



Tti Testing Laboratories

OVER 30 YEARS OF EXCELLENCE IN QUALITY ASSURANCE



DIVISION 06 • INSTITUTIONAL

Institutional testing & inspection

Tested in the lab. Checked at the factory.

Tti Labs runs an ISO/IEC 17025 testing laboratory and an ISO/IEC 17020 inspection body. Both serve the fabrics, uniforms, workwear, footwear and protective equipment on Tti Labs' listed scope.

✓ Uniform

✓ Workwear

✓ Footwear

✓ PPE



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www.ttilabs.net



INDEPENDENT SINCE 1995

In 1995 Pakistan had no independent, third-party private-sector laboratory equipped to meet the quality, safety and compliance demands of global trade. Tti Labs built one.

Hamed K. Lateef founded Tti Labs in July 1995.



TESTING • INSPECTION • SINCE 1995

Testing tells you what a product is. Inspection checks how it was made.

Tti Labs tests products in its ISO/IEC 17025 laboratory. Its group company, Tti Inspections Pvt Ltd, inspects factories and shipments as an ISO/IEC 17020 inspection body.

The 25,000 sq ft headquarters in Lahore handles 600+ samples and 1,500+ tests a day. Standard turnaround is 3 days.

The group has five entities: Tti Testing Laboratories, Tti Inspections Pvt Ltd, Tti Labs Training Institute, Tti Labs Sustainability Center and Fahm-ul-Halal.

FOUR SERVICE LINES



Testing

ISO/IEC 17025 accredited laboratory, PNAC LAB 022



Inspection

ISO/IEC 17020 accredited inspection body, PNAC IB-006



Certification

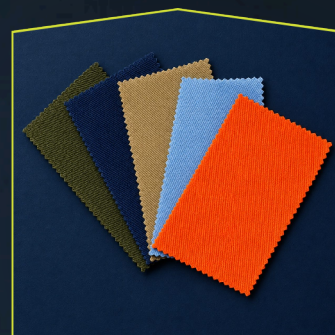
CE marking and ZDHC MRSL



Sustainability

Supply chain sustainability

All credentials: p.10.



DIVISION 06 · INSTITUTIONAL

One division, eight institutional categories.

Tti Labs runs 17 product divisions with 250+ professionals. Each division has its own team, instruments and specialised standards. Division 06 lists eight institutional categories.

▼ 01 CTD

▼ 02 Navy

▼ 03 Police

▼ 04 Army

▼ 05 Air Force

▼ 06 Rescue 1122

▼ 07 NESPAK

▼ 08 SNGPL

Uniform & workwear fabrics · pp.4–5

Protective wear & footwear · p.6

Inspection and supplier checks · pp.7–9

17

DIVISIONS

544

ACCREDITED METHODS

378ACCREDITED
PARAMETERS**600+**

SAMPLES A DAY

1,500+

TESTS A DAY

3 daysSTANDARD
TURNAROUND

Tti Labs serves manufacturers, exporters, retailers, regulatory bodies and global sourcing organisations.

Category names as listed for Division 06 in Tti Labs' Global Reference Publication (June 2026), chapter 05.

PNAC LAB 022 · TEXTILES & RELATED PRODUCTS

28 fabric tests on the accredited scope.

Uniform and workwear are in Tti Labs' softline inspection range. In the laboratory, PNAC lists 26 of these 28 tests under one row, "Textiles & Related Products". The hydrostatic and air permeability tests come from PNAC's row for PPE and woven textiles.

