

SPECIFICATION

C-SD OTE NO.037ADV1920 Dt-23-09-2019

SIS Number: 20190273
Item Code : 2101613865

Dated : 17/09/2019

BALLISTIC GRADE OF ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE
UNIDIRECTIONAL FABRIC USED IN HARD ARMOUR PANEL (HAP) OF
BODY ARMOURS
OCF AVADI SPECIFICATION No.: 1201909/002 (enclaved)
~~SAMPLING PLAN : AS PER ANNEXURE (ISO/2859)~~ ✓

0044396

Nomenclature: Ballistic Grade Ultra High Molecular Weight Polyethylene Unidirectional fabric used in Hard Armour Panel (HAP) of Body Armours

Requirements:

- a) **Chemical** : (i) Material: Ultra High Molecular Weight Polyethelene
- b) **Physical**: (1) Width: 160 cm minimum (ii) GSM : $245 \pm 8\%$
(iii) Construction : Unidirectional composite sheets cross plied & orientation $0^\circ/90^\circ/0^\circ/90^\circ$
- c) **Mechanical** : (i) Tensile Strength (Minimum): 10000N (As per IS 7016 part 2)
(ii) Ball bursting strength (Minimum): 3000N (As per IS 7016 part 6 method A)
- d) **Ballistic**
- (i) Fabric shall be strong enough to withstand the impact of bullets fired from ammunitions as given in Table – A
- (ii) Fabric should posses the property of greater energy distribution
- (iii) Multiple layers of fabric with areal density of 4.90 Kg/m^2 when subjected to ballistic testing for threat level III+ as a composite with Monolithic Silicon Carbide Ceramic Plate of thickness 7.5 mm shall be able to stop bullets fired from the following ammunitions a distance of 10 metre.

Table-A

Test Bullet	Bullet Weight (g)	Reference Velocity (m/s)
7.62 X 39mm (Hard steel core)	7.45 to 8.05	700 ± 15
7.62 mm NATO FMJ	9.4 to 9.6	838 ± 15

(iv) Ballistic limit:

The ballistic limit V_{50} shall not be less than 550 m/s when tested with 17 grains FSP type II at areal density of 4.90 Kg/m^2 as per MIL – 662F standards.

The protection ballistic limit BL(P) shall be the average of 6 fair impact velocities consisting of the three lowest velocity complete penetrations and the three highest partial penetration velocities provided that the spread for the six velocities is not greater than 30 m/s.

In case where the zone of mixed results is greater than 30 m/s (i.e., the highest partial penetration velocity is higher than the lowest complete penetration velocity), the BL(P) shall be the average of 10 fair impact velocities consisting of five lowest complete penetration velocities and the five highest partial penetration velocities provided that the spread for the Ten velocities is not greater than 38 m/s.

Firm shall provide Ballistic evaluation report in support of V_{50} values of each lot.

(v) Firm shall provide OEM certificate along with traceability, year of manufacture (Vintage not before 2019) and Country of Origin Certificate.

Note: OCF Avadi reserves the right to perform the ballistic evaluation of item supplied. A sample of multiple layers with areal density of 4.90 Kg/m^2 as a composite with Monolithic Silicon Carbide ceramic plate of 7.5 mm will be tested for threat level III+.

Jt.GM/ODC

AWM/ODC

HOS/ODC