



**Tti Testing Laboratories**

31 YEARS OF EXCELLENCE IN TIC INDUSTRY

ISO/IEC  
**17025**  
ACCREDITED

ISO/IEC  
**17020**  
ACCREDITED



LEATHER ACCESSORIES & PRODUCTS · FOOTWEAR

# Leather & footwear testing

## Securing your gateway to global markets

End-to-end compliance solutions for leather manufacturers/exporters, ensuring product quality, safety, and performance to meet stringent regulatory requirements.

Leather Apparel & Accessories

Commercial Leather Furnishings

Casual & Fashion Footwear

**111 786 001**

[www.ttilabs.net](http://www.ttilabs.net)



# Serving Pakistan's leather industry since 2012

Supporting Pakistan's thriving leather industry since 2012, with the goal to take its capabilities to the next level, while ensuring adherence to quality benchmarks for competing on the global stage.

We are offering complete TIC services backed by our cutting-edge, ISO/IEC 17025 accredited testing lab and domain experts with massive experience in global leather and footwear compliance projects.



## PAKISTAN'S EXPORTS, JULY 2025 – JUNE 2026

US\$ million · Pakistan Bureau of Statistics

**\$881m**

LEATHER, LEATHER PRODUCTS & FOOTWEAR

**\$300.3m**

LEATHER GLOVES

**\$261.2m**

LEATHER GARMENTS

**\$130.4m**

LEATHER FOOTWEAR

**\$129.4m**

TANNED LEATHER

**8.65**

MILLION PAIRS OF LEATHER FOOTWEAR

PBS groups 32 Leather tanned, 33 Leather manufactures, 34 Footwear. The total of 881 is their sum.

### DIVISION 02 · LEATHER PRODUCTS

✓ Leather Bags

✓ Belts

✓ Upholstery

✓ Leather Swatches

✓ Natural Leather

✓ Synthetic Leather

✓ Casualwear

### DIVISION 04 · FOOTWEAR

✓ Formal Shoes

✓ Casual Shoes

✓ School Shoes

✓ Sports Shoes

✓ Medical Shoes/Slippers

✓ Safety Footwear

✓ Protective Shoes for Motorcycle Riders

ISO/IEC 17025 · ISO/IEC 17020 · PNAC LAB 022

# Global accreditation & recognition



## ISO/IEC 17025 Accredited Testing Laboratory

- ✓ U.S. CPSC Accepted: Pakistan's first third-party lab, accepted for lead and flammability testing
- ✓ Accredited by PNAC, a signatory to the ILAC Mutual Recognition Arrangement
- ✓ ZDHC Approved Wastewater Laboratory



## ISO/IEC 17020 Accredited Inspection Body

- ✓ Pakistan's first PSQCA-registered inspection body to get ISO/IEC 17020 accredited scope
- ✓ ZDHC MRSL V3.1 Certifier (Level 1 & 2)
- ✓ EPA Punjab Approved Water, Wastewater & Environmental Testing Laboratory

77

accredited test rows in the scope groups Leather / Footwear / Gloves and Leather & PPEs

Rev. 09

PNAC scope LAB 022, signed 03-08-2026

2027

Accreditation valid until 08-08-2027

## Why choose Tti as your quality partner?



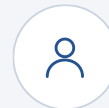
**ISO/IEC 17025 accredited, trusted by 1500+ global brands**



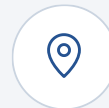
**3-day standard turnaround time**



**Uncompromising sample chain-of-custody**



**Direct access to technical experts**



**HQ at Lahore, with offices at Karachi, Faisalabad and Sialkot**

Manufacturers

Exporters

# Leather & footwear testing

We support leather, footwear, and related products with comprehensive evaluation. Our capabilities generate precise, standards-aligned data to help businesses meet international regulations, buyer specifications, and market access requirements.

EN

ISO

AATCC

ASTM

SATRA

IULTCS

CE Mark

ZDHC

AFIRM RSL

## Signature analyses

TECHNIQUE · ACCREDITED METHOD

### Chromium VI

IC

ISO 17075-2 (chromatographic)