TEST	METHOD AND EDITION
STRENGTH	
Tensile strength, grab & strip	ISO 13934-1:2013, -2:2014 · ASTM D5034-21 (R25), D5035-11 (R24)
Tear strength (Elmendorf, tongue, wing-shaped)	ISO 13937-1, -2, -3:2000 · ASTM D1424-25, D2261-13 (R24)
Bursting strength	ISO 13938-1:2019 · ASTM D3786/D3786M-18 (R23)
Seam slippage (fixed seam opening, fixed load)	ISO 13936-1:2004, -2:2004
Failure in sewn seams	ASTM D1683/D1683M-22
WEAR	
Abrasion resistance, Martindale	ISO 12947-1:1998, -2:2016, -3:1998, -4:1998 · ASTM D4966-22
Pilling (pilling box, Martindale, random tumble)	ISO 12945-1:2020, -2:2020 · ASTM D4970/D4970M-22, D3512/D3512M-22
Appearance after home laundering	ISO 15487:2018 · AATCC 143-2018te
Stiffness, circular bend	ASTM D4032-08 (2016)
WATER, AIR & FLAME	
Water repellency, spray test	ISO 4920:2012 · AATCC TM22:2024
Water penetration, hydrostatic pressure	ISO 811:2018, EN 20811:1992 · AATCC 127-2017(2018)e
Air permeability	ISO 9237:1995 · ASTM D737-18 (2023)
Flame resistance, vertical	ASTM D6413/D6413M-2022
Flammability of apparel textiles	ASTM D1230-25 · 16 CFR 1610



Abrasion resistance, Martindale

ISO 12947 · ASTM D4966



Tensile strength, grab & strip

ISO 13934-1, -2

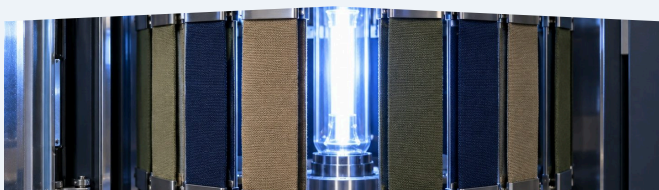
Methods as listed in PNAC accreditation scope LAB 022 Rev. 09 (03-08-2026), pp. 2-5. Selection shown; confirm the edition when you order.

PNAC LAB 022 • TEXTILES & RELATED PRODUCTS

Colour, washing and construction.

The second half of the 28 tests: colour fastness, washing and shape, fibre content and fabric construction, and two chemical checks, pH and formaldehyde.

TEST	METHOD AND EDITION
COLOUR FASTNESS	
Colour fastness to light, xenon arc	ISO 105-B02:2014 • AATCC TM16.3:2020
Colour fastness to laundering, accelerated	ISO 105-C06:2010, C10:2006 • AATCC TM61:2020e2
Colour fastness to rubbing (crocking)	ISO 105-X12:2016 • AATCC TM8:2022e
Colour fastness to perspiration	ISO 105-E04:2013 • AATCC TM15:2021e
Colour fastness to dry cleaning	ISO 105-D01:2010 • AATCC TM132:2013e3
WASHING & SHAPE	
Industrial washing & finishing, workwear	ISO 15797:2017
Dimensional change after laundering	ISO 6330:2021, 5077:2008, 3759:2011 • AATCC TM135:2025, TM150:2025
Spirality after laundering	ISO 16322-1:2005, -2:2021, -3:2021
Bow & skew, garment twist	ASTM D3882-08 (2025) • AATCC TM179-2025
CONSTRUCTION & CHEMISTRY	
Fibre content, quantitative	ISO 1833, 11 parts (editions 2006–2023) • AATCC 20A-2025
Mass per unit area	ISO 3801:1977, BS EN 12127:1998 • ASTM D3776/D3776M-20 (2025)
Ends & picks (warp & weft count)	ISO 7211-2:2024, BS EN 1049-2:1994 • ASTM D3775-17 (R23)
pH of the aqueous extract	ISO 3071:2020
Formaldehyde	ISO 14184-1:2011, -2:2011



Colour fastness to light, xenon arc

ISO 105-B02 • AATCC TM16.3



Industrial washing, workwear

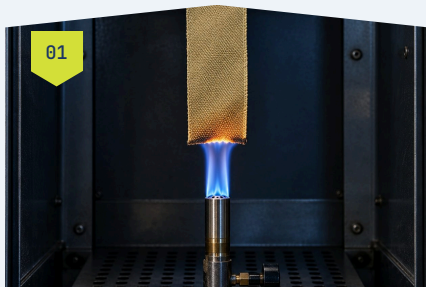
ISO 15797:2017

Methods as Listed in PNAC accreditation scope LAB 022 Rev. 09 (03-08-2026), pp. 2–4. Selection shown; confirm the edition when you order.

DIVISION 03 • PPE • DIVISION 04 •
FOOTWEAR

Boots, gloves and protective clothing.

Tti Labs opened its Footwear and Protective Equipment Testing Laboratory in 2016, for tactical and industrial safety footwear, gloves and other PPE. In 2022 it added facilities for workwear, protective clothing, welding apparel, motorcycle protective equipment and industrial safety products. In 2025 it added accredited testing for motorcycle protective equipment, workwear, footwear and gloves.



Heat & flame clothing

Limited flame spread: ISO 14116:2015 and ISO 11612:2015, tested to ISO 15025:2016. Contact and convective heat: ISO 11612:2015.



Welding apparel

Molten metal splash, small and large: ISO 11611:2024, ISO 11612:2015.



High-visibility clothing

Chromaticity: EN ISO 20471:2013/Amd 1:2016, ANSI/ISEA 107-2020.



Motorcycle garments

Impact abrasion, restraint and risk zoning: EN 17092 (parts 2-6):2020. Impact protectors: EN 1621-1, -2, -3.



Safety footwear

Outsole slip: ISO 13287:2019. Whole-footwear water penetration and upper/sole bond: ISO 20344, ISO 20345 (2021/Amd 1:2024).



Gloves

Cold and whole-glove water penetration: EN 511:2006. Contact and convective heat: EN 407:2020. Motorcycle gloves: EN 13594:2015.



Tti Labs checks design, comfort, fit and ergonomics to ISO 13688:2013/Amd 1:2021, EN 469:2020, ISO 11612:2015 and ISO 11611:2024, with EN 13634, EN 13594, EN 17092 and EN 1621 for footwear, gloves and motorcycle wear.

DIVISION 04 • FOOTWEAR

Formal shoes

Casual shoes

School shoes

Sports shoes

Medical shoes/slippers

Safety footwear

Protective shoes for motorcycle riders

DIVISION 03 • PROTECTIVE CLOTHING

General

High-visibility

Motorcycle

Heat & flame

Welding

DIVISION 03 • GLOVES

General

Welders

Firefighters

Motorcycle

Football GK

Chemicals

Thermal

Mechanical

Methods from PNAC LAB 022 Rev. 09, pp. 7, 8, 11, 12. Selection shown. Product lists as published for Divisions 03 and 04.

TTI INSPECTIONS PVT LTD • ISO/IEC 17020 • PSQCA APPROVED

Eight stages, from sample to sealed container.

A test tells you what a product is made of. An inspection tells you whether the factory made it correctly. Tti Inspections Pvt Ltd does this with full-time inspectors across Pakistan.

SP

Sample picking at ~10% production

Random selection to remove bias; samples sealed and identified for the lab

PPI

Pre-production inspection before manufacturing

Pre-production sample approval; line and QC readiness; specification alignment

IPI

Initial production inspection at ~10-20%

Early defect detection; workmanship and construction review; process consistency

DUPRO

During production inspection in-line

Workmanship consistency; measurement and specification checks; inline QC validation

PFI

Pre-final inspection at ~60-80%

Measurement and fitting checks; packaging and labelling review; performance verification

FRI

Final random inspection 100% packed

AQL sampling to ANSI/ASQ Z1.4-2008; defect classification; pass, fail or hold

FC

Full check inspection every unit

High-risk or sensitive orders; zero-defect requirement support

LS

Loading supervision at stuffing

Container condition; quantity and assortment; safe stacking; seal integrity

Also offered: fabric inspection (FI) before cutting, to ASTM D5430-13 4-point grading, and production monitoring (PM), with daily reports on quality and progress.



Stages and timings: Tti Labs FOOD and TEX profiles 2026; PPI, FRI and LS placement from ttilabs.net.



FINAL RANDOM INSPECTION • SHIPMENT CHECKS

Sampled to AQL, checked line by line.

AQL • ACCEPTANCE LEVELS

ANSI/ASQ Z1.4-2008, Level II

0 CRITICAL

2.5 MAJOR

4.0 MINOR

Switching rules: normal to reduced, normal to tightened, tightened to discontinue

Fabric: ASTM D5430-13, 4-point grading

Shade limit: 4 and above

Measurements: 3 pieces per size, all colours

WHAT A SHIPMENT INSPECTION CHECKS

Quantity

100% carton-packed per the packing list; random cartons per AQL level

Marking

Labels, shipping marks and barcodes, all verified

Workmanship

Stitching, appearance, presentation and a functional check

Product conformity

Shade (limit 4 and above), material and style against the approved reference sample

Measurements

3 pieces per size, all colours; tolerance per client requirements

Packing

Assortment, placement, dimensions and carton integrity



Closing meeting. The inspector requests a corrective action plan and obtains a signature from the factory. Booking within 24 hours; the report follows within the next 24 hours after the inspection ends.

INSPECTION PRODUCT RANGE

Garments

Fabric

Denim

Home textile

Towel

Socks

Caps

▼ Uniform

▼ Workwear

Gloves

Leather

Sports

Footwear

Tent

Hard goods

Food

Agriculture

Pharmaceuticals

INSPECTION & TECHNICAL AUDITS

Before the order, and after delivery.

Tti Labs' inspection reports are detailed and ready for a decision. They show critical risks and compliance gaps against international standards and buyer specifications.

BEFORE ORDER

Factory quality assessment

Checks that a manufacturer can meet product specifications, quality requirements and delivery expectations before you place the order. It covers capacity, machinery, workforce competency, QC systems and documents.

BEFORE BULK

Sample evaluation & product review

Checks pre-production samples and prototypes against specifications, materials and functional requirements. It aligns buyer expectations before bulk production.

IN THE SUPPLIER'S LAB

Lab technical audit

Checks a testing laboratory's technical capability: equipment calibration, method validation, personnel competency, QC procedures and data integrity, benchmarked against ISO/IEC 17025.

ALONG THE SUPPLY CHAIN

Traceability audit

Follows product and material traceability from raw material to finished goods: documentation, batch identification, labelling and records.

ON THE LABEL

Product labelling compliance

Checks labelling, marking and packaging against regulatory and buyer requirements. This avoids rejection for wrong or missing information.

WHEN DEFECTS RECUR

Defect analysis & root cause

Traces recurring defects to process, material or workmanship, so that corrective action happens at source.

AFTER DELIVERY

Post-delivery inspection support

An independent evaluation of delivered goods after a dispute, complaint or quality concern. The report supports an objective resolution and helps decide accountability.

AT THE POINT OF SALE

Mystery shopping audit

An unbiased assessment of customer experience, store operations and brand compliance at retail points, against brand guidelines and retail SOPs.

Tti Labs identifies gaps in processes, documentation and compliance. That enables corrective action at source and strengthens supplier accountability.

ACCREDITATIONS, APPROVALS AND RECOGNITIONS

Accredited, approved and recognised.

✓ ISO/IEC 17025 testing laboratory

PNAC LAB 022, first granted 13 May 2006. Scope Rev. 09, valid until 8 August 2027.

✓ Global ACI MRA

PNAC is a signatory to the Global ACI MRA (formerly ILAC MRA)

✓ U.S. CPSC accepted

Conformity assessment body, Lab ID 1168

✓ EPA certified

Environmental testing laboratory, EPA Punjab

✓ Provincial food authorities

Approved by all provincial food authorities of Pakistan for a wide range of test parameters

✓ The Microfibre Consortium

2030 Commitment signatory

✓ ISO/IEC 17020 inspection body

PNAC IB-006, held by Tti Inspections Pvt Ltd

✓ PSQCA approved

Inspection agency

✓ U.S. IAC certified

Microbiology laboratory, Pakistan's first (2021)

✓ OGRA approved

Petroleum and lubricants testing laboratory

✓ ZDