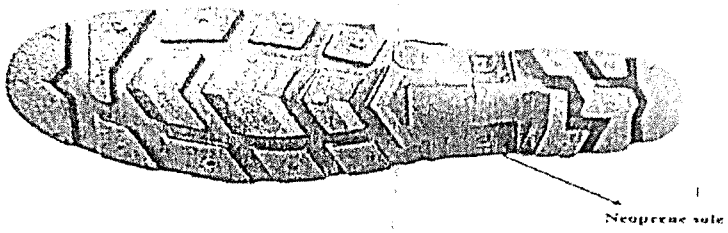

Figure -4 Wader shoe sole

Size of Wader Suit:- Different size of Wader Suit will be required as per the demand.

Trial directive of wader Suit:-

1. Colour test .
2. Water proof test.
3. No manufacturing error.
4. Comfortable to wear.
5. Should not hamper mobility .
6. The vendor shall provide test report along with wader suit as per the buyer requirement. The test report shall be form Govt. approved laboratories like NITRA and others.
7. Undertaking by the Suppliers that it fulfils all the QR requirements

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Director General, ITBPF

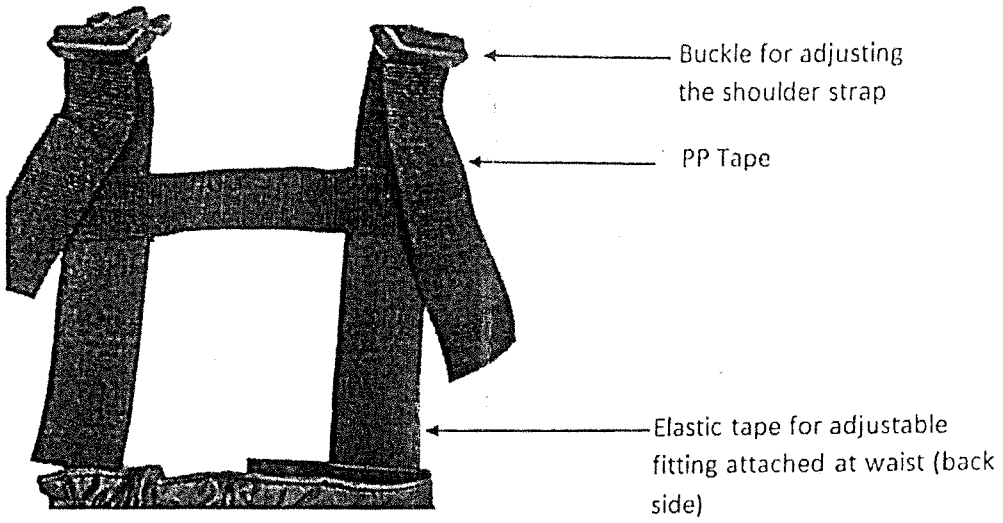

Figure -2Adjustable shoulder strap

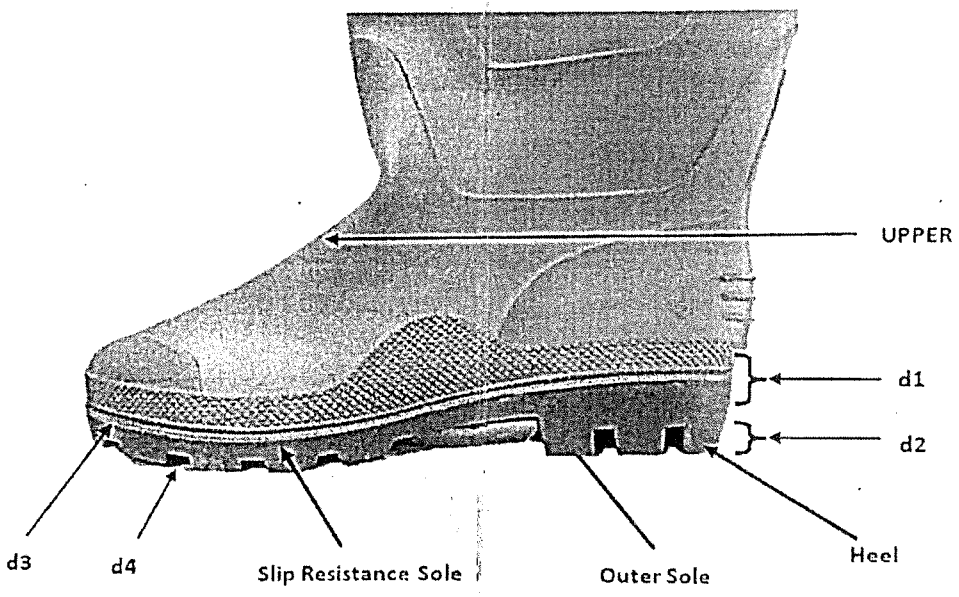

Figure -3Wader shoe

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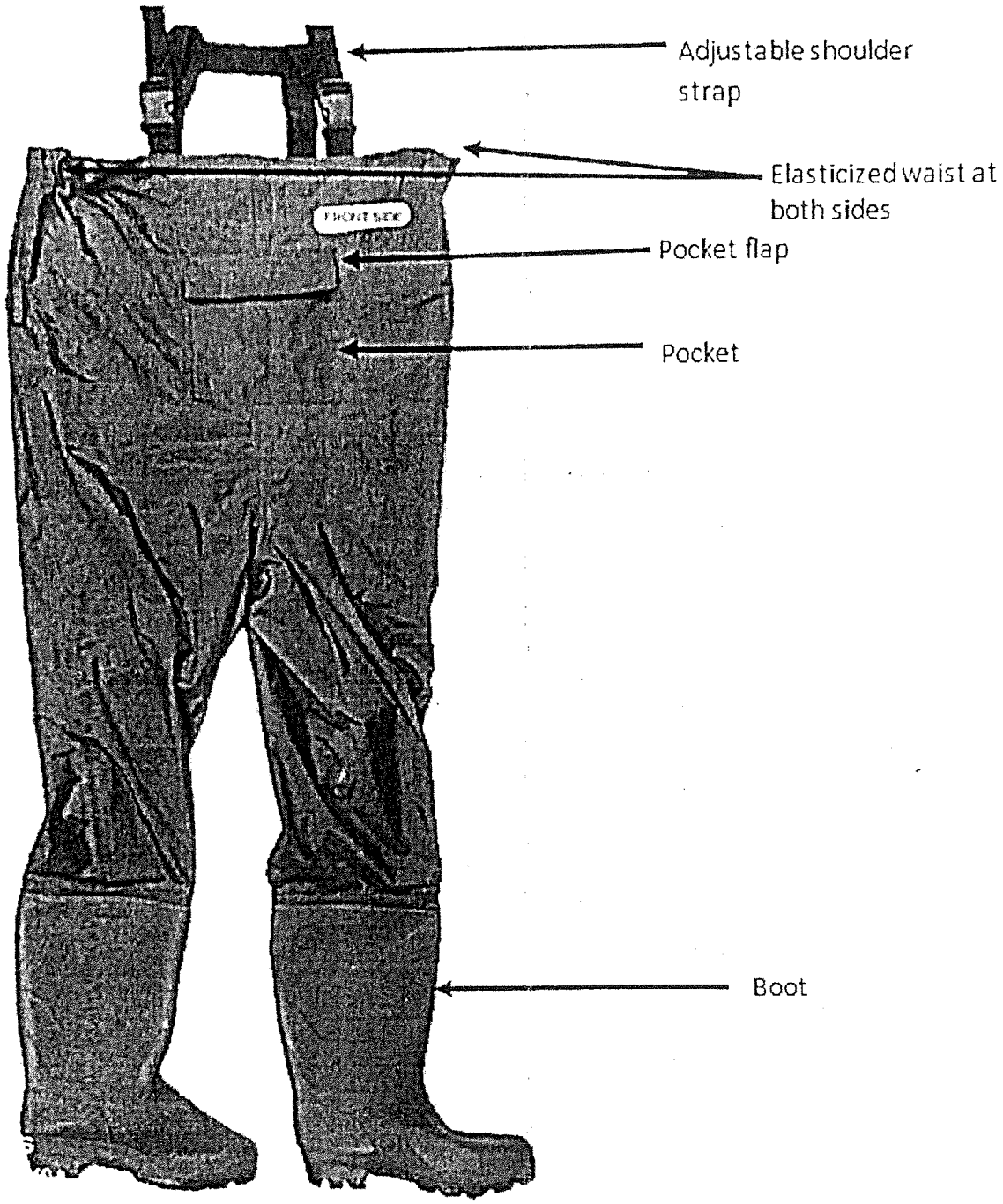

