


RESTRICTED

CERTIFICATE

Certified that the specification No.:ODC-OFMK/R&D/MMPV-03  
Bullet Proof Glasses for MODERNIZED MPV has been made.  
It contains 03 pages and they have been serially numbered  
from serial No. 01 to 03

  
12/11/09  
( B.P. BABU )

SR.DIRECTOR  
ORDNANCE DEVELOPMENT CENTER  
ORDNANCE FACTORY, MEDAK

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(Total Pages - 04)

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SPECIFICATION NO. ODC-OFMK/R&D/MMPV-03, DT.11-11-2009

BULLET PROOF GLASSES FOR MODERNIZED MPV

1. SCOPE :

This specification pertains to supply of 52mm thick splinter proof B.P. glasses for Modernized MPV

2. PROTECTION:

Bullet Proof glass of 52+1/-0 mm thick should give the protection against 7.62 Dragnov Armour piercing ammunition with muzzle velocity 810 to 830 meters per second (approx) from a distance of 10 meters.

3. MATERIAL CONDITION:

- i) All the glasses are of splinter proof glasses.
- ii) No water, air or dust should form inside the glass layers for this manufacturer/suppliers are required to furnish three years guarantee.
- iii) The glasses should be free from defects such as cracks, pock marks, sand/silica marks, scratches, visual or distortions, dust particles etc., on inner/outer surfaces of all layers.
- iv) The bullet proof glass shall be fixed in the frames, and fitted on the vehicle strictly as per specifications/advice of the manufacturer by this organisation. In spite of this if bullet proof glass develops cracks during usage within a period of 3 years from the date of purchase then the manufacturer shall be liable to give free replacement against this damaged glass.

4. TRANSPARENCY:

The BP glasses should be fully transparent without any colour tint.

The refractive index of the glass should provide distortion free single image visual characteristic.



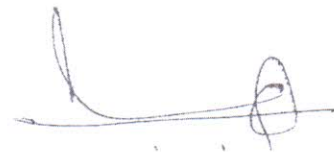
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**BULLET PROOF GLASSES FOR MODERNIZED MPV**

5. **INSPECTION:**

- i) By GM/OFPM or Dir/ODC or his authorized representative at ODC-OFMK for dimensional, visual, fitment or rubber beading and for ballistic checks.
- ii) Splinter proof glass samples (size: 500x500mm) should be supplied at free of cost. This should be true representative of bulk in respect of material at the time of manufacturing, thickness etc., this samples will be ballistically tested at ODC-OFMK. Manufacturers representative can be present if required.
- iii) The sample should withstand 3 rounds of fire. Distance between two hits should be minimum 120mm. size of the sample glass is 500x500mm (minimum)
- iv) One set of samples from each batch should be tested at ODC-OFMK for ballistic trials. If the item fails in ballistic trials, complete batch will stand rejected at the cost of supplier.
- v) Test Certificate: Each batch should accompany test certificate clearly indicating the tests carried out and also distance as stipulated in para – 2 and 5 (iii) BP glass can withstand.
- vi) Piercing / failure of BP Glass : If the bullet specified as in para – 2 penetrates the sample (para 5 (iii) and passes through the full thickness of the glass causing a through hole it will be considered as a failure of BP glass.

If the bullet shatters the glass and lodges inside the glass, without coming out and without causing a hole on opposite surface, it will be considered acceptable. And if the glass film on the back side /opposite surface shatters it will be considered a failure of BP glass.



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6. **RUBBER BEADING:**

Rubber beading to be supplied by the firm along with BP glasses. U-type rubber beading to be supplied as per sketches enclosed. Windshield glass should be supplied in assembly with rubber beading.

Rubber details:

- |                     |   |                              |
|---------------------|---|------------------------------|
| a) Type of rubber   | : | Polyvinyl butadiene.         |
| b) Shore hardness   | : | 65 +5 at the time of receipt |
| c) Tensile strength | : | 70 +5 kg/Sq.cm               |
| d) Elongation       | : | 300% + 10 min                |

7. **PACKING:**


Glasses are to be packed for safe transportation either by Air/Ship/Rail and Road.

8. **GENERAL:**

ODC-OFPM reserve the right to

- i) Ballistic test the glass(es) from the (supplied) bulk at any point of time.
- ii) Reject the complete lot even accepted on sample testing, in case the glass taken from the lot (bulk) fails in the ballistic test on supplier's cost. Also supplier has to replenish the expended glass free of cost if the glass does not fail in ballistic test.

Delivery time, quantity and other terms and conditions are as per tender enquiry documents.

  
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CERTIFIED THAT THE FOLLOWING AMENDMENT HAS BEEN MADE IN SPECIFICATION NO: ODC-OFMK/R&D/MMPV-03 BULLET PROOF GLASSES FOR MODENIZED MPV. IT CONTAINS 04 PAGES AND THEY HAVE BEEN SERIALLY NUMBERED FROM SERIAL NO. 01 TO 04

**FOR:**

SL. NO: 5 – INSPECTION: - BY GM/OFPM OR DIR / ODC OR HIS AUTHORIZED REPRESENTATIVE AT ODC – OFMK FOR DIMENSIONAL, VISUAL, FITMENT OR RUBBER BEADING AND FOR BALLISTIC CHECKS.

**READ:**

SL. NO: 5 – INSPECTION:- BY Sr.GM/VFJ OR DIR / ODC OR HIS AUTHORIZED REPRESENTATIVE AT ODC – VFJ FOR DIMENSIONAL, VISUAL, FITMENT OR RUBBER BEADING AND FOR BALLISTIC CHECKS.

*MCas*

(VIKAS PURWAR)  
DIRECTOR

ORDNANCE DEVELOPMENT CENTRE  
VEHICLE FACTORY, JABALPUR

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