

Provision of Data Regarding Existing Facilities / Laboratory Tests Available at PCSIR,

Leather Research Centre

Leather Technology Division (LTD)

S. No.	Description of Services	Test Methods
Leather Technology Division		
Physical Testing of Leather and Textile		
1.	Abrasion Resistance of Leather/Textile	EN-388
2.	Adhesion to Finish of Leather	IUF-470
3.	Apparent Density of Leather	IUP-5
4.	Binder application / Binder quality	Leather Technician Hand Book by J, H. Sharp House 1989
5.	Bursting Strength of Leather	IUP-9, ISO-3379
6.	Closure Strength of Touch and Close Fastener	WTM 123
7.	Coating Adhesion Test	CTM 112
8.	Cold Crack test of Leather	IUP-29
9.	Colour Fastness to Accelerated Ageing	ISO 17228
10.	Color Fastness to Perspiration (Leather/Textile)	ISO 11641, SATRA TM 355, AATCC-15, CTM 123A&B
11.	Color Fastness to Water (Leather/Textile)	ISO 11642, IUF-421
12.	Colour Fastness to Circular Rubbing of Leather (wet & dry)	BS-1006 UK LC SLF-5
13.	Colour Fastness to day light of Leather	ISO 105-B01, IUF-401
14.	Colour Fastness to Migration into PVC Material	ISO 105 X10, IUP-442
15.	Colour Fastness to Petroleum Sprit of Leather	ASTM D7676 14a
16.	Colour fastness to water spotting of Leather #	EO-7 (IUP-420)
17.	Colour Fastness to Dry & Rubbing (Crock Meter)	ISO 105 x 12/ ISO 11640
18.	Density (per inch/ gm Textile)	ISO-1833
19.	Dexterity of Gloves	EN-420
20.	Degreasing Power	Lab Developed Method
21.	Disperse Dye	CTM 141
22.	Elongation at Break of Leather	IUP-6, ASTM S2211-95, ISO-3376
23.	Fatliquor Application / Fatliquor Quality	Leather Technician Hand Book by J, H. Sharp House 1989
24.	Fibre Composition (Textile)	ISO-1833
25.	Fibre Identification of Leather	BLMRA Hides & Skins Under Microscope
26.	Flexing Endurance of Leather (wet & dry)	IUP-20
27.	Hydrolysis Resistance Test	CTM 143
28.	Measuring Area of Leather	ASTM D 2347-79
29.	Modified Lastometer Test	CTM 110
30.	Pigment Application / Pigment quality	Leather Technician Hand Book by J. H. Sharp House 1989
31.	Puncture Resistance Test (Leather)	EN-421
32.	Seam Strength	ISO 13935-1&2, ASTM D 1683
33.	Shrinkage temperature of Leather	ISO 3380, IUP-16, ASTM 6076

34.	Sizing of Working Glove	EN-420
35.	Softness of Leather	ISO 17235, IUP-36
36.	Static Water Uptake Water Hydrostatic Pressure	ASTM B1815
37.	Stitch tear Strength of Leather	IUP-44
38.	Tanning Agents application / Tanning Agents Quality	Leather Technician Hand Book by J, H. Sharp House 1989
39.	Tape Test	CTM 140, ISO 11644
40.	Tear Strength of Leather (Double Edge)	IUP-8, ISO-3377
41.	Tear Strength Glove (Single edge)	EN 388
42.	Tensile Strength of Leather	IUP-6, ASTM D 2209-95, ISO-3376
43.	Thickness of Leather	IUP-4
44.	Vamp Flex Test	CTM 111
45.	Water penetration of Leather	IUP-10
46.	Water vapor absorption	IUP-42
47.	Water Vapor permeability (Leather)	IUP-15
48.	Yarn Count Ne (Textile)	ISO-7211-5
49.	Minimum Clearance under Toecap at Impact	EN ISO 20344&45
50.	Hydrolysis of Out Sole	--do--
51.	Minimum Internal Length of Toecaps	--do--
52.	Interlayer Bond Strength	--do--
53.	Resistance to Fuel	--do--
54.	Whole Footwear Penetration Force	--do--
55.	Water Resistance to Hydrostatic Pressure	AATCC 127
56.	Impact Resilience	ASTM D2632
Microbiological Testing of Leather & Textile		
66.	Bacterial Count in Leather / Wet Blue	ASTM D-4576
67.	Determination of Activity of Enzyme Powder	(LOHLEIN-VOLHARD METHODS) Enzyme Technology in Beam House Practice
68.	Microbiological Analysis for Drinking Water	ASTM D-4576
70.	Anti-Fungal Activity	AATCC 30