Figure -1 Wader Suit (front)

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Method of Leaching: The specimen shall be immersed in water at a temperature of 15 to 20°C and a pH of between 6 and 8 for 72 hours. The specimen shall then be removed, air-dried and brought to standard atmospheric conditions prior to further testing.

Table 2: Specification of colour of the "Wader Suit" except boot

(Guideline of AATCC Test method 173 & AATCC Evaluation Procedure 7)

Colour System	Green		
Illuminant Observer	CIE LCH		
Standard Observer	D 65		
Tristimulus Values	10 Degree		
	X	Y	Z
	5.709	6.422	5.273
L C H	L	C	H
	30.453	8.034	121.753
CMC (l:c)	2:1		
Colour difference, ΔE_{cmc}	≤ 3.0		

Interpretation of Results :

i) If ΔE_{cmc} is less than or equal to **3.0**, then the sample is acceptable.

ii) If ΔE_{cmc} is greater than **3.0**, then the sample is unacceptable.

Note-1: Absorbance/reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore, the comparison should be made between samples of the same type i.e., identical fabric construction parameters and filament/ fibre composition.

Note-2: Test should be carried out after proper conditioning as per AATCC 173 using a Diffuse (sphere) geometry spectrophotometer.

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WEBBING (ADJUSTABLE SHOULDER STRAP)			
1	Colour	Black	
2	Width, mm,	38 to 40	IS 1954
3	Identification of material	Polypropylene or Nylon	IS 667
4	Colour fastness to washing - Change in colour - Staining on adjacentfabric	4 or better 4 or better	IS/ISO105-C10 C(3): 2006
5	Colour fastness to light	5 or better	IS/ISO105 B02
6	Breaking strength, N, Minimum(Lengthwise)	1700	IS 1969
ELASTIC TAPE			
1	Colour	Black	
2	Position of Elastic tape - Elasticized waist - Elastic tape	- At both sides of the waist band (right and left side) Refer figure no -2) - Attached to the back side of the waist band and stitched to tape for adjustable fitting.	Visual
3	Width,mm,	38-40	IS 9686
4	Extension at 50% Load, gf	350 to 700	IS 9686
5	Limit of useful extension, %, minimum	120	IS 9686
6	Tension Decay under constant stretch	Shall not exceed 5 %	IS 9686

