

TECHNICAL SPECIFICATIONS
ROCKET 122 mm HE FRAG FOR BM-21 (NON ER)
OPERATIONAL CHARACTERISTICS AND FEATURES

TECHNICAL PARAMETERS AND OPERATIONAL PARAMETERS

1. Technical Specifications and Functional Requirements.

Sr	Parameter	Details
(a)	Caliber	122 mm
(b)	Total Length of Rkt Projectile with fuze	2870 mm ± 15 mm
(c)	Total weight of Rocket with fuze	66 kg±100g
(d)	Total Weight of Warhead (Filled)	18.4kg±100g
(e)	Weight of main explosive filling	6.4 kg ±100g
(f)	Type of Explosive filling	HE filling (TNT/ RDX/ Al Powder)
(g)	Initial thrust required to Start the motion in Launcher	5884 to 7845 N (600 to 800 kg)
(h)	Type of Propellant	Two cylinder double base grains (Cords)
(j)	Mass of propellant	20.45 kg±100 gms
(k)	Maximum velocity under normal condition	690 m/s+50 m/s
(l)	Maximum Range	
	without break ring	20400 ± 100 m
	with small break ring	15850 m
	with large break ring	11980 m
(m)	Minimum range	5000
(n)	Range and accuracy in meters (within ±4Pe of Range Table)	≤1.27% of range
Fuze MRV 9E 210		
(o)	Type	Nose percussion type with setting for Instantaneous action and delay action
(p)	Filled Mass	0.950 + 0.05 kg
(q)	Arming Distance	140 to 400 m from rocket truck
(r)	Operating temperature conditions	- 40°C to +50°C
(s)	Humidity	98%
(t)	Overall Length	Maximum 195.36 mm
(u)	Intrusion	Maximum 54.71 mm
(v)	Diameter	64 mm
(w)	Fuze setting	DA, Short delay, long delay

Fuze MRV -U		
(u)	Type	Nose percussion type with setting for Instantaneous action and delay action
(v)	Filled Mass	0.71 kg
(x)	Arming Distance	140 to 400 m from rocket truck
(y)	Operating temperature conditions	- 40°C to +50°C
(z)	Humidity	98%
(aa)	Overall Length	191.42 to 195.04 mm
(ab)	Intrusion	53.01 to 54.39 mm

Sr	Parameter	Details
(ac)	Diameter	64 mm
(ad)	Fuze setting	DA, Short delay, long delay

2. **Technical and Environmental Criteria** :- Test facilities for conduct of Environmental test for the Rocket Amn is not available with DGQA. Vendor to provide Certificate of Conformity duly supported by requisite Test Certificates for same. Detail Methodology and procedure followed for Environmental test by OEM should be provided for information of the buyer. Suitable clause accordingly be added in the RFP.

3 **Technical Evaluation**: To assess the performance of the Rocket DGQA and User Evaluation will be carried separately. Rockets required for evaluation needs to be supplied by the vendor at free of cost.

4. **Technical Literature**: User hand book/operators Manual, design specification, preservation Instructions and Technical Manuals to include Technical description, Inspection/Maintenance tasks, procedures for assembly/disassembly, safety precautions and instructions for proof and testing will be provided by the vendor. All literatures should be bi-lingual i.e. HINDI AND ENGLISH.

5 **Range Table** : Range Table for plain and mountain to be provided. False range table to be made available during Technical evaluation.

6 **Packing**:

(a) The Rocket ammunition should be packed in the rectangular wooden box.

(b) Fuzes are to be packed separately in hermetically sealed steel containers.

(c) The package should be legible, give the details of ammunition, lot No, year of manufacture, quantity etc and UN Hazard Division labels as normally done for ammunition.

(d) It is mandatory that all packing materials of any kind made of plant origin used for Packing shall require treatment including Heat-Kiln treatment at 56°C for a minimum 30 hours or Methyl Bromide Fumigation at 48g/cum for 32 hours of chemical impregnation of wood with wood preservatives such as copper chrome arsenic or any other approved treatment as per International Standards. Shipment coming into India shall be packed in packaging material confirming to this standard and shall carry a Phytosanitary Certificate issued by an authorized officer at the country of origin of the consignment in the format prescribed under International Plant Protection Convention of the Food & Agriculture Organization. It may also be noted that consignment dispatched without the aforesaid certificate can be detained by the concerned officers of the customs unless clearance is obtained from the plant Quarantine Authorities at the expense of the imposter. 'Packing Material' here means any kind of material of plant origin used for packing which shall include hay, straw, wood saving, wood chips, saw dust, wood waste, wooden pallets, dunnage mats, wooden packages, coir pith, peat or sphagnum moss etc.

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(e) The packing of the Equipment and Spares/goods shall confirm to the requirements of specifications and standards in force in the territory of the Seller's country.

(f) Each spare, tool and accessory shall be packed in separate cartons. A label in English shall be pasted on the carton indicating the under mentioned details of the item contained in the carton. A tag in English with said information shall also be attached to six samples of the items. If quantity contracted is less than six then tag shall be affixed to complete quantity contracted of the item. The cartons shall then be packed in packing cases as required.

7 **Quality:**

(a) The term “quality”, shall denote the quality of ammunition, workmanship, production practices and procedure and shall apply to all deliverables including component parts sources from third countries to be supplied in accordance with the contract.

(b) The quality of the ammunition to be delivered shall confirm to the standards and/or specifications of the manufactures in force in Seller’s country at the time of manufacture and shall be certified depending on the type of the special equipment by one of the following documents:

- (i) Certificate of Quality
- (ii) Passport or Service log
- (iii) Specification-Certificate of Quality

(c) All the ammunition to be delivered under the present contract shall be new, unused, and in working order

8 **Shelf Life** : Shelf life in the roofed warehouses in 15 years, including on the open site under cover – 5 years. These storage conditions are valid for temperature rate between -40°C up to +50°C. It can be stored under temperature of the ambient air from +50°C up to 60°C within the period not more than 6 hours per year.

9 **Environmental Conditions :-** It should meet for the following conditions:

(a) Minimum temperature for used	-30°C
(b) Maximum temperature for use	+55°C
(c) Minimum temperature for storage	-20°C
(d) Maximum temperature for storage	+55°C
(e) Maximum Relative Humidity	98%
(f) Average Relative Humidity	65%

10 **Quality Assurance:** Supplier would provide the Standard Acceptance Test Procedure. within one month of this date of contract. Buyer reserves the right to modify the ATP. Supplier would be required to provide all test facilities at his premises for acceptance and inspection by Buyer. The details in this regard will be coordinated during the negotiation of the contract. The item should be of the latest manufacture, conforming to the current production standard and having 100% defined life at the time of delivery.

11. **Inspection:** The Inspection will be carried out by DGQA. The mode of Inspection will be user inspection & Joint Inspection.

12. **Safety:** Subject to observing the operating documentation regulations, RPs should ensure safety during handling and storage. The RP after having been dropped on any surface, including ground, will not be subjected to firing and it shall be disposed in normal standard procedure. It should be safe for transportation during vehicles, railway, air, river and sea without any limitations as to the distance and at the speeds permissible for these kinds of transport is allowed. Safety requirements during firing will be provided by OEM.

13. **Warranty:**

(a) The supplier should provide the warrants for the quality of design, manufacture, materials, packing, marking, preservation and the proper functioning of the equipment for the period of **24 months** from the date of arrival of equipment.

(b) The warranty is valid under the condition that the delivered equipment is operated, maintained and stored by the CUSTOMER in compliance with the technical instruction given in the documents supplied by the SUPPLIER.

(c) The SUPPLIER during the warranty period shall deliver/replace/rectify the deficient/defective equipment in case the defects or the shortage in delivery occurred through his fault.

14. **Additional information**

(a) UN HD division and compatibility Group of ammunition.

(b) Compatibility Certificate for the firing of the rocket through existing in-service Equipment.

(c) Methodology and Procedure for the Assessment of the Shelf Life of Rocket and Fuze.

(d) Maximum obtainable shelf life

(e) Explosive filling details of Rocket and Fuse along with specification, Grade and acceptance parameter for assessing the serviceability of the rocket ammunition.

(f) Do and Do not for use

(g) Details of the Environmental Test carried out at design and production stages.

(h) Rocket and Fuzes should be functional during the entire allotted shelf life. (Certificate to be provided by seller)

(j) SOP for conduct of Defect investigation on occurrence of accidents and defects during exploitation of the ammunition to be provided by the suppliers.