Munitions India Limited

विनाशाय दुष्कृताम्

ARTILLERY AMMUNITION

COMPLETE COMBAT SOLUTION PROVIDER

MUNITIONS INDIA LIMITED

SHELL 155MM
HE ERFB BT

Rapid and accurate firing at long ranges to attack the ground targets by 155 mm Artillery Gun.

TECHNICAL SPECIFICATION	
Maximum Range	24 km
Muzzle Velocity	827 ± 10 m/sec
Max. Chamber Pressure	345 ± 8 MPa
Mass of Shell without Fuze	42.84 to 45.34 kg
Length of Shell without Fuze	842.3 mm
Shelf Life	15 years
Operating Temperature	-20 °C to +60 °C
Compatibility	D
Hazard Division	1.1

PACKAGING DETAILS

Packed in 12 nos. in 01 wooden pallet named unit load.
Length x Width x Height: 1130 mm x 990 mm x 580 mm

SHELL 155MM
HE ERFB BB

Rapid and accurate firing at long ranges to attack the ground targets by 155 mm Artillery Gun.

TECHNICAL SPECIFICATION	
Maximum Range	38.4 km
Muzzle Velocity	795 ± 5 m/sec
Max. Chamber Pressure	345 ± 8 MPa
Mass of Shell without Fuze	45.27 to 47.77 kg
Length of Shell without Fuze	861 mm
Shelf Life	10 years
Operating Temperature	-20 °C to +60 °C
Compatibility	D
Hazard Division	1.1
PACKAGING DETAILS	
Packed in 12 nos. in 01 wooden pallet named unit load.	
Length x Width x Height : 1128mm x 960mm x 562 mm	

SHELL 155MM HE M107

Often used for training / practice, in addition to its normal role as anti-personnel, ammunition.

TECHNICAL SPECIFICATION	
Maximum Range	18 km
Muzzle Velocity	685 m/sec
Max. Chamber Pressure	386 MPa
Mass of Shell without Fuze	42.1 kg
Length of Shell without Fuze	604 mm
Shelf Life	15 years
Operating Temperature	-20 °C to +60 °C
Compatibility	D
Hazard Division	1·1

PACKAGING DETAILS

Packed in 12 nos. in 01 wooden pallet named unit load.
Length x Width x Height : 880mm x 1060mm x 575 mm

SHELL 155MM HE M77 B

Rapid and accurate firing at long ranges to attack the ground targets by 155 mm Artillery Gun.

TECHNICAL SPECIFICATION	
Maximum Range	24 km
Max. Chamber Pressure	440 MPa
Mass of Shell without Fuze	41.7 kg
Length of Shell without Fuze	728 mm
Shelf Life	15 years
Operating Temperature	-20 °C to +60 °C
Compatibility	D
Hazard Division	1.1

PACKAGING DETAILS

Packed in 12 nos. in 01 wooden pallet named unit load.
Length x Width x Height : 900 mm x 1060 mm x 556 mm

SHELL 155MM
ILLUMINATING ERFB

Designed to support night warfare. The illumination provided by this ammunition is sufficient for identification and engagement of all types of moving and non-moving objects.

TECHNICAL SPECIFICATION	
Maximum Range	25.58 km
Luminosity	750,000 Cd (Min)
Time of Burning	90 sec. (Min)
Mass of Shell without Fuze	42.84 to 45.34 kg
Length of Shell without Fuze	843mm
Shelf Life	10 years
Operating Temperature	-20 °C to +60 °C
Compatibility	G
Hazard Division	1.3

PACKAGING DETAILS

Packed in 12 nos. in 01 wooden pallet named unit load.
Length x Width x Height : 1128 mm x 990 mm x 562 mm

SHELL 155MM
SCREENING SMOKE ERFB

The shells are normally used to mask the movement or redeployment of own forces from enemy observation, thereby neutralizing direct enemy fire.

TECHNICAL SPECIFICATION	
Maximum Range	24 km
Smoke Emission	90 sec (Min)
Descent Rate of Canister	5m/s
Mass of Shell without Fuze	43.5 kg nominal
Length of Shell without Fuze	878 mm
Shelf Life	10 years
Operating Temperature	-20 °C to +60 °C
Compatibility	G
Hazard Division	1.2

PACKAGING DETAILS

Packed in 12 nos. in 01 wooden pallet named unit load.
Length x Width x Height : 1128 mm x 990 mm x 562 mm

FUZE PD

ELECTRONIC

The Fuze is compatible to fire with 155mm Ammunition. It has two modes of operation i.e. Point Detonation Super Quick and Point Detonation Delay as per requirement.