Chemical Research Division (CRD)

S. No.	Description of Services	Test Methods
Chemical Research Division		
Chemical Testing		
135.	Acid Value of Oil	SLC 304, SLO 1/5
136.	Active matter in Leather Chemicals	
137.	Ash Content in Leather	ASTM 2005, D 261796
138.	Basicity of Chrome Tanning Material	SLC 136, SLT 6/2
139.	Chromium Oxide in Chrome Tanning Material (Cr ₂ O ₃)	ASTM 2005, D 3898-93
140.	Chromium Oxide in Leather (Cr ₂ O ₃)	SLC 8, IUC 8, BS:1309: 8
141.	Chromium VI in Leather	SLC 22, DIN 53314
142.	Chromium VI in Leather with (at 80°C, 20% RH) & without ageing	ISO 17075-1: 2017
143.	Chromium VI in Dyed Leather	ISO 17075-1: 2017
144.	Concentration in Leather Chemicals	
145.	Fat Content in Leather Chemical	SLC 319

146.	Degree of Tannage in Leather	ASTM 2000, D 6020-96
147.	Emulsifying Power	Lab Developed Method
148.	Fat Content in Leather (Wet Blue)	ISO 4048
149.	Fat Content in Leather (Crust Leather)	SLC 4, IUC 4, BS:1309: 4
150.	Fat Content in Leather (Pickle)	SLC 405
151.	Hide Substance in Leather	SLC 7, IUC-10: BS 1309:7
152.	Iodine Value of Oil	SLC 305, SLO 1/6
153.	Moisture in Leather	ASTM D3790
154.	Percentage of Fixed Tannins in Leather	ASTM 2005, D 6020-96
155.	pH Value of Leather Extract	SLC 13
156.	pH Value of Water	ASTM D 1293-99
157.	Saponification Value of Oil	ASTM 2005, D 5558-95, SLC-303
158.	Sulfide Content in commercial Sodium Sulfide	Chemical Analysis of Leather TNO
161.	Total Alkalinity of Sulphated Oil	Based on SLC 312, SLO 2/7
162.	Total Alkalinity of Lime	Chemical Analysis of Leather TNO
163.	Volatile Matter in Leather	SLC 3, IUC 45, BS:1309: 3
164.	Water Soluble Contents of Leather	SLC 5
Chemical Testing of Banned Chemicals		
165.	Aromatic Amines from Leather & Textile	Lab Developed Method
166.	Azo Dye from Leather & Textile	1. Bundesgesundheitsblatt 39 S. 78-81 Carl Heymanns Verlag KG, Koin 1996 2. Ecotoxicology Safety 53, 42- 47 (2002)& 3. Lab Developed Method
167.	Cortisone (Herbal Capsules Gopain)	Lab Developed Method (TLC)
168.	Dimethyl Fumarate (DMFu) in Leather	Lab Developed Method &EN ISO 16186
169.	Disperse Dye from Leather & Textile	Lab Developed Method
170.	Formaldehyde in Leather	ISO 17226, IUC 19, SLC 23 (2003)
171.	Formaldehyde in Textile	ISO 14184-1: 2011 (E)
172.	Nitro benzene in Leather & Textile	Lab Developed Method
Environmental Testing		
173.	Biological oxygen demand (BOD) in water & waste water	As per NEQS for Municipal and Liquid Industrial Effluents & APHA 20 th Addition
174.	Calcium for Drinking water	-do-
175.	Chemical oxygen demand (COD) In water & waste water	-do-
176.	Chlorides in water & waste water	-do-
177.	Dissolved Oxygen in water	-do-
178.	Iron in Water	-do-
179.	Magnesium in water	-do-
180.	Oil and Grease in water	-do-
181.	Permanent Hardness	-do-
182.	Potassium in water	-do-
183.	Sodium in water	-do-

