

## **SPECIFICATION FOR HIGH-VIS VEST (Class 2)**

The vests must be designed, manufactured, stitched and constructed as per IS-15809: 2017 for Type 1, Class 2 (Indian standard) for high visibility warning cloth. The Color shall be Fluorescent Yellow as specified by IS-15809: 2017. Fabric content shall be Polyester-Cotton with 65% Polyester and 35% Cotton (+/- 5). This fabric should be IS-15809:2017 approved standards for Color fastness from a NABL accredited testing laboratory.

### **FABRIC SPECIFICATION**

<b>Sr. No.</b>	<b>Tests Conducted</b>		<b>Expected results</b>
1.	Polyester in the background fabric should be at least. (IS	% Polyester	65 (+/-5)
2.	Cotton in the background fabric should be at least.	% Cotton	35 (+/-5)
3.	Color Fastness to artificial light	Rating	4
4.	Color fastness to washing @ 60°C.		
	Change in color		4-5
	Staining on Acetate/cotton/polyamide/polyester/acrylic/wool		4/4-5/3-4/4-5/4-5/4-5
6.	Color fastness to rubbing Staining on cotton	Dry Wet	4-5 4
7.	Color fastness to perspiration.		
	Change in color	Alkaline	4-5
	Staining on Acetate/cotton/polyamide/polyester/acrylic/wool.		3-4/4/3-4/4-5/4-5/4
	Change in color	Acidic	4-5
	Staining on Acetate/cotton/polyamide/polyester/acrylic/wool.		3-4/4/3-4/4-5/4-5/4
8.	Color fastness to dry cleaning solvent used: perchloroethylene		
	Change in color		4-5
	Staining of solvent		3-4
9.	Colorfastness to hypochlorite bleaching		
	Change in color		4-5
10.	Color fastness to hot pressing at 110°		Dry Damp Wet
	Change in color		4-5 4-5 4-5
	Staining on cotton		- 4-5 4-5
11.	% dimensional change by washing.		
		Warp	0.0
		Weft	0.5 shrinkage
12.	Tensile strength (Newton) 5 cms strip method.		
		Warp	1700 (min)
		Weft	300 (min)

13.	Surface resistivity (Antistatic test) in $\Omega$		Should comply EN ISO 1149-1
14.	Fire retardant test		Should comply IS 11871
15.	Luminance factor for background material, $\beta$ value (min)	-	For Red Orange: 0.40 Yellow/Green: 0.70
16.	Co-efficient of retroreflection for reflective tape, cd.lx-1m-2 (min)		Should comply IS 15809:2017 (cl. 3.11)

The Reflective tape shall be Glass bead type Reflective tape. 2 vertical 2 Horizontal in front and back The Reflective Glass bead material shall be tested as per IS-15809: 2017.

Following procedures shall be followed at the time of structuring reflective material on to the Polycotton Fabric for better strength:

- The vest shall have Front fastness construction for greater wearer comfort & maneuverability.
- Lower rise at the waist will be followed by the horizontal strip of reflection.
- Collar and throat tab shaped providing optimum compatibility. New shoulder shape and decreased side sleeve allow full rotation mobility in
- Shoulder and arm. There will be presence of side supporting fabric avoiding joints at side. The arm cut should be at reasonable distance such that the wearer should find no obstacles in wearing or working with the vest.
- Hook & loop fasteners will be given for closing and opening of the vest. There should be no joints at the side of the vest.
- The shoulder should be over locked for extra fitting & strength. This will help to provide locking of any loose edges and that there should be no migrations of colors on the reflective vests or the reflective tapes.
- 100% polyester 3 ply thread will be used for stitching and be matched wherever the color combination is required.
- The vest should provide for 360° visibility.

#### **Background Fabric:**

The background cloth 65:35 Polyester Cotton pertaining to IS-15809:2017 standards shall have following features:-

1. The basic fabric used shall be high visibility fluorescent dyed material for enhanced day time visibility consisting of 65/35 % Polyester/Cotton yarn in warp & 65/35% Polyester/Cotton yarn in weft. So that polyester yarn in warp having high reflection property will project on the upper surface of the garment & cloth yarn in weft having low reflection property will remain in the inner surface of the garment & provide sufficient comfort to the wearer even though worn over regular clothing.
2. Blend Composition: The overall blend composition shall be 65:35 Polyester Cotton.
3. GSM: Mass of background material shall be 170-180 GSM
4. Comfort Level: The Cotton yarn will remain in the inner portion of garment enhancing the comfort level of the wearer, even in hot conditions.

**Reflective Tapes:** Reflective tape shall comply IS-15809:2017) & certified by OEKO-TEX (Class 1)

- Glass bead type reflective tape shall be certified for 100 washes @ 60°C as per ISO 6330 6N
- The reflective material shall have minimum reflectivity of 500cd/lux.
- Reflective material shall be visible from 300 Mtrs.

### **Reflective Logo:**

The PVC type reflective logo (size not less than 4 X 3 Inches) of MGVCL and other information as provided by company as per attach graphic shall be visible in the dark and reflective when Light falls on it thus creating the Brand leverage & total visibility. Reflective logo can be stitched on front and back side of the vest. The logo printing to be done on the inner surface of micro prismatic reflective sheet and border to be sealed for better life of the logo.

### **Documents Required:**

1. Test Certificate of Hi Visible Fluorescent background material tested & passed as per IS-15809:2017 standards from Textile Committee. (or other NABL Accredited like ATIRA)
2. Certificate of OEKO-TEX (Class 1) for Reflective tape along with letter of conformity for quality approval as well as authorization letter against specific end usage (product, department name, tender ID etc.) from manufacturer to be submitted with bid
3. Sample for feel & finish must be submitted with tender.
4. Brand, ISI marking & manufacturer wash care instruction tag to be on each jacket.
5. In case of Dealer/ Distributer / Trader, Notarized copy of authorization letter from Manufacturer is must.
6. The manufacturer shall have In-house testing laboratory conforming to IS-15809:2017 standards for the testing of background material & reflective tape.

### **SIZE of VEST:**

Size	Length (inch)	Chest (Inch)
Small	25	38
Medium	27	40
Large	28	43
X-Large	29	45
XX-Large	30	47
3XL	31	49
4XL	32	50

Fabric and Reflective material should be sent to NABL/Govt. Approved laboratory for testing following parameters.

### **Fabric**

1. Content of the fabric
2. GSM
3. Color fastness (As per IS-15809: 2017 standards)

**Reflective Tape**

1. Reflectivity
2. Wash ability
3. Abrasion (As per IS-15809:2017 standards)

—50 BANDS



**All dimension are in mm.**