TECHNICAL SPECIFICATION	
Mass	1000 gms
Length	151 mm
Diameter	61 mm
Shelf Life	15 years
Operating Temperature	-30 °C to +55 °C
The Fuze is safe for use in the muzzle velocity range of 180 to 1000 m/s and can withstand chamber pressure up to 397 ± 8 MPa	

FUZE PD

M557P1

The Point Detonating M557P1 is an impact fuze used in the High Explosive projectiles of 155mm Howitzer. This Fuze complies fully with all NATO military specifications and test methods.

TECHNICAL SPECIFICATION	
Mass	950 g
Length (Overall)	151 mm
Length (Visible)	96.4 mm
Thread	25.4 mm
Operating Temperature	-62°C to +71°C
PACKAGING	
8 / 12 Fuzes per box, 2 metal boxes per wooden box	

BI- MODULAR CHARGE SYSTEM

It is a state of the art replacement for conventional propellant charges.

BMCS M91

SINGLE BASE PROPELLANT

Low Zone (consisting of 1 to 2 low zone modules, for smaller ranges and training purpose)

BMCS M92

TRIPLE BASE PROPELLANT

High Zone (consisting of 3 to 5 high zone modules for 39 Cal, or 3 to 6 for 45Cal & 52 Cal)

TECHNICAL SPECIFICATION	BMCS M-91 (Single Base Propellant)	BMCS M-92 (Triple Base Propellant)
Maximum Range	12 km	40 km
Mass	1.9 kg	2.8 kg
Length	167mm (nominal)	167mm (nominal)
Muzzle Velocity	455 m/sec	878 m/sec
Shelf Life	15 year	15 years
Operating Temperature	-10 °C to +60 °C	-10 °C to +60 °C

PACKAGING DETAILS

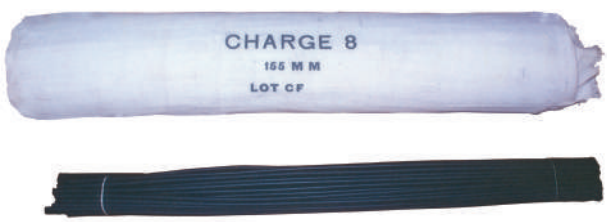
Each module is sealed in a multi-layered barrier bag with a protective packing piece. The barrier bags are partially vacuumed and hermetically sealed then packed in cylinder (with five modules) then put in palletised Unit (with 25 cylinder).
Length x Width x Height: 1100 mm x 1050 mm x 1078 mm

HAZARD CLASSIFICATION	
Compatibility	C
Hazard Division	1.3

DOUBLE BASE PROPELLANT

The product is used with 155 mm ammunition.

CHARGE 8



CHARGE 9

TECHNICAL SPECIFICATION	CHARGE 8	CHARGE 9
Length	735 ± 5 mm	740 ± 5 mm
OD	6.4 ± 0.30 mm	12.1 ± 0.2 mm
Hole Dia	3.30 ± 0.30 mm	1.28 ± 0.04 mm
Web	1.55 ± 0.05 mm	2.02 ± 0.03 mm
Cal Value	700 ± 25 Cal/gm	800 ± 25 Cal/gm
BALLISTICS	**CHARGE 8**	**CHARGE 9**
V of A	685 m/s at 21°C	827 m/s at 32°C
SD	3.2 m/s	3.5 m/s
ACP Mean	241 Mpa	309 Mpa
Range	19km	27 km

CHARGE M4A2

Sb Propellant Charge M4A2 In White Bag, Cylindrical and Perforated Propellant Grain Used in 155 mm Bofors Howitzer Gun

PRESSURE	
P mean	218 Mpa
P average	153 to 190 Mpa

MUZZLE VELOCITY	
Zone	MV
3	274 m/s
4	347 m/s
5	403 m/s
6	482 m/s
7	569 m/s

PRIMER M191 A2

The Primer is composed of a finished metal alloy cartridge which contains various components sealed within. In the rear end of the primer there is plunger while a sealing disc, percussion cap and Gun powder charge (GPC-20) are placed within the inner case.