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SHOES (FULLY MOLDED)			
1	Shoe upper material	Poly Vinyl Chloride (PVC)	As per Hand Book of Common Polymer
2	Flexing of shoe upper (20 000 flexing cycles)	No crack shall be observed	IS 15298 Pt 1
3	Attachment of shoes	Shoes should attachtothe wader suit	Visual
4	Thickness of shoe upper (mm)	2.5±2	IS 15298 Pt 1
5	Thickness of outsole heel (mm) -d1 -d2	 11 to 13 9 to 11	 IS 15298 Pt 1 (Refer to Fig. 3)
6.	Thickness of Slip resistance sole(mm) -d3 -d4	 4.5 to 5.5 5.5 to 6.6	 IS 15298 Pt 1 (Refer to Fig. 3)
7.	Upper and outsole interlayer bond strength, N/mm,	3.0	IS 15298 Pt 1 Clause 5.2
8	Colour	Green	Visual
9	Inner side laminated fabric -Identification of fibre -Mass of the inner fabric, Maximum	 Polyester 30	 IS 667 IS 7016-1
10	Anti slip sole (Fig.4)	Nitrile Rubber sole	As per Hand Book of Common Polymer
11	Density of out sole (gm/cm^3)	1.1-1.4	IS 17012:2018
HARDWARE (QUICK RELEASE BUCKLE)			
1	Identification of material of Buckle (both Male &Female Buckle)	Polypropylene or Nylon	As per melting point using appropriate apparatus. Polypropylene: approx. 170°C Nylon: 220 to 260°C
2	Pull Load, Kg, Minimum	50 (The male and female parts shall not in any case come out either due to slippage or breakage)	By applying load between the male and female parts of the buckle at a speed of 100 mm/minute.

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Appendix-A

QR/Specification of Wader suit

Introduction: The waders (Fig.1) feature a premium fixed boot design with a deep griped profile for increased stability on uneven and rocky terrain. The chest waders can easily be adjusted with the integrated adjustable shoulder strap and belt (Fig.2). The chest section features an integrated waterproof pocket for storing valuables or essentials while wading.

Sl.No.	Characteristics	Requirements	Test Method
1	Total weight of wader suit including shoe (kg), Maximum	3.0	Electronic weighing balance
2	Identification of coating	Poly Vinyl Chloride (PVC)	As per Hand Book of Common Polymer
3.	Identification of fibre of the uncoated fabric	Polyester	IS 667
4	Weave(Uncoated fabric)	1/1 Plain weave	Visual
5	End/dm(Uncoated fabric), Minimum	400 (for guidance)	IS 1963
6	Picks/dm(Uncoated fabric), Minimum	300 (for guidance)	IS 1963
7	Thickness (Coated material), mm, Maximum	0.35	IS:7016 Pt 1 (at 10kPa foot pressure)
8	Mass(Coated material),g/m^2, Maximum	400	IS 7016 Pt 1
9	Mass (Uncoated fabric), g/m^2, Maximum	70	IS 7016 Pt 1
10	Breaking strength(Coated material), Newton(Minimum) -Warp-wise -Weft-wise	 700 400	IS 7016 Pt 2
11	Tearing Strength(Coated material), Newton(Minimum) -Warp-wise -Weft-wise	 25 12	IS 7016 Pt 3 A1
12	Colour fastness to washing(Coated material) - Change in colour - Staining on adjacent fabric	 4 or better 4 or better	IS/ISO105-C10 C(3)

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13	Colour fastness to Perspiration(Coated material) - Change in colour - Staining on adjacent fabric	 4 or better 4 or better	IS/ISO 105 E04
14	Colour fastness to rubbing(Coated material) - Dry - Wet	 4 or better 4 or better	IS/ISO 105 X12
15	Colour fastness to light(Coated material)	5 or better	IS/ISO105 B02
16	Dimensional Change due to Relaxation(Coated material) after 72 hours -Both directions, percentage, Maximum	0.5	IS 2977
17	Water resistance, hydrostatic head test on coated material and seams -Before treatment -After leaching (Annexure-1)	 No water leakage up to 1200 mbar	EN ISO 20811, Dynamic method (Rate of rise of water 60 cm H2O/min)
18	Water repellency (Coated material) (Face side)	90	IS: 390
19	Stability at (-30°C for 6 hrs)(Coated material)	No crack	IS: 7016 pt 8 and IS: 7016 Pt 10
20	Colour specification(Coated material)	≤3.0	Refer Table 2
21	Stiffness (Coated material), cm, Maximum -warp -weft	 2.5 2.5	IS 6490
22	Flexing by De-Mattia (Coated material) (50,000 cycles)	No cracks and No delamination	IS 7016 Pt 4

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