

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 WP P2 MK-1:** Produces white smoke with incendiary effects
- 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 WP	19.77 Kg
Blank	3.75 Kg

Weight of Projectile

HE	15.2 Kg
Smoke WP	16.0 Kg

Shell Body Forged steel

Main Charge:

HE	TNT
Smoke	WP

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

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
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. Charged packed in a brass cartridge case and then packed in a chipboard container.

Size of box	85.8 x 18.3 x 16.4 cm
Gross weight	38.70 Kg
Color & marking	Service brown with yellow/white stencilling

Artillery Ammunition

122 mm HOW HE D-30



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

Performance: (at full service charge)

Muzzle Velocity	690 m/s
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Average Chamber pressure	2500 Kg/cm ²
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Maximum range	15300 m
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Chamber pressure for performance proof tests:

Strength	2760 ± 40 Kg/cm ²
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Charge stability	2760 ± 40 Kg/cm ²
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Detonation	2500 Kg/cm
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Accuracy:

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

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

Reducable Reduce Charge	2.5 Kg
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Full Service Charge	3.5 Kg
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Primer	D-5
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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	109.5 x 21 x 16.5 cm
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Gross weight	44 Kg (Approx)
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Colour & Marking	Service Brown with Yellow / White Stencilling.
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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
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)	≤ 0.7 mil

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. Charged 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 stenciling

155 mm HOW HE M 107



This is semi-fixed 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	M3A1
White Bag	M4A2
Charge 8W	M119A2
Primer	M-82 Percussion type

Performance (With charge M4A2- white bag)

Muzzle Velocity	564 m/sec
Average Pressure	2560 kg/cm ²
Range	14600 m

Chamber pressure for performance proof tests:

Strength	2870 ± 50 kg/cm ²
Charge stability	2870 ± 50 kg/ cm ²
Detonation	2560 kg/cm ²

Accuracy:

PE (Range)	46 m
PE (Lateral)	04 m

Packing

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

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

Formaldehyde - FA 37%

Applications

General purpose formalin is suitable for Tanneries, Poultry/Sugar Industries and for manufacturing Urea and Phenolic Glues

Specifications

Grade	Commercial
Appearance	Water like
*Formaldehyde content	36.8 - 38.6 % (w/w)
*Methanol content	2.5 - 10 % (w/w)
Density	1.032-1.11 g/cc at 25 °C
Acidity as Formic Acid	0.005 - 0.03 % (w/w)
Ash content (max.)	2 % by wt.



Packing: 30 liters is packed in plastic can, 200 liters in GI drum while bulk quantities are packed in SS tanker.

* Formaldehyde concentrations 36.5 – 38.5 % with 3 – 11 % Methanol contents are produced on request

Urea Formaldehyde Concentrate 85% - UFC 85

Applications

Used as anti Urea (granular) manufacturing process. Also suitable for manufacturing U.F Glue.

Specifications

Appearance	Water like
Viscosity	250 – 600 cps at 25°C
Density	1.310 – 1.330 g/cc at 25°C
pH	8.0 – 9.0 at 25°C
Formaldehyde	60 ± 2 % by weight
Urea	25 ± 1 % by weight
Water	15 ± 1.0 % by weight
Shelf life	6 months at 25°C



Packing: 60 liters in plastic can and bulk quantities in SS tanker.

Urea Formaldehyde Concentrate 63% - UFC 63

Applications

Used in the manufacturing of Moulding Compounds. Also suitable for manufacturing U.F. Glue.

Specifications

Appearance	Water like
Viscosity	10 – 20 cps at 25°C
Density	1.200 – 1.250 g/cc at 25°C
pH	7.0 - 8.0 at 25°C
Formaldehyde	45 ± 1 % by weight
Urea	18 ± 1 % by weight
Water	37 ± 1.0 % by weight
Shelf life	6 months at 25°C

Packing: 60 liters packed in plastic can while bulk quantities are packed in SS tanker.

Chemicals (Polymers)

Phenol Formaldehyde (RESOLE) – KN 400

Application

Suitable for coating the Rock Wool.

Specifications

Appearance	Reddish Brown liquid
Viscosity	10 - 25 cps at 25°C
Density	1.10 – 1.2 g/cc at 25°C
pH	7.5 - 8.5 at 25°C
Shelf life	15 days at 25°C
Packing: 60 liters in plastic can, 200 liters in GI drum & bulk quantities in SS tanker.	