TECHNICAL SPECIFICATION	
Body of Projectile	Brass
General Chemical Composition	Combination of Potassium Nitrate, Charcoal & Sulphur
Cap F-26	Combination of Lead Styphnate, Tetrazene, Barium Nitrate, Lead Dioxide & Antimony Trisulphide
Base Substance	Potassium Nitrate
Compatibility	G
Hazard Division	1.4

PACKAGING DETAILS

It is packed in Plastic box viz. M31A containing 560 nos. each & 18 such plastic boxes packed in a box.
Length x Width x Height : 1200 mm x 1000 mm x 822 mm

SHELL 130 MM HE

The 130 mm, gun M-46 is a long range medium gun and is capable of direct as well as
indirect laying fire. The gun is designed to :

i) Destroy/neutralise hostile artillery including self propelled artillery.
ii) Fight the enemy heavy tanks.
iii) Destroy enemy pill boxes and strong field works.
iv) Fire at enemy rear areas and concentration areas

TECHNICAL SPECIFICATION	
Maximum Range	27 km
Muzzle VelocityFVC-	810 to 930 m/s RVC- 525 to 705 m/s
Max. Chamber Pressure	425 MPa
Mass of Shell without Fuze	32.60 kg
Length of Shell without Fuze	565.30 mm to 568.70 mm
Shelf Life	Shell-20 Yrs Carts 10 Yrs Fuzed 7 Yrs
Operating Temperature	-20 °C to +60 °C
Compatibility	E
Division	1.2
PACKAGING DETAILS	
Shell of 130 mm HE & 1 Cartridge of 130 mm RVC/FVC packed in 1 Steel Box C-53A	

FUZE DA
B429

Fuze B429 is a percussion type of nose fuze having direct, delay and Graze action. This fuze is used for Shell 130 mm HE Filled. The fuze can be set externally to 'I' and 'D' mode corresponding to 'O' and '3' markings on fuze body respectively with the help of selector mechanism incorporated in fuze body.

TECHNICAL SPECIFICATION	
Mass of Filled Fuze	438 g
Length of fuze	103.02 mm to 105.71mm
Diameter	40 mm Max
Shelf Life	07 Years
Operating Temperature	-20°C to +60°C
HAZARD CLASSIFICATION	
Compatibility Group	D
Hazard Division	1.2
PACKING DETAILS	
Box G-70 used for packing of 20 no of Fuze. With adaptor Box M23 B and plastic container 67 A having total Qty. 15 Nos.	

SHELL 105 MM
HEER (BB)

It is a high explosive extended range (HEER) Shell. Better fragmentation is achieved by introducing high quality steel alloy (AISI-9260) and thinning the body of the shell. The optimised ballistic shape of the shell improve the ballistic co-efficient (Reduced drag) & provide better accuracy. The Base Bleed Unit (BBU) at base reduces the drag and gives additional thrust to carry the shell further.

TECHNICAL SPECIFICATION	
Maximum Range	20.4 km
Muzzle Velocity	731 m/sec
Maximum Chamber Pressure	332 MPa
Mass of filled Shell	15.765 kg
Length of Shell (plugged)	611 mm
HAZARD CLASSIFICATION	
Compatibility	F
Hazard Division	1.2
PACKAGING DETAILS	
One Wooden / Steel Box holding two Shells in laminated container Length x Width x Height : 671 mm x 312 mm x 185 mm	

SHELL 105 MM

HE

The ammunition is employed to demolish army concentrations, fortifications, bunkers and many other defence installations. This is suitable for use both in the plains as well as mountains.

TECHNICAL SPECIFICATION	
Maximum range	17.6 km
Muzzle velocity	591m/sec (normal charge) 710 m/sec (super charge)
Maximum Chamber Pressure	332 ± 8 MPa
Mass of the filled shell	16.97 kgs max
Length of Shell without Fuze	451.56 ±2.5 mm
Shelf life	30 years
Operating Temperature	-20 °C to +60 °C
Compatibility Group	D
Hazard Division	1.2

PACKING DETAILS

One Wooden / Steel Box holding two Shells in laminated container
Length x Width x Height : 671 mm x 312 mm x 185 mm

MUNITIONS INDIA LIMITED

SHELL 105 MM
ILLG

This ammunation provides intense illumination for identification and engagement of all types of stationary and moving objects.

The shell is fired with time mechanical fuze, present to ensure ejection at the desired height and range. The illuminant canister supported with parachute and spin break system provides intense illumination on the ground covering an area of 600 mtrs. radius.

TECHNICAL SPECIFICATION	
Maximum range	17 Kms
Luminosity	700,000 candela
Time of burning	25 sec (min)
Height of burst	400 mtrs (Approx)
Duration of illumination	30 sec (min)
Rate of descent	10 m/sec (max)
Net explosive content	800 gm (Approx)
Estimated mass	15.88 ± 0.1 Kgs
Length	450 mm (Approx)
Diameter	104+0.2mm(Approx)
Fuze	213P MK5 (M2)
Shelf life	10 years.
Compatibility Group	G
Hazard Division	1.2

PACKING DETAILS

One Wooden / Steel Box holding two Shells in laminated container
Length x Width x Height : 671 mm x 312 mm x 185 mm

SHELL 105 MM

BE SMOKE (SCREENING & COLOUR)

The BE Smoke is used for screening and counter surveillance purpose in the combat field. It produces uniform thick opaque screen over a wide area to facilitate tactical deployment of troops and shielding from direct enemy attack.

BE colour smoke is similar emission type smoke ammunition producing uniform dense colour smoke in ed, orange and blue colours for signalling purposes.

TECHNICAL SPECIFICATION	
FOR COLOUR	
Estimated mass	15.970 Kgs
Net explosive content	Red - 450 gm (approx) Orange - 450 gm (approx) Blue - 410 gm (approx)
Length	450 mm (approx)
Diameter	104.5 + 0.2 mm (approx)
Time of burning (including built up time)	45 sec (min)
Fuze	213 T & P MK5 (M2)
Range	17 km (Max)
Shelf Life	10 years
FOR BE SMOKE	
Mass of filled bomb	17 Kgs
Length	450 mm (approx)
Diameter	104.5 + 0.2 mm (approx)
Duration of smoke	Over 45 sec
Range	11 Km
Smoke	Dense white
Shelf Life	10 years
Compatibility group	G
Hazard Division	1.2
Fire Fighting Classification	2
PACKING DETAILS	
One Wooden / Steel Box holding two Shells in laminated container Length x Width x Height : 671 mm x 312 mm x 185 mm	

FUZE PERCUSSION
DA NO.117

Fuze 117 is a direct action and graze fuze. It is used in a variety of equipment, with HE, bursting smoke and chemical shells. It functions at low angle of impact and is rapid in action.

TECHNICAL SPECIFICATION	
Mass of Filled Fuze	1.188 Kg ± 10 gms.
Length of fuze	124.689 mm to 126.848 mm
Diameter	61 mm Max
Shelf Life	18 Years
Operating Temperature	-20°C to +60°C
HAZARD CLASSIFICATION	
Compatibility Group	B
Hazard Division	1.2
PACKING DETAILS	
Container 47B is used for packing of Fuze Box M104 is used to hold 20 fuzes	

FUZE 213 MK5

M1& M2 M3 & M4

Fuze 213 MK5 (M-1) & (M-2)

These are high precision mechanical time and impact fuzes which offer a choice of air burst at a desired point above the target or detonation on impact. Time setting is 0-80 seconds in steps of 0.5 seconds. Reliable and versatile the fuzes are compatible to all guns and howitzers from 75 mm to 152 mm calibers. M1 is used with HE shells whereas M-2 is employed with cargo shells/smokes base ejection type shells.

Fuze 213 MK5 (M-3) & (M-4)

Very accurate mechanical time and direct action fuzes, specially suited for accurate laying of smoke screens, battle field illumination and release of cargo at the precise point over the target.

CARTG. 105 MM
SUPER CHARGE & NORMAL CHARGE

Cartg 105 mm SC & NC is loosely assembled with the shell in the chamber of the gun to release required pressure to project the ammunition at a muzzle velocity sufficient to perform effectively at the target.

TECHNICAL SPECIFICATION SUPER CHARGE	
Max mass of the cartg case	3.2 K_gs
Total weight of the propellant	3135 g
Muzzle velocity	712 m/sec
Maximum pressure	390 Mpa
TECHNICAL SPECIFICATION NORMAL CHARGE	
Max mass of the cartg case	3.2 Kgs
Total weight of the propellant	2332 g
Muzzle velocity	591 m/sec
Maximum pressure	390 Mpa
Compatibility	E
Hazard division	1.2
Fire Fighting classification	2

PACKING DETAILS

One Wooden / Steel Box holding four Cartgs. in laminated container
Length x Width x Height : 663 mm x 650 mm x 248 mm

Munitions India Limited [MIL] is Defence Public Sector Enterprise [CPSE] under the Ministry of Defence, Government of India.

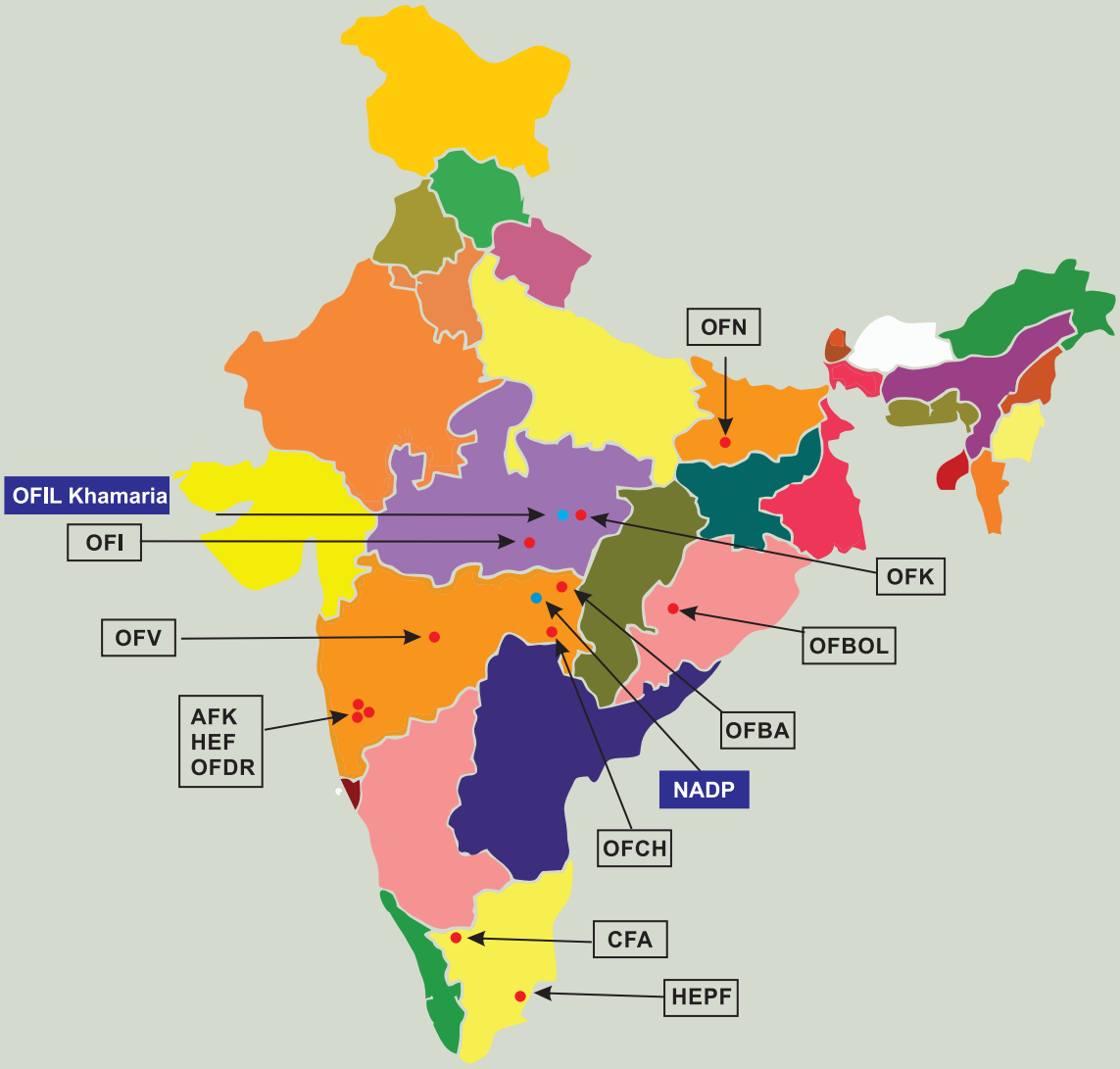
MIL, India's biggest manufacturer and market leader is engaged in Production, Testing, Research & Development and Marketing of comprehensive range of ammunition & explosives for Army, Navy, Air Force & Para-Military Forces.

With Corporate Office at Pune (India), MIL in its 12 state-of-the-art manufacturing units located across the country employs skilled workforce of around 23,000. These factories have proven integrated base for production of Small, Medium & High Calibre Ammunition, Mortars, Rockets, Hand Grenades etc. with in-house manufacturing of Initiatory Compositions, Propellants and High Explosives for over 150 years. Our primary objective is to provide competitive edge to the Armed Forces by equipping them with modern and quality battlefield ammunition.

Our foreign customers include countries located in North America, South America, Europe, Africa and Asia. The patronage we receive from our customers both in India and abroad reflects their faith in quality of our products and services. We are the Force behind the Armed Forces.

MIL with its 12 manufacturing units provide:

- A broad and versatile production base with multi-technology capabilities
- State-of-the-art manufacturing facilities
- Large pool of skilled and professionally qualified manpower and managerial personnel
- Strict adherence to quality standards (all units are ISO-9001 certified)
- Original as well as adaptive Research & Development
- A strong base for industrial training & testing



Munitions India Limited
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