Colorimetric

ISO 17075-1:2017

### Genuine leather verification

FTIR

Chemical identification

Microscopy

Microscopic &amp; structural analysis

### Formaldehyde

HPLC

ISO 17226-1:2021

Colorimetric

ISO 17226-2:2018

### Metals

ICP · FAAS

ISO 17072-1:2019 extractable

ICP · FAAS

ISO 17072-2:2022 total

PNAC LAB 022 · REV. 09 · ACCREDITED  
METHODS

# Leather test menu



01

## Physical & mechanical

|                                 |                 |
|---------------------------------|-----------------|
| ■ Thickness                     | ISO 2589:2016   |
| ■ Tensile strength & elongation | ISO 3376:2020   |
| ■ Single-edge tear              | ISO 3377-1:2011 |
| ■ Double-edge tear              | ISO 3377-2:2025 |
| ■ Ball burst                    | ISO 3379:2024   |
| ■ Softness                      | ISO 17235:2015  |
| ■ Flex, flexometer              | ISO 5402-1:2022 |
| ■ Water resistance              | ISO 5403-1:2025 |
| ■ Water vapour permeability     | ISO 14268:2023  |
| ■ Abrasion, rotating drum       | ISO 4649        |

02

## Colour fastness

|                          |                   |
|--------------------------|-------------------|
| ■ Light, xenon arc       | ISO 105-B02:2014  |
| ■ To-and-fro rubbing     | ISO 11640:2018    |
| ■ Perspiration           | ISO 11641:2025    |
| ■ Water                  | ISO 11642:2025    |
| ■ Solvents               | ISO 11643:2009    |
| ■ Water spotting         | ISO 15700:1998    |
| ■ Migration into polymer | ISO 15701:2022    |
| ■ Machine washing        | ISO 15702:1998    |
| ■ Mild washing           | ISO 15703:1998    |
| ■ Crocking               | ISO 20433:2024    |
| ■ Petri-dish method      | SATRA TM 335:2018 |

03

## Chemical

|                        |                            |
|------------------------|----------------------------|
| ■ pH                   | EN ISO 4045:2018           |
| ■ Chromic oxide        | ISO 5398-1 & -3:2018       |
| ■ Chromium VI          | ISO 17075-1:2017 · -2      |
| ■ Formaldehyde         | ISO 17226-1:2021 · -2:2018 |
| ■ Amines from azo dyes | ISO 17234-1:2024 · -2:2011 |
| ■ Extractable metals   | ISO 17072-1:2019           |
| ■ Total metals         | ISO 17072-2:2022           |
| ■ Organotin compounds  | ISO 16179:2025             |
| ■ Dimethyl formamide   | EN 16778:2016              |
| ■ Chlorinated phenols  | ISO 17070:2015             |
| ■ Fat content          | ISO 4048:2018              |

04

## Restricted substances

|                         |                     |
|-------------------------|---------------------|
| ■ AP & APEO             | EN ISO 18254-1:2016 |
| ■ PAH                   | ISO 16190:2021      |
| ■ Chlorobenzenes        | EN 17137:2024       |
| ■ PFAS                  | ISO 23702-1:2023    |
| ■ Bisphenols A, B, S, F | ISO 11936:2023      |
| ■ Flame retardants      | EN ISO 17881-1 & -2 |
| ■ Preservatives         | ISO 13365-1:2020    |
| ■ Dimethyl fumarate     | ISO 16186:2021      |
| ■ SCCP & MCCP           | ISO 22818:2021      |

A selection of the accredited rows on PNAC scope LAB 022, Rev. 09 (signed 03-08-2026). Method years as listed on the scope.

REACH ANNEX XVII · ENTRY 47 · EN ISO 17075-2

# Chromium VI, measured by IC

3

MG/KG · EU LIMIT IN LEATHER



Collagen fibres    Chromium III cross-link    Chromium VI

Illustration, not to scale

## Why chromium VI

Chromium III compounds are added in some tanning processes to cross-link the collagen in leather. Chromium VI can form when chromium III oxidises.

## What the rule says

Leather articles, and leather parts of articles, that come into contact with the skin may not be placed on the EU market at 3 mg/kg chromium VI (0.0003% by weight of the total dry leather) or more. Applies from 1 May 2015.

Regulation (EU) No 301/2014: recital 3; Annex XVII entry 47, paragraphs 5 and 6.

## Ion chromatography

IC-based detection for interference-free confirmation in high-risk materials, to EN ISO 17075-2.

## First accredited in Pakistan

Accredited chromium VI (Part 2) testing, commissioned with the CIC laboratory in 2025.