184.	Sulfate in water & waste water	-do-
185.	Sulfide in water & waste water *	-do-
186.	Suspended Solids (S.S) in water & waste water	-do-
187.	Temporary Hardness	-do-
188.	Total Alkalinity of water & waste water	-do-
189.	Total Chlorine in water & waste water	-do-
190.	Total Chrome in water	-do-
191.	Total Dissolved Solids in water & waste water	-do-
192.	Total Hardness of Water *	-do-
193.	Total Kjeldahl Nitrogen (TKN)	-do-
194.	Total Solids in water & waste water	-do-
Chemical Analysis of Waste Water		
195.	Temperature or Temperature increase	As per NEQS for Municipal and Liquid Industrial Effluents & APHA 20 th Addition
196.	pH value	-do-
197.	5-days Biochemical Oxygen Demand (BOD ₅) at 20 ^o C	-do-
198.	Chemical Oxygen Demand (COD)	-do-
199.	Total suspended solids	-do-
200.	Total dissolved solids	-do-
201.	Grease and oil	-do-
202.	Chloride (as Cl)	-do-
203.	Sulphate (SO ₄)	-do-
204.	Sulphide (S)	APHA-4500-S ⁻² F
205.	Ammonia (NH ₃)	-do-
206.	Chromium (trivalent and hexavalent).	-do-
207.	Chlorine	-do-
Chemical Analysis of Drinking Water		
208.	pH range	As per PSQCA Requirement & APHA 20 th Addition
209.	Total Dissolved Solids (TDS)	-do-
210.	Nitrite (NO ₂) as Nitrogen	-do-
211.	Chloride	-do-
212.	Sulphate (SO ₄)	-do-
213.	Potassium (K)	-do-
214.	Sodium (Na)	-do-
215.	Magnesium (Mg)	-do-
216.	Calcium (Ca)	-do-
217.	Chlorine (Cl)	-do-
Chemical Analysis of Soft Water, Boiler Feed Water and Boiler		
218.	pH range	As per PSQCA & NEQS Requirement, APHA 20 th Addition
219.	Total Dissolved Solids (TDS)	-do-
220.	P (Phenolphthalein) Alkalinity	-do-

221.	M (Methyl Orange) Alkalinity	-do-
222.	Chloride	-do-
223.	Total Hardness	APHA-2340
224.	Conductivity	-do-
225.	Dissolved Oxygen	-do-
226.	Phosphate	-do-

Physical and Chemical Testing of Protective Gloves

S. No.	Description of Services	Test Method
Protective Gloves EN 420:2003		
227.	Sizing of Gloves	
228.	Dexterity of Gloves	-do-
229.	Water Vapour Permeability	-do-
230.	Water Transmission	-do-
231.	Chrome VI	-do-
232.	pH	-do-
Protective Gloves Against Mechanical Risk EN-388:2003		
233.	Abrasion Resistance	
234.	Tear Resistance	-do-
235.	Puncture Resistance	-do-
Protective gloves for welders EN 12477:2001 which included EN 388, EN 407, EN 420 & EN 1149-2		
253.	Sizing of Gloves	
254.	Dexterity of Gloves	-do-
255.	Water Vapour Permeability	-do-
256.	Water Transmission	-do-
257.	Chrome VI	-do-
258.	pH	-do-
259.	Abrasion Resistance	-do-
260.	Tear Resistance	-do-
261.	Puncture Resistance	-do-
Protective Gloves for Firefighters EN 659:2003 (+A1:2008) EN 388, EN 407, EN 420 & EN 1149-2		
270.	Sizing of Gloves	
271.	Dexterity of Gloves	-do-
272.	Water Vapour Permeability	-do-
273.	Water Transmission	-do-
274.	Chrome VI	-do-
275.	pH	-do-
276.	Abrasion Resistance	-do-
277.	Tear Resistance	-do-
278.	Puncture Resistance	-do-
286.	Water Penetration	-do-
Protective Gloves for Motorcyclists EN-13594:2002		
287.	Sizing of Gloves	
288.	Dexterity of Gloves	-do-
289.	Water Vapour Permeability	-do-
290.	Water Transmission	-do-
291.	Chrome VI	-do-
292.	pH	-do-
293.	Abrasion Resistance	-do-
294.	Tear Resistance	-do-
295.	Puncture Resistance	-do-
296.	Impact Abrasion Resistance	-do-

297.	Seam Strength	-do-
Safety Shoes EN ISO 20345:2004		
I. Upper		
298.	Thickness	-do-
299.	Tear Strength	-do-
300.	Tensile Strength	-do-
301.	Flexing Resistance (Wet and dry)	-do-
302.	Water Vapour Permeability and Coefficient	-do-
303.	pH Value	-do-
304.	Chromium VI Content	-do-
II. Lining EN ISO 20345:2004		
305.	Tear Strength	-do-
306.	Abrasion Resistance	-do-
307.	Water Vapour Permeability and Coefficient	-do-
308.	pH Value	-do-
309.	Chromium VI Content	-do-
III. Tongue		EN ISO 20345:2004
310.	Tear Strength	-do-
311.	pH Value	-do-
312.	Chromium VI Content	-do-
IV. Insole and Insock		EN ISO 20345:2004
313.	Thickness	-do-
314.	pH Value	-do-
315.	Water Absorption and Desorption	-do-
316.	Abrasion Resistance	-do-
317.	Chromium VI Content	-do-
V. Outsole		EN ISO 20345:2004
318.	Thickness of non-cleated outsoles	-do-
319.	Tear Strength	-do-
320.	Abrasion Resistance	-do-
321.	Flexing Resistance (wet and dry)	-do-

322. Leather Processing and Job Facilities

Tannery Machinery /Equipment:

The following machineries and equipments are available for Job work in Tannery Division, LRC

- i. Fleshing (Hand)
- ii. Fleshing (Machine)
- iii. Sammying
- iv. Wet Shaving (Manual / Auto)
- v. Dry Shaving
- vi. Blue Trimming
- vii. Splitting
- viii. Splitting of split
- ix. Piling
- x. Hanging
- xi. Toggle (dry)
- xii. Vacuum Drying
- xiii. Sammying /Setting
- xiv. Vibration Staking (single pass)
- xv. Buffing (Manual)
- xvi. Hydraulic

- a. Press Embossing (Zug grain)
 - b. Plain
 - c. Crocodile Press
 - d. Embossing (Other than Zug Grain)
 - e. Sarama (Head), cut pieces uotp 3 sq.ft
 - f. Leather pieces sheets of 12-16 sq.ft (plain)
- xvii. Hand spray (single coat)
 - xviii. Auto spray (single coat)
 - xix. Trimuning (dried leather)
 - xx. Polishing
 - xxi. Stonning
 - xxii. Toggle (wet)
 - xxiii. Glazing (one time)
 - xxiv. Shaving of split on Auto Machine
 - xxv. Shaving of split (manual)
 - xxvi. Hand staking
 - xxvii. Trimming of wet blue split
 - xxviii. Drumming according to size;
 - Plastic Drums & Wooden Drums 2' D x 1' L; 4 ½ 'D x 3' L
 - Milling Drum 4' D x 3 ½ D x 6' L
 - Milling Drum 6' D x 6' L; 6 ½ D x 6' L
 - Tanning Drum 5' D x 4' L; 6 ½ D x 6' L
 - Tanning Drum 7' D x 6' L; 8' D x 6' L; 8' D x 7' L
 - xxix. Wet toggle
 - xxx. Wheel staking