± 50 kg/cm ²
Charge stability	2630 ± 50 kg/ cm ²
Detonation	2350 kg/cm ²
Accuracy:	
PE (Range)	46 m
PE (Lateral)	15 m

Packing

	8 shells packed in a wooden pallet.
	Propellant charges & Fuzes supplied in steel container
Colour & marking	Service brown with yellow / white stenciling



Tank & Anti-Tank Ammunition



Tank Ammunition

105 mm HE/TK P1A1



This is a general purpose high explosive round. It can be fired from 105mm L7 series rifled tank gun fitted on many current MBTs such as Leopard, Vickers,

MK 1&3, M60 (Manufactured under license in USA as M68), early M1, updated M 48, Merkava and re-gunned T-54 series and T-69.

Performance

Muzzle velocity	683 ±15 m/s
Average chamber pressure	1800 kg/cm ²
Max Range	10400 m
Dispersion:	
PE/Range	1/190 m (max)
PE Lateral	15 m (max)
Accuracy at 1000 m:	
SD (Vertical)	0.36 meters
SD (Horizontal)	0.36 meters

Technical Data

Length of Complete Round	1020 mm (Approx)
Weight of Complete Round	24.21 Kg
Shell Body	Forged Steel 12 Kg (Approx)
Fuze	PDM 557 percussion type
Length of Projectile	490 mm
Weight of Projectile	14.94 Kg (with fuze)
Weight of Filling	TNT 2.04 Kg
Cartridge Case	Drawn Brass 70 / 30
Propelling Charge	M1-MP
Weight of Propellant	3 ± 0.10 Kg
Primer	Electric type L20-A1

Packing

Each round is placed in a chip board container and further packed in a steel box.

Size of box	118 x 21 x 19 cm
Gross weight	46.9 kg (Approx)
Colour & marking	Service brown with yellow / white stencilling



Tank & Anti Tank Ammunition

105 mm APFSDS P1A1



APFSDS (Armour Piercing Fin-Stabilized Discarding-Sabot) is a Kinetic Energy Fin Stabilized Round and can be fired from 105mm L7 series rifled tank gun fitted on many current MBTs such as Leopard, Vickers, MK 1&3, M60 (Manufactured under license in USA as M68), early M1, updated M 48, Merkava and re-gunned T-54 and T-69 series.

Performance

Muzzle velocity	1490 m/s
Average chamber pressure	4340 kg/cm ²
Effective Range	3500 meter
Accuracy at 1000 m:	
SD (Vertical)	0.3 m
SD (Horizontal)	0.3 m
Penetration	300 mm, against RHA target at zero obliquity, confirming to DEF-STAN 95-13/2

Technical Data

Length of Complete Round	946 mm
Weight of Complete Round	18.91 Kg
Projectile	Tungsten Alloy core with discarding sabot and fin stabilization
Length of Projectile	486 mm
Weight of Projectile	6.12 Kg
Cartridge Case	Drawn Brass 70/30
Propelling Charge	Triple base multi tubular NQ/M .046
Weight of Propellant	5.62 Kg (Nominal)
Primer	Electric Type L20 A1
Penetrator (Tungsten Alloy)	Density 17.4 ± 0.15 gm/cm ³

Packing

Each round placed in a chip board container and further packed in a steel box:

Size of box	105 x 20 x 19 cm
Gross weight	37.75 Kg (Approx)
Colour & marking	Service brown with yellow / white stencilling



Tank Ammunition

125 mm HE FS TK



This is a general fin stabilized round with High Explosive and can be fired from 125 mm smooth bore tank guns, T-80 UD (Ukraine), Al Khalid (Pakistan), PT-01 (Poland), T-85 (China) or equivalent.

Performance (at full charge)

Muzzle velocity	850 m/s
Chamber pressure	3500 kg/cm ² (Approx)
Max Range	10000 m
Accuracy at 1000 meters:	
SD (Vertical)	0.3 m
SD (Horizontal)	0.3 m

Technical Data

Length of Complete Round	1106 mm
Weight of Complete Round	34 Kg (approx)
Shell Body	Forged Steel
Fuze	DRH-05, PD type
Length of Projectile	700 mm
Weight of Projectile	23 Kg
Weight of Filling	TNT 3.051 Kg
Case	Semi combustible cartridge case with steel base and cover
Propelling Charge	Consist of single base propellant in tubular bundle and granular form, 14/19, (16/1.35 Tubular)
Primer	Electric Percussion No. DJD-2 or P ₂

Packing

Charge structure is packed in fibre glass sealed humidity proof container and projectile is packed in steel box. Fuze is packed separately and is placed at one end of the same steel box.

Size of box (L.W.H)	67 x 44 x 25.5 cm
Gross weight of box	59 Kg
Colour & marking	Service brown with yellow / white stencilling

Tank & Anti Tank Ammunition

125 mm APFSDS/T



APFSDS (Armour Piercing Fin-Stabilized Discarding-Sabot) is a Kinetic Energy Fin Stabilized Round and can be fired from 125mm smooth bore tank guns, T- 80 UD (Ukraine), Al Khalid (Pakistan), PT-91 (Poland) and T-84 (China) or equivalent.

Performance

Muzzle velocity	1730 ± 5 m/s
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Chamber pressure at 21°C	4850 ± 50 kg/cm ²
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Effective Range	2000 m
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Accuracy at 1000 m:

SD (Vertical)	0.3 m
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SD (Horizontal)	0.3 m
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Penetration	460 mm, against RHA target at zero obliquity, confirming DEF-STAN 95-13/2
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Technical Data

Length of Complete Round	1086 mm
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Weight of Complete Round	21.47 Kg
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Projectile	Tungsten Alloy core with discarding sabot and fin stabilization
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Length of Projectile	555 mm
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Weight of Projectile	7.37 Kg
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Penetrator (Tungsten alloy)	Dual density: Tail ≥ 17 gm/cm ³ , Head ≥ 17.5 gm/cm ³
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Main Cartridge Case:

Case	Semi combustible cartridge case with steel base and cover
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Propelling Charge	16/19 Single base granular
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Weight of Propellant	6 Kg
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Primer	Electric/Percussion Primer No. 2
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Secondary Cartridge Case:

Case	Semi combustible with projectile
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Propellant Charge	Granular 16/19 2.50 Kg and Tubular 19/1-25 0.8 Kg
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Packing

Main Charge Structure and Secondary Charge Structure are packed separately in fiber glass sealed humidity proof container then are packed in a steel box.

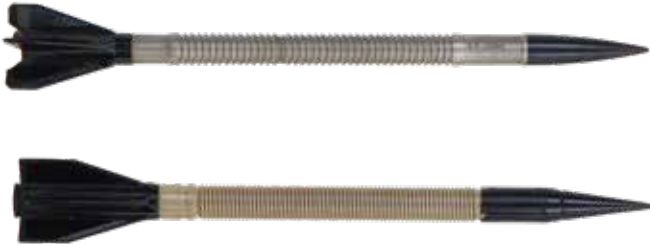
Size of box	82 x 50 x 26 cm
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Gross weight	53 Kg (Approx)
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Colour & marking	Service brown with yellow /white stenciling
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Tungsten Alloy Penetrators & Rod



POF has established capacity for producing Single/Double Density Tungsten Alloy Cores (Penetrators) of all types. At present following type of penetrators are being produced:

Caliber	Density (gm/cm ²)	Specification	Penetration
100mm APFSDS	17.4 (Approx)	W91.5NE	300 mm Min
105mm APFSDS	17.4 (Approx)	W91.5NE	300 mm Min
125mm APFSDS	17-18 (Approx)	WMB-101 JTS	460 mm Min
Tungsten Alloy Rods	Ø = upto 35 mm	Density Range	
(W+Ni+Fe or W+Ni+Cu)	L = upto 800 mm	17-18 gm/m ³ (Approx)	

Strict Quality Control following International Quality Management System yields Penetrators of highest quality.

Each Penetrator is checked for internal flaws and surface cracks applying latest Internationally accepted Ultrasonic Flaw Detection and Dye Penetration Inspection methods.

Important dimensions are checked with electronic probes and compared with Master Standard reference by means of a projector.



Rockets



Anti Tank Rocket

40 mm HEAT P1 Mk1 (RPG-7P)



This is an anti armour grenade used against tanks, self propelled guns and fortifications. It is fired from 40mm Recoilless Launcher, type 1969-1 or equivalent by loading through the muzzle end.

Performance

Maximum range	500 m
Effective range	300 m
Maximum velocity	300 m/s
Accuracy at 300 meters:	
SD (Horizontal)	0.5 m
SD (Vertical)	0.5 m
Penetration	300 mm thick Armour plate

Technical Data

Caliber	40 mm
Type of Warhead	HEAT
Length of rocket	925 mm
Weight of rocket	2.2 Kg

Packing

Each rocket placed in a polythene sleeve/plastic container and 6 rockets are packed in a wooden box:

Size of box	81 x 25.4 x 46.7 cm
Weight of box	35 Kg
Colour & marking	Service brown with yellow / white stenciling



Anti Tank Rocket

73 mm HE SPG-9



73 mm FSRA HEAT round is a Fin Stabilized Rocket Assisted High Explosive Anti Tank ammunition fired from its smooth bore Recoilless Launcher 73mm.

Performance

Maximum range	4500 m
Effective range	800 m
Muzzle Velocity	435 m/s
Accuracy at 800 meter:	
SD (Vertical)	0.5 m
SD (Horizontal)	0.5 m
Dispersion at 4500 m	PE (R) = 1/140
	PE (L) = 1/500
Rate of Fire	6 rounds per minute

Technical Data

Length of rocket	1060 mm (Approx)
Weight of rocket	4.5 Kg (Approx)
Weight of filled shell	3.2 ± 0.04 Kg (without fuze) 3.295 + 0.081 Kg (with fuze)
Weight of bursting charge	0.765 + 0.055 Kg
Primer	Electric type
Fuze	GO-2 Point Detonation Impact Fuze or V9 P1 A2

Packing

Each warhead assembled with rocket motor placed in a polythene sleeve, while the expelling charge is separately placed in a nylon cylinder. 6 complete sets packed in a wooden box:

Size of box	102 x 50 x 32 cm
Weight of box with 6 rockets	48 Kg (Approx)
Colour & marking	Service brown with yellow/white stencilling



Anti Tank Rocket

73 mm FSRA HEAT SPG-9 (RAAD)



73 mm FSRA HEAT round is a Fin Stabilized Rocket Assisted High Explosive Anti Tank ammunition fired from its smooth bore Recoilless Launcher 73 mm.

Performance

Maximum range	1300 m
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Effective range	800 m
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Velocity (rocket booster) at 300 m	690 ± 20 m/s
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Muzzle velocity	415 ± 12 m/s
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Penetration	300 mm, against RHA target at zero Obliquity, conforming to DEF-STAN 95-13/2
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Accuracy at 800 meter:

SD (Horizontal)	0.5 m
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SD (Vertical)	0.5 m
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Technical Data

Length of rocket	1131 mm
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Weight of rocket	4.6 Kg
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Weight of projectile	2.7 Kg
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Type and weight of charge	RDX /WAX, 0.31 Kg
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Primer	Electric type
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Base Fuze	Bottom part VP 9
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Nose Fuze	Head part VP 9
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Packing

Each warhead assembled with rocket motor placed in a polythene sleeve, while the expelling charge is separately placed in a nylon cylinder. 6 complete sets packed in a wooden box:

Size of box	102 x 50 x 32 cm
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Weight of box with 6 rockets	45 Kg (Approx)
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Colour & marking	Service brown with yellow/white stencilling
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Rockets

Rocket 122 mm HE (MBRL) YARMUK

Rocket 122mm HE (MBRL) is a ground to ground free flight artillery rocket fired from multi-tube launcher. It is used against personnel and light materials providing both fragmentation and blast effect.



Performance

Muzzle velocity	400 m/s
Max. time of flight	78 sec
Max. range without brake ring	20580 m
Max. range with small brake ring	15890 m
Max. range with large brake ring	11990 m

Accuracy:

PE range and deflection	80 meters and 168 meters respectively when fired at an elevation of 833 R 49 meters and 93 meters respectively when fired at an elevation of 750 R Black blast of rocket 50 m rear Functioning
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Technical Data

Length of complete rocket	2875 mm
Weight of complete rocket	66 Kg (approx)
Weight of filled warhead	18.4 Kg without Fuze 19.4 Kg with Fuze
Weight of bursting charge	6.4 Kg Compo B
Weight of propellant	20.4 Kg double base

Packing (Without Links)

Each rocket in a polythene sleeve and subsequently in a wooden box. Two brake rings kept in a pocket in the lid of the wooden box. Nose Fuze packed in a separate chipboard container and also kept in the box:

Size of box	323 x 21 x 23 cm
Weight of box	90 Kg
Colour & marking	Service brown with yellow / white stencilling



Mortar Bombs



Mortar Bomb

60 mm HE P2A1



This bomb is fired with 60 mm Mortar Model 1979 and use against personnel, providing fragmentation and blast effect.

Performance

Muzzle velocity	170 m/s
Pressure:	360 kg/cm ²
Range:	2075 m
Accuracy:	
PE (Longitudinal)	1/70
PE (Lateral)	1/180

Technical Data

Complete Round

Weight with Fuze	1.37 Kg (Approx)
Length with Fuze	233 - 243 mm

Projectile

Body material	Cast Iron
Colour	Deep bronze green
Main Charge	TNT: DNN (42:58). 112 gm
Fuze	V 9 P1-A2 Impact fuze

Other Components

Primary cartridge	Double base propellant, WD-615
Augmenting charge	Double base propellant 5 ring shaped charges
Primer	No. 303 percussion type
Tail unit	10 steel fins

Packing

6 bombs are packed in waterproof chip/cardboard/plastic carrier with carrying handle and 3 x carriers (18 bombs) are further packed in a steel box:

Size of box	54.6 x 26.7 x 26.7 cm
Weight of box	39 Kg
Colour & marking	Service brown with yellow /white stencilling



Mortar Bomb

60 mm Smoke P2A3



This bomb is fired with 60 mm Mortar Model 1979 and is used to produce smoke for screening and spotting purposes.

Ballistics

Muzzle velocity	126 m/s
Pressure	260 ± 10 Kg/cm ²
Range:	1330 m
Accuracy:	
PE (Longitudinal)	1/160
PE (Lateral)	1/180
Smoke Duration	< 10 sec

Technical Data

Complete Round

Weight with Fuze	1.5 Kg (Approx)
Length with Fuze	240 ± 2 mm

Projectile

Body material	Cast Iron
Colour	Eau de nil – Sea Green
Main Charge	150 ± 20 gm (Approx)
Fuze	V 9 P1-A2 Impact fuze

Other Components

Primary cartridge	Double base propellant WD - 615
Augmenting charge	Double base propellant 3 ring shaped charges
Tail unit	10 steel fins

Packing

9 x bombs are packed in waterproof chip/cardboard carrier with carrying handle and 2 carries (18 bombs) are further packed in a steel box:

Size of box	61 x 27 x 26 cm
Weight of box	43 Kg
Colour & marking	Service brown with yellow / white stenciling



Mortar Bomb

60 mm Illuminating & Signal (Red & Green)



Canister Design Built In Fixed Delay (No Fuze)

These bombs are available in three types. Illuminating bombs are used for illumination during night missions while red & green bombs are used for signalling. Illuminating rounds are assembled with nylon/cotton parachute 840 mm, wide linked with a star Bi-metal wire rope covered with asbestos tube.

Performance

Star ejection height	183 m
Illuminating time:	
i. Illumination round	35 - 45 sec
ii. Signal rounds	8 - 12 sec
Illumination power	125,000 to 150,000 cd

Technical Data

Complete Round

Weight	1 Kg
Length	246 mm (Approx)
Diameter	60 mm
Color	White

Main charge:

i. Illuminating	SR 562
ii. Green Signal	SR 429
iii. Red Signal	SR 406

Projectile

Body material	Seamless steel tube
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Identification:

Illuminating	Parachute + Star
Signal Red	Red Star
Signal Green	Green Star

Other Components

Primary cartridge	Double base propellant WD 615, 3.2 gm
Augmenting charge	Double base propellant one ring shaped charges, 0.10 x 24/48 mm Weighting 3.1 gm
Percussion Primer	No. 303
Tail unit	10 steel fins

Packing

6 bombs are packed in waterproof chip/cardboard carrier with carrying handle. 3 x carriers (18 bombs) are further packed in a steel box:

Size of box	55 x 26 x 26 cm
Weight of box	30 Kg
Colour & marking	Service brown with yellow/white stencilling



Mortar Bomb

81 mm HE M57D A2



This bomb is used against personnel and light material providing both fragmentation and blast effect and is fired with Hotchkiss Brandt mortars of the following types:

- i) MO-81-61 C Short barrel
- ii) MO-81 -61 L Long barrel

Performance

Velocity	291 m/s
Pressure	570 kg/cm ²
Range:	4550 m max
Accuracy:	
PE (Longitudinal)	32 m
PE (Lateral)	7.5 m

Technical Data

Complete Round

Weight with Fuze	3.2 Kg (Approx)
Length with Fuze	382 mm (Approx)

Projectile

Body material	Forged steel
Colour	Olive drab or deep bronze green
Explosive charge	681 gm of TNT (Approx.)
Priming Load/Exploder	56 ± 0.5 gm TNT 80.2 (2 x Pellets)
Fuze	V 19 PA-A2, Detonating direct action type with optional delay of 0.05 sec.
Primary cartridge	Double base propellant
Augmenting charge	7 horse shoe charges containing double base propellant
Tail unit	10 Aluminium alloy fins

Packing

3 x bombs are packed in waterproof cardboard/plastic container with carrying handle and 2 carriers (6 bombs) are further packed in a steel box:

Size of box	46 x 23 x 32 cm
Weight of box	29 Kg
Colour & marking	Service brown with yellow /white stencilling



Mortar Bomb

81 mm Smoke M57 DA1



This bomb produces smoke for screening and spotting purposes and is fired with Hotchkiss Brandt mortars of the following types:

- i). MO-81-61 C Short barrel
- ii). MO-81 -61 L Long barrel

Performance

Velocity	291 m/s
Pressure	570 kg/cm ²
Range	4550 m max
Accuracy:	
PE (Longitudinal)	32 m
PE (Lateral)	7.5 m
Smoke duration	35 sec (minimum)

Technical Data

Complete Round

Weight with Fuze	3.2 Kg (Approx)
Length with Fuze	382 mm (Approx)

Projectile

Body material	Forged steel
Colour	Sea green or Eau-de-nil
Charge	650 ± 25 gm
Bursting charge	10 ± 3 gm CE (1 x Pellet)
Fuze	V 19 PA-A2, Impact & Delay 0.05 sec Optional

Other Components

Primary cartridge	Double base propellant
Augmenting charge	7 horse shoe charges containing double base propellant
Tail unit	10 Aluminium alloy fins

Packing

3 bombs packed in waterproof chipboard/cardboard carrier with carrying handle and 3 carriers (9 bombs) packed in a steel box:

Size of box	34 x 34 x 44 cm
Weight of box	50 Kg
Colour & marking	Service brown with yellow / white stencilling



Mortar Bomb

81 mm Illuminating, Signal (Red & Green)



Canister Design Built In Fixed Delay (No Fuze)

These bombs are used with 81mm mortar and are available in three types. Illuminating bombs provide illumination during night while red & green bombs are used for signaling.

Illuminating rounds are assembled with nylon parachute of 1000mm diameter linked with a star through a zinc/cadmium plated steel wire.

Performance

Illuminating:	Average delay time for ejection of star 15 ± 1.5 sec. Average burning time of star 50 ± 8 sec.
Signal Red & Green	Average delay time of ejection of star 6 ± 1 sec. Average burning time of star 10 ± 2 sec.

Technical Data

Complete Round

Weight	2.5 kg (Approx)
Length with Fuze	318 mm (Approx)

Projectile

Body material	Seamless steel tube
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Identification:

Illuminating	Parachute + Star
Signal Red	Red Star
Signal Green	Green Star

Main charge:

Illuminating	Composition SR 562
Signal Red	Composition SR 406
Signal Green	Composition SR 429

Other Components

Primary cartridge	Double base propellant
Augmenting charge	3 horse shoe type charges containing double base propellant for illuminating & 1 for signal (Red & Green)
Tail unit	10 Aluminum alloy fins

Packing

3 bombs packed in waterproof chipboard/cardboard carrier with carrying handle and 2 carriers (6 bombs) are further packed in a steel box:

Size of box	45.5 x 22.3 x 31.7 cm
Weight of box	25 Kg
Colour & marking	Service brown with yellow /white stenciling



Mortar Bombs

120 mm HE M 44 A2



This bomb is suitable for use with Mortar AM-50 (Brandt) with 1.75 meter barrel length and is used against personnel and light material creating fragmentation and blast effect.

Performance

Muzzle velocity at charge 7	331 m/s
Max pressure	820 kg/cm ²
Chamber pressure for performance proof tests:	
Strength	920±20 kg/cm ²
Charge stability	920±20 kg/cm ²
Detonation	820 kg/cm ²
Max. range	6745 m

Accuracy

PE (Range)	50 m
PE (Lateral)	13 m

Technical Data

Complete Round

Weight of projectile as fired	13.0 Kg
Length of projectile with Fuze	676 mm

Projectile

Body material	Forged steel
Colour	Deep bronze green
Exploder charge	TNT Pellets
Main Charge	TNT, 2.6 Kg
Fuze	V 19P A2, SQ / delay

Other Components

Primary cartridge	CL-3, Ballistite 74 gm (Approx)
Augmenting charge	7 charges of 75 gm (Approx) each of Ballistite GB Pa in Cellunyl horse shoe container
Tail unit	12 steel fins (6 pairs)

Packing

Each round packed individually in plastic tube alongwith fuze and aug charge (in plastic container) Two plastic tubes (two bombs) packed in a steel box:

Size of box	82.0 x 32.3 x 15.8 cm
Weight of box	42 Kg (Approx)
Colour & marking	Service brown with yellow/white stencilling



Mortar Bombs

120 mm Smoke M 44 A1



This bomb is suitable for use with mortar AM-50 (Brandt) with 1.75 meter barrel length and produces smoke for screening and spotting purposes.

Performance

Muzzle velocity at charge 7	331 m/s
Max pressure	820 kg/cm ²
Chamber pressure for performance proof tests:	
Strength	920 ± 20 kg/cm ²
Charge stability	920 ± 20 kg/cm ²
Detonation	820 kg/cm ²
Max. range	6745 m
Accuracy :	
PE (Range)	50 m
PE (Lateral)	13 m
Smoke duration	60 Sec

Technical Data

Complete Round

Weight of projectile as fired	13.0 kg
Length of projectile with Fuze	676 mm

Projectile

Body material	Forged steel
Colour	Eau de nil to shade 218 to BS - 381C
Exploser charge	C.E Pellets
Main Charge	2.6 kg
Fuze	V19 P A2, SQ / delay

Other Components

Primary cartridge	CL-3, Ballistite, 74 gm (approx)
Augmenting charge	7 charges of 75 gm. each of Ballistite GB Pa in cellulynyl horse shoe container
Tail unit	12 steel fins (6 pairs)

Packing

Each round packed individually in plastic tube alongwith fuze and aug charge (in plastic container) Two plastic tubes (two bombs) packed in a steel box:

Size of box	79.50 x 33.6 x 34.4 cm
Weight of box	47.10 Kg (Approx)
Colour & marking	Service brown with yellow/white stencilling



Mortar Bombs
Training (Inert)
 60, 81, 120 mm



Training (Inert) rounds are used to meet training needs of troops in short ranges at low cost. These bombs can be used minimum for 10 x times with charge of primary cartridges. These bombs are fired with their standard mortars.

Technical Data

Complete Round	60 mm	81 mm	120 mm
Weight with PRF (Kgs)	1.37	3.2	13
Length with PRF (mm)	240 ± 2	382	676
Projectile material	Cast Iron	Cast Iron	Forged Steel
Color	Artic blue	Artic blue	Deep saxe blue
Main charge	HES (Sand + Wax)	HES (Sand + Wax)	HES (Sand + Wax)
Fuze (PRF)	Alluminium Alloy	Alluminium Alloy	Alluminium Alloy
Primary Charge	Double base propellant	Double base propellant	Double base propellant
Augmenting charge	Nil	Nil	Nil
Range	180 ± 20	200 ± 20	200 ± 20

Packing

Size of Box (mm)	54.6 x 26.7 x 26.7	45.5 x 22.3 x 31.7	82.0 x 32.3 x 15.8
Weight of Box (Kgs)	39	29	42
No of Rds in box	18	06	02
Colour & Marking	Service brown with white stencilling		
Primary Packing	29.8 x 15.2 x 18.4 8 kg	26.0 x 7.4 x 21.5 4.50 kg	



Grenades,
Pyrotechnics,
Demolition,
Fuzes,
Primers &
Detonators



Grenade Hand

AP HE P2 A1 (ARGES-84)



This is designed to inflict massive damage against soft targets within its blast radius of 20 meters.

Technical Data

Weight of the grenade	480 ± 20 gm
Body	Plastic with embedded steel balls
Length	115 ± 3 mm
Diameter	60 mm (Approx)
No. of steel balls	5000 (approx dia 2-2.3 mm)
Weight of the explosive	95 ± 5 gm of plasticized PETN
Effective range	20 mtr radius
Activation	Lever activated with delay time of 3.5 to 5 sec

Packing

Each grenade packed in a plastic container, 12 such containers packed in a steel box:

Size of box	33.5 x 26.5 x 14.5 cm
Weight of box	11 Kg
Colour & marking	Service brown with yellow / white stencilling



Grenade Hand Target Indication MK-2

These grenades are used to generate coloured smoke for signalling activities of small units for short period of time.



Available in following clours:

White	P4 MK2 (JM)
Green	P5 MK2 (XL)
Blue	P6 MK2 (WL)
Orange	P7 MK2 (GG)
Red	P8 MK2 (PA)
Yellow	P9 MK2 (LK)

Technical Data:

Weight	330 - 410 gm (Approx)
Height	144 mm
Diameter	56.5 mm
Operation	By releasing safety pin
Body	Steel drawn tube
Emission of smoke	50 ± 10 sec

Packing

Each grenade packed in a plastic container, 20 such containers are packed in a wooden/Steel box

Size of box	60 x 29 x 19 cm
Weight of box	19 Kg
Colour & marking	Service brown with yellow /white Stencilling



Grenade Hand Discharger P3 MK1



This is a lever operated non-bursting type grenade used for creating smoke screen.

Technical Data

Weight	510 gm
Height	150 mm
Diameter	58 mm
Operation	Lever activated with delay time of 3.5 - 5 sec
Body	Tin sheet

Packing

Each grenade packed in a tin/ plastic container, 20 such containers are packed in a steel box:

Size of box	60 x 29 x 19 cm
Weight of box	22 Kg
Colour & marking	Service brown with yellow /white Stencilling



Demolition

Charge Demolition No. 1, 6 Inch Beehive MK- 1



This charge is used for demolition of bunkers and similar RCC structures. The charge is detonated by detonator No. 27 with a suitable length of safety fuze or by electric detonator No. 33 or No. 8.

Technical Data

Weight of explosive	3.2 Kg (Approx)
Charge	Compo B
Total weight	3.250 Kg (Approx)

Packing

2 charges packed in a cylinder and two cylinders (4 charges) packed in a wooden box:

Size of box	51 x 44.5 x 26 cm
Weight of box	33 Kg
Colour & marking	Service brown with yellow / white stencilling

Demolition

Demolition 1 OZ CE Primer

Technical Data

Length	2.9 - 3.4
Weight	28.35 gm
Shape	Conical cylinder (Single perforation)

Packing

Each primer wrapped internally and externally with lead free paper. Top & bottom covered with lead free and waxed paper washers to make it completely waterproof. 10 primers packed in a metallic cylinder, 6 cylinders (60 primers) packed in a cardboard carton:

Size of carton	37.4 x 15.3 x 18 cm
Weight of carton	8 Kg
Colour & marking	Service brown with yellow / white stencilling



Pyrotechnics

Flare Trip Wire MK 2/2



This is a safety device used for giving a signal and light to people being protected by this arrangement. A spool of wire is supplied along with the device, which activates the mechanism when any hostile intruder or trespasser trips over the wire, a candle of illuminating composition is initiated.

Technical Data

Height of flare candle	98 ± 1mm
Diameter	62.5 mm
Primer	Percussion type ABC
Illuminating composition	SR 547
Time	Not less than 60 sec
Intensity	40,000 candles
Weight of complete flare	1.84 Kg

Packing

Each flare placed in carton, further packed in a tin box with arm link assembly and one trip wire spool with cardboard fitments. 12 flares packed in a steel box:

Size of box	67 x 28 x 25 cm
Weight of box	34 Kg
Colour & marking	Service brown with yellow / white stenciling



Pyrotechnics

Cartridge Signal Pencil Shooting Type



These cartridges are meant for firing by a Shooting Pencil and are used for signalling during day or night. On firing, the star is propelled to the prescribed height and emits the specific colour of light.

Available in following types:

Red

Green

Illuminating

Note: Pencil Shooting Gun (Pyrotechnic Pistol) is also in production line of POF.

Technical Data

Burning time 5.0 ± 1.0 Sec

Height to which ejected 70 m ~120 m

Packing

216 cartridges packed in a steel box:

Size of box 29.2 x 19.7 x 21.7 cm

Weight of box 17 Kg

Colour & marking Service brown with yellow / white stencilling

Fuze, Primers & Detonators



Detonators

Type	Utilization
Detonator M-17	Fuze PDM 557
Detonator M-24	Fuze PDM 557
Detonator No. 32	81 & 120 mm Mortar Bombs
Detonator No. 108	37 mm HE/T
Detonator No. 137	37 mm HE/T
Detonator No. 237	37 mm HE/T
Detonator No. 208	60 mm Mortar Bomb

Fuzes

Type	Utilization
No. 6 & 8	30 mm HEI API
HE-1	37 mm HE/T
V9P1/A2	60 mm Mortar Bomb HE & Smoke
V 19 PA-A2	81 mm Mortar Bomb HE & Smoke
PDM 557 M	25 PDR HE
PDM 557	105 mm HOW HE & Smk, 155 mm HOW HE
L 56	105 mm TK HESH
V 19 P A2	120 mm Mortar Bomb HE & Smoke
LIU 4	122 mm HOW HE T-54 & D-30
LIU 5	130 mm HE
PF-1A Proximity	105 mm HE & 203 mm HOW HE

Primers

Type	Utilization
Percussion type No. 304 A-1	122 mm HOW HE
Percussion type D-5	130 mm Gun HE & 122 mm HOW D-30
Percussion type MK2A4	155 mm HOW HE
Percussion type P-6	106 mm HEAT
Electric type L20 A1	105 mm APFSDS
No. 303	60,81 & 120 mm Mortars
No. 12 MK4/LA	37 mm HE/T
No. P1 MK3	105 mm HOW HE, Smk & Blank
No. 330	30 mm Ball & HEI
Percussion type No. M-82	155 mm HOW & 8" HOW
Primer Percussion type P-5	100 mm APFSDS

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