Phenol Formaldehyde (RESOLE) – KN 300

Application

Suitable for the production of water proof Plywood.

Specifications

Appearance	Maroon Red liquid
Viscosity	200 – 400 cps at 25°C
Density	1.10 – 1.2 g/cc at 25°C
pH	12.0 – 13.5 at 25°C
Solid Content	43 ± 2 % by wt.
Shelf life	Two months at 25°C

Packing : 60 liters in plastic can, 200 liters in steel drum & bulk quantities in MS tanker.

Phenol Formaldehyde (RESOLE) – KN 900

Application

Suitable for coating of abrasive in the manufacturing of Cutting / Grinding Disc

Specifications

Grade	Abrasive binder
Viscosity	200 – 400 cps at 25°C
Density	1.19– 1.23 g/cc at 25°C
pH	8.0 – 8.5 at 25°C
Solid Content	70 - 80 % by wt.
Shelf life	Two months at 25°C

Packing : 60 liters in plastic can.

Phenol Formaldehyde (RESOLE) – KN 750

Application

Used as Cold-setting foundry sand (Silica/Quartz) binder for the production of Moulds and Cores.

Specifications

Grade	Foundry
Viscosity	200 - 400 cps at 25°C
Density	1.17 – 1.22 g/cc at 25°C
pH	12.0 - 14 at 25°C
Solid Contents	50 ± 2 % by wt.

Packing: 60 liters packed in plastic can & 200 liters in steel drum

Chemicals (Polymers)

Phenolic Resin (NOVOLAC) – KF 800

Application

Suitable for coating silica sand in the hot sand coating process

Specifications

Appearance	Granules
Softening point	90 ± 10 °C
Moisture (max.)	1.0 % by wt.
Ash	1.0 ± 0.2 % by wt.
Shelf life	Six months at 25°C

Packing: 50 kg in polypropylene bag

Foundry Resin (NOVOLAC) – FN 700

Applications

Used in the manufacturing of tundish board and ingot mould hot tops and in corning shell moulding process.

Specifications

Appearance	Powder (85% 200 mesh)
Nitrogen	3.8 – 4.0 % by wt
Moisture contents	0.5 – 0.9 %
Ash contents	0.8 – 1.2 % at 950°C
Shelf life	One year at 25°C

Packing: 50 kg in polypropylene bag

Lamp Capping Cement – LCC 760

Application

Suitable for bonding cap and glass portion in bulb manufacturing process

Specifications

Appearance	Fine powder
Bulk Density	0.7 - 0.95 g/cc
PH (in ethanol)	6.5 - 7.1
Curing time	180 sec at 350°C
Torque strength of bonded cap after curing	5 - 7 kg
Shelf life	One year at 25°C

Packing: 25 kg is packed in a cardboard box.

Urea Formaldehyde – KR 3000

Application

Used as abrasive binder in the manufacturing of Sand Paper.

Specifications

Appearance	Opaque
Viscosity	2000 – 4000 cps at 25°C
Density	1.290 – 1.310 g/cc at 25°C
pH	8.0 ± 0.5 at 25°C
Free formaldehyde	1.5 – 2.0 %
Gel. time	30 – 40 sec at 100°C
Solid content	65 ± 1 %
Shelf life	Two months at 25°C

Packing : 30 and 60 liters in cans and 200 liters in GI drum.

Chemicals (Polymers)

Phenolic Resin (Novolac) – FN 600

Applications

Used in the manufacturing of Cutting/Grinding disc

Specifications

Appearance	Powder (90% 250 mesh)
Softening point	100 ± 10°C
Moisture content	0.5 – 0.9%
Ash content	0.8 – 1.2 % at 950°C
Shelf life	Six months at 25°C

Packing : 15 kg are packed in a cardboard box.

Urea Formaldehyde-KR 60

Application

Suitable for the production of ordinary plywood/Chipboard.

Appearance	Opaque
Viscosity	200-300 cps at 25°C
Density	1.252-1.262 g/cc at 25°C
pH	8.0-8.5 at 25°C
Free formaldehyde	Below 1%
Gel. time	40 – 60 sec at 100°C
Solid content	60 ± 1%
Shelf life	Two months at 25°C

Packing : 30 liters in plastic can, 200 liters in steel drum & bulk quantities in MS tanker.

