

RESTRICTED

CERTIFICATE

Certified that the specification No. VFJ/R&D/LA/SP/BPV/GLASS/SML (4X4) for bullet proof glasses for the bullet proofed SML (4X4) created on 14th June 2019 hereby stands amended on 20 Jan 2020.

This is the first amendment issued to the specification i.e. (Amendment no.01, dated:20/01/2020). It contains 07 pages and they have been serially numbered from serial No .01 to 07. The last 04 pages of this specification consists of drawings.

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20.01.2020

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BULLET PROOF GLASSES FOR BP SML (4X4)

(Amendment no.01, dated:20/01/2020)

01. SCOPE :

This specification pertains to supply of 50mm thick splinter proof bullet proof glass for BP SML (4X4) vehicle.

02. PROTECTION :

Bullet proof glass of 50mm +1mm thick (fitted with rubber beading) should provide protection against 7.62 SLR, Nato Ball ammunition with muzzle velocity 838 +8 meters per second (approx) from a distance of 10 meters.

03. MATERIAL CONDITION :

- i. All glasses should be made by using minimum 4mm thick silicon coated, optical quality, scratch proof poly carbonate sheets, Certificate from original manufacturer of poly carbonate sheet with batch number etc, should be furnished by the supplier. The glasses should be splinter proof.
- ii. No water, air or dust layers should form inside the glass and for the same, the manufacturer/supplier is required to furnish three years guarantee.
- iii. The glasses should be free from defects such as cracks, pock marks, sand/silicon marks, scratches, visual distortions, dust particles, trapped moisture etc, on inner/outer surface of all layers.
- iv. The bullet proof glasses shall be fixed in the frames and fitted on the vehicle strictly as per manufacturer's specifications/advice at Vehicle Factory Jabalpur. In spite of this, if the glass develop cracks within a period of 3 years from the date of purchases, the manufacturer shall be liable to give free replacement.

04. TRANSPERANCY :

The Bullet proof glass 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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05. INSPECTION :

- i. By Sr. GM/VFJ or his authorised representative at VFJ for dimensional, visual, fitment of rubber beading on the glass and for ballistic test .
- ii. One sample of bullet proof glass of size 500mmx500mm should be supplied free of cost along with each lot of 10 sets or part there off . The sample should be true representative of bulk in respect of material, thickness and the manufacturing process . This sample will be ballistic tested at Vehicle factory Jabalpur end . (Manufactures representative can be allowed to be present during ballistic test on request, if required) If the sample fails in ballistic test, the entire lot supplies will be rejected at the cost of supplier .
- iii. The sample should withstand 3 rounds of fire at minimum distance of 120 mm from each other .
- iv. The supplier should furnish test certificate with each lot of bullet proof glasses clearly indicating the tests carried out and a certificate of guarantee that bullet proof glass will withstand fire from the weapons as stipulated in para 2 and 5 (iii) .
- v. If the bullet as specified in para 2, penetrates the sample and passes through the full thickness of the glass causing a through hole, it will be considered as a failure of bullet proof glass .
- vi. If the bullet shatters the glass and lodges inside, without coming out of it and causing a hole on front hit surface, it will be considered acceptable . However, if the glass film on the back side/opposite surface shatters, it will be considered as failure of the bullet proof glass .
- vii. As regard presence of scratches, lint, black spot, interlayer defects and cracks in the bullet proof glasses, it will be inspected as per IS 2553 (part-2) -1992-para 5.1.5 .
- viii. The bullet proof glasses should be free from the presence of virtual scratches arising due to lack of process control .

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6. RUBBER BEADING :

i. Rubber beading to be supplied by the firm along with bullet proof glasses . For wind shield glass (Drg No. LA/BPV/SML/GLASS/001/A), driver co-driver glasses (Drg No. LA/BPV/SML/GLASS/002/A), side glasses (Drg No. LA/BPV/SML/GLASS/003/A), and rear glasses (Drg No. LA/BPV/SML/GLASS/004/A) along with U-type rubber beading to be supplied by firm as shown in bullet proof glass drawings . Drawings referred herein form an integral part of this specification .

ii. All bullet proof glasses including wind shield glass should be supplied with rubber beading having not more than one joint in assembled condition .

Rubber Details :

- a) Type of Rubber : Neoprene/EPDS
- b) Shore hardness : 65 + 5 at the time of receipt
- c) Tensile strength : 70 + 5 kg/Sq. Cm .
- d) Elongation : 300% + 10 min .
- e) Poly content : 60% min .

7. PACKING :

Glasses are to be packed for safe transportation . Any damage during transportation will be at the cost of the supplier .

8. GENERAL :

1. Sr. GM/VFJ reserve the right to randomly select a test from the bulk at any point of time for ballistic test and reject the complete lot if this random sample fails even if the original sample was found acceptable during the ballistic test .

2. In case the lot is found acceptable on ballistic testing, the expended piece has to be replenished by the supplier free of cost to make good the set .

3. The supplier must fix his monogram and indicate serial No. & year of the manufacture of each glass to ensure traceability .