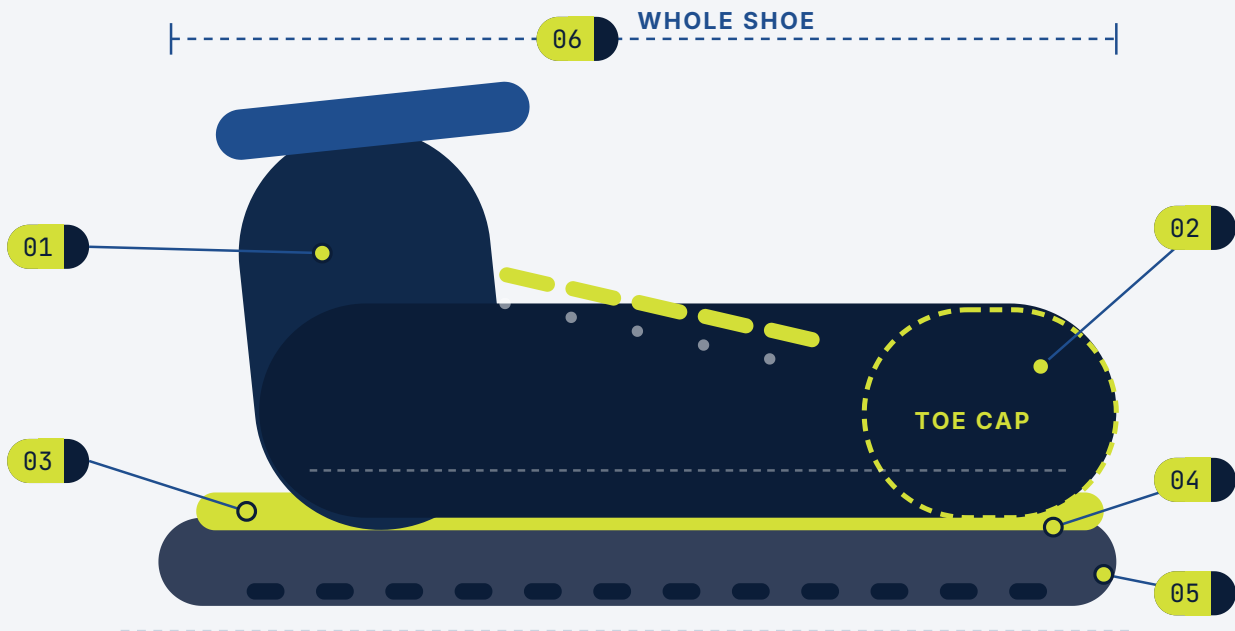
## Two accredited routes

ISO 17075-1:2017 colorimetric and ISO 17075-2 chromatographic, both on PNAC LAB 022.

EN 13634:2017 · ISO 20344 · ISO 20345 · SATRA

# Anatomy of a tested shoe

Footwear tests on Tti's accredited scope, each placed on the part of the shoe it examines. Clause numbers are from EN 13634:2017.



## 01 Upper

EN 13634 4.2.1 · 4.4

- Height of upper
- Vamp flex  
ISO 5402-2:2015 · SATRA TM 25
- Upper material: pH, Cr VI, colour fastness

## 02 Toe cap & impact

ISO 20344 · EN 13634

- Toe cap impact resistance
- Impact abrasion  
EN 13595-2:2002
- Impact cut  
EN 13595-4:2002

## 03 Insole & insock

EN 13634 4.5 · 4.9 · 4.10

- Insole construction
- Insole abrasion and thickness
- Water absorption & desorption

## 04 Bond

EN 13634 4.3.1 · ISO 20344

- Upper/outsole and sole interlayer bond strength
- Adhesion, rapid sole  
BS 5131:1990 · SATRA 404:2020

## 05 Outsole

EN 13634 4.6 · ISO 20344

- Slip resistance  
ISO 13287:2019
- Flex resistance  
ISO 17707:2005
- Cleats, thickness, fuel oil

## 06 Whole shoe

EN 13634 4.8 · SATRA

- Whole-shoe flexing  
SATRA TM 92
- Water penetration
- Transverse rigidity
- Electrical resistance

FOOTWEAR & PROTECTIVE EQUIPMENT LABORATORY · SINCE 2016

# Footwear testing, from school shoes to safety boots

In 2016 Tti established a Footwear and Protective Equipment Testing Laboratory for tactical footwear, industrial safety footwear, gloves and other personal protective equipment, tested to international standards.

01

**EN 13634:2017**

Protective footwear for motorcycle riders

02

**ISO 20344:2021/Amd 1:2024**

Test methods for footwear

03

**ISO 20345:2021/Amd 1:2024**

Safety footwear

04

**ISO 13287:2019**

Slip resistance of the outsole

05

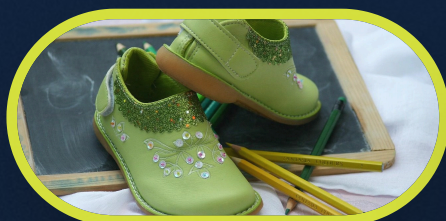
**SATRA TM 92**

Whole-shoe flexing

06

**Regulation (EU) 2016/425**

CE / UKCA certification support



# What the EU asks of leather



Limits and scope notes below are taken from the regulation texts on EUR-Lex, read October 2026. **A test report shows the result for the sample and method; it does not by itself establish market compliance.**

✓ REACH Annex XVII

✓ EU Deforestation Regulation

✓ Regulation (EU) 2016/425

## REACH ANNEX XVII · ENTRY 47

### Chromium VI in leather

Leather articles, and leather parts of articles, that come into contact with the skin may not be placed on the market at 3 mg/kg chromium VI (0.0003% by weight of the total dry leather) or more.

Regulation (EU) No 301/2014 · applies from 1 May 2015

## REACH ANNEX XVII · ENTRY 43

### Azo colourants

Azo dyes that may release listed aromatic amines above 30 mg/kg (0.003% by weight) may not be used in textile and leather articles in direct and prolonged contact with the skin or mouth.

Annex XVII as replaced by Regulation (EC) No 552/2009

## REACH ANNEX XVII · ENTRY 72

### CMR substances in footwear

Restricts listed CMR substances in consumer clothing, textiles and footwear, but not in articles made exclusively of natural leather, fur or hide, nor in footwear within the PPE Regulation (EU) 2016/425.

Regulation (EU) 2018/1513

## EU DEFORESTATION REGULATION

### Leather taken out of scope

Cattle hides, skins and leather (ex 4101, ex 4104, ex 4107) were deleted from Annex I of Regulation (EU) 2023/1115. Published 17 September 2026, in force the following day. Live cattle stay in scope.

Delegated Regulation (EU) 2026/2102 of 13 July 2026



**Tti tests and inspects material and reports what it finds. It does not determine whether a product falls inside or outside a regulation.**

AQL-BASED SAMPLING · CUSTOM QC PROTOCOLS

# Inspection & certification



PPI

## Pre-Production Inspection

Raw material and production readiness evaluation

DUPRO

## During Production Inspection

In-line quality control during manufacturing

FRI

## Final Random Inspection

Pre-shipment inspection based on AQL standards

CLS

## Container Loading Supervision

Ensuring correct loading, quantity, and handling

## Specialized inspection services

- ✓ Sample Evaluation & Product Review
- ✓ Defect Analysis & Root Cause Investigation
- ✓ Post-delivery Inspection Support
- ✓ Product Labeling Compliance

## AQL sampling

ANSI/ASQ Z1.4-2008 · LEVEL II

0

CRITICAL

2.5

MAJOR

4.0

MINOR

Booking within 24 hours; report submitted in the next 24 hours after the inspection.

## CE certification support

THIRD-PARTY FACILITATION VIA GLOBAL PARTNERS

For protective footwear placed on the EU market under Regulation (EU) 2016/425, Tti provides accredited testing, technical file preparation and coordination with Notified Bodies. The Notified Body carries out the EU type examination and issues the certificate.

1

**Standards identification**

2

**ISO/IEC 17025 testing**

3

**Technical file preparation**

4

**Notified Body coordination**

5

**EU type examination (Module B)**

6

**CE marking**

7

**Annual renewal**

Tti tests and coordinates; the Notified Body issues the certificate.

ZDHC MRSL V3.1 · ZDHC WASTEWATER GUIDELINES V2.2 · REACH

# From chemical inputs to wastewater outputs

## ZDHC MRSL V3.1 certifier

Level 1 & 2, on analytical testing, screening and SDS review.

- ✓ Tanning, finishing, waterproofing and coating chemicals

## ZDHC Wastewater laboratory

Approved under the ZDHC Wastewater Guidelines V2.2.

- ✓ Tannery wastewater, all four discharge categories incl. ZLD

## REACH compliance

Restricted-substance testing on the accredited scope.

- ✓ Cr VI, azo amines, formaldehyde, metals, PFAS

## Supply-chain traceability

Readiness for the EU Digital Product Passport (DPP).

- ✓ Supplier mapping, Tier 1 to Tier 3

## Milestones in leather & footwear



Photography. Unsplash: Prateek Chawla (cover), Jason Leung, Lifetime Leather, Alex Shuper, rupixen, Kelly Sikkema, Noah Smith (back). Pixabay: AS\_Photography, Eccofinishing, Alexas\_Fotos, Panals, sonja\_paetow, tylermike525, Ralphy\_Fotos, breakermaximus, andreas160578, Dusan\_Cvetanovic, webandi. Object photographs only.



**Tti Testing Laboratories**

**Tti Testing Laboratories is a trusted quality partner to leading global buyers, built to bridge the gap between manufacturing realities and global compliance expectations.**

ISO/IEC 17025 · PNAC LAB 022

Liaison office in Sialkot

31 Years of Excellence

**111 786 001**

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