Urea Formaldehyde-KR 50

Application

Suitable for the production of Chipboard.

Appearance	Opaque
Viscosity	40-80 cps at 25°C
Density	1.200-1.250 g/cc at 25°C
pH	8.0-8.5 at 25°C
Free formaldehyde	Below 5%
Gel. time	50 – 70 sec at 100°C
Solid content	50 ± 1%
Shelf life	Two months at 25°C

Packing : 30 liters in plastic can, 200 liters in steel drum & bulk quantities in MS tanker.

Chemicals (Polymers)

Lamp Capping Cement – LCC 770

Application

Suitable for coupling caps with tube rods.

Specifications

Appearance	Fine powder
Bulk Density	0.70 – 0.95 g/cc
pH (in ethanol)	6.5 – 7.1
Curing time	180 sec at 350 °C
Torque strength of bonded cap after curing	5 – 7 kg
Shelf life	One year at 25°C

Packing: 25 kg in a cardboard box.

Urea Formaldehyde – KR 60

Application

Suitable for the production of ordinary Plywood/Chipboard.

Specifications

Appearance	Opaque
Viscosity	200 – 300 cps at 25°C
Density	1.252 – 1.262 g/cc at 25°C
pH	8.0 – 8.5 at 25°C
Free formaldehyde	Below 1 %
Gel. time	40 – 60 sec at 100°C
Solid content	60 ± 1 %
Shelf life	Two months at 25°C

Packing: 30 liters is packed in plastic can and 200 liters in steel drum while bulk quantities are packed in MS tanker.

Urea Formaldehyde – KR 50

Application

Suitable for the production of Chipboard.

Specifications

Appearance	Opaque
Viscosity	40 – 80 cps at 25°C
Density	1.200 – 1.220 g/cc at 25°C
pH	8.0 – 8.5 at 25°C
Free formaldehyde	Below 1 %
Gel. time	50 – 70 sec at 100°C
Solid content	50 ± 1 %
Shelf life	Two months at 25°C

Packing: 30 liters is packed in plastic can and 200 liters in steel drum while bulk quantities are packed in MS tanker.

Chemicals

Glacial Acetic Acid

Acetic Acid is a clear and colourless liquid having pungent and vinegary odour with burning taste. Major uses of Acetic Acid are in the manufacturing of cellulose acetate Fiber, PTA, ester solvents, dyes, metal salts and many other chemicals. Its user industries are Textile, Leather, Food, Pharmaceuticals, Plastic and Rubber.

Technical Data

Content	≥ 99.5% (weight %)
Freezing point	15.5°C
Density at 20°C	1.042 gm/ml
Methanoic acid	0.35%
Acetaldehyde	0.10%
Heavy metal (as pb)	0.0004%
Evaporation residue	0.02%
Content of iron	0.0002%
Time of oxidation of potassium permegrate	5 minutes



Packing: 30 kg in plastic cans and bulk quantities in tankers

Ethyl Acetate

Ethyl Acetate is a stable, colourless and inflammable liquid with a pleasant odour. It is used widely in formulating gravour, printing inks, adhesives and lacquers. It is used extensively as a cellulose nitrate solvent in the Manufacturing of products such as artificial and patent leathers, inks, cement, photographic films and linoleum. Ethyl Acetate is also used in the formulation of products like candy glaze, cleaning fluids, flavours and spirit varnishes. .

Technical Data

Content	≥ 99.5% (weight %)
Density	0.878 – 0.883 gm/ml
Moisture	0.20%
Acidity (as CH ₃ COOH)	0.005%
Evaporation residue	0.005%



Packing: 180 kg in steel drums and bulk quantities in tankers

Butyl Acetate

Butyl Acetate is a colourless inflammable liquid with a pleasant and fruity odour. It is widely used in cellulose nitrate lacquers. It is also an active solvent for cellulose acetate batryle, ethyl cellulose chlorinated rubber, polystyrene, methaerylate resins, natural gums and paints. This ester is also used as a solvent in the preparation of artificial leather, textile and plastics and as an extraction solvent in processing various oils and pharmaceuticals.

Technical Data

Content	≥ 99.5% (weight %)
Density	0.897-0.902 gm/ml
Moisture	≤ 0.20%
Acidity (as CH ₃ COOH)	≤ 0.005 %
Evaporation residue	≤ 0.005%

Packing: 180 kg in steel drums and bulk quantities in tankers.