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52/01/97-DD(W)-01 (Revised - I)

Inspection Criteria for BP Steel

1. Scope

This inspection criteria is meant for testing of Bullet Proof steel sheets which will provide protection against fire from 7.62 mm SLR and AK-47 from close range i.e./ from 10 mtr. distance.

2. Thickness

AK-47 : 4.0 mm to 4.5 mm including rolling tolerances.
7.62 mm SLR : 6.0 mm to 6.7 mm including rolling tolerances.

3. Physical inspection

The supplier will supply the BP sheets duly tested for hardness at a number of places and the hardness testing marks must be visible. The supplier will give a certificate giving hardness in BHN, UTS, YS, percentage elongation and heat number of the BP steel sheets. A certificate that the steel is bullet proof will be given by the bullet proof steel manufacturer.

4. Method of firing

The BP steel sample sheets will be rigidly secured in a suitable fixture and bullets will be fired on the sample sheet normal to the surface from 10 mtr. distance. The distance will be measured from the muzzle of rifle to the BP steel sample plate as shown in the figure-I.

The test sheet sample will be cut to the required size (300 mm x 300 mm) from bigger B.P. steel plate offered for testing or to be used for bullet proofing of vehicle. All B.P. steel sheets of size greater than 90,000 sq. mm in area will be sample tested ballistically cent percent. Test samples will be selected randomly by the inspection team.

5. Firing area

On the test sample, the bullet should not hit the plate within 15 mm of its edges/outer periphery. No two bullets should hit at a distance of less than 10 mm from each other on the firing area of the sample as explained above (please refer to figure 2).

6. Testing

(a) With 7.62 SLR : Atleast 6 (six) shots will be fired upon from a distance of 10 mtr. using 7.62 mm SLR on a sample size of 300 mm x 300 mm.

Velocity of the projectile should be nominal 838 Mtr. per second with positive tolerance of 8 Mtr. per second. Normal ball 7.62 mm ammunition will be used for this sample testing.

- (b) With AK-47 rifles : Atleast 6 (six) shots will be fired upon from a distance of 10 mtr. in single mode using AK rifle on a sample sheet of size 300 mm x 300 mm . The velocity of projectile should be nominal 715 mtr. per second with positive tolerance of 15 Mtr. per second and negative tolerance of 0.0 Mtr. per second. No two bullets should hit the plate within 10 mm of each other on its firing area. A minimum of one burst of 3 AK-47 rounds will be fired on each sample piece.

7. Acceptance/projection

The B.P. sheet sample will normally be rejected for the following three reasons :

- Bullet passes through the B.P. steel : If the bullet passes through the sample, the parent sheet is rejected.
- The B.P. steel sample cracks due to bullet firing : If the bullet makes a visible hair line through crack on the opposite side of the sheet (to be checked by kerosene), the parent sheet is rejected.
- Bullet produces abnormal distortion/bulge/back face signature in the B.P. steel sample sheet : If the bullet produces bulge of 3 mm or more for 4 mm nominal thickness sheet or bulge of 5 mm or more for 6 mm nominal thickness sheet, the parent sheet stands rejected.

The parent sheet whose sample withstands the ballistic testing will be used for bullet proofing of vehicles.

8. Management of rejected B.P. steel sheets

The rejected B.P. steel sheet will be cut to smaller sizes and marked rejected by punching on them on the spot. These sheets will not be used for bullet proofing application.

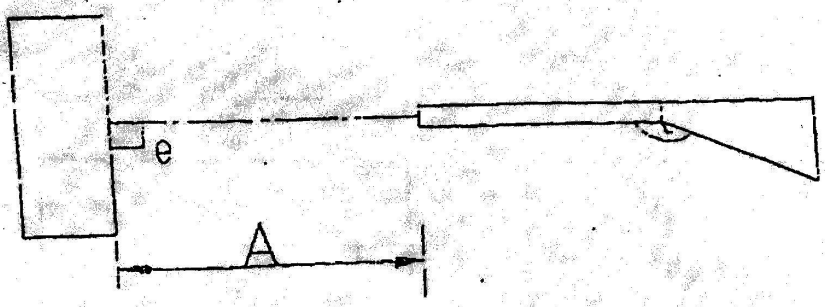
9. Miscellaneous

The Indian B.P. steel manufacturers will provide free access to the inspection team to their works of B.P. steel manufacturing.

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TESTING OF B P STEEL

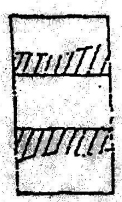
FIGURE - I



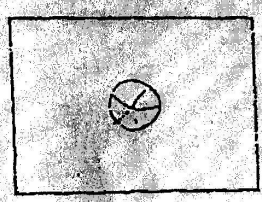
A	AK47	AK47	7.62 SLR
Mts	10.0	10.0	10.0
mm	4.0 ^{+0.5} _{-0.5}	6.0 ^{+0.3} _{-0.3}	6.0 ^{+0.1} _{-0.1}

NOT TO SCALE

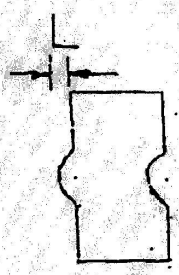
MODES OF REJECTION



THROUGH HOLE



HAIR LINE THROUGH
CRACKS



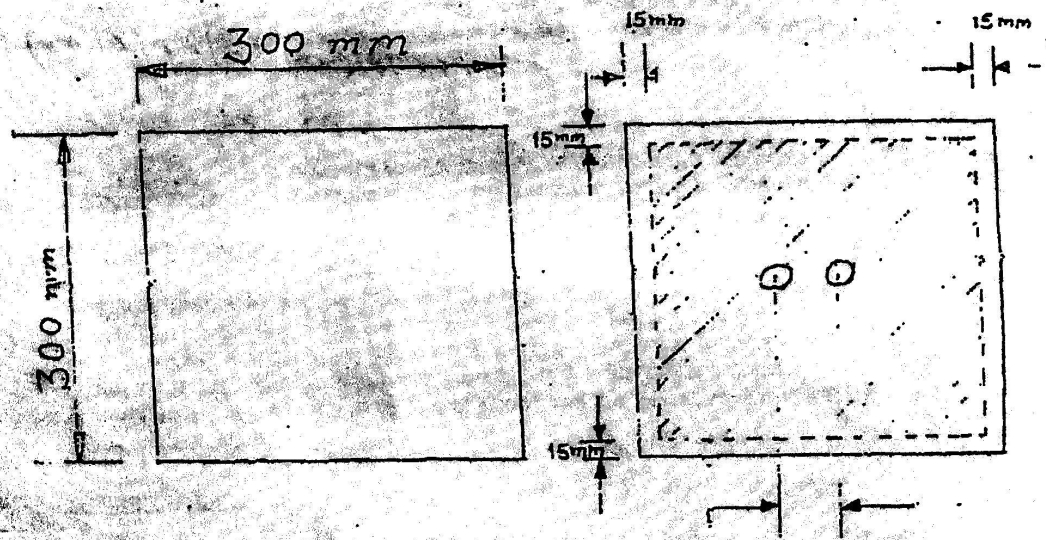
MAXIMUM
DISTORTION

L = 3.0 mm
4.0 mm thick
L = 5.0 mm
6.0 mm thick

NOT TO SC

CA 4
Last

FIGURE - II



ALL BULLETS TO HIT IN SHADED PORTION ONLY MINIMUM DISTANCE FOR TWO BULLETS HITS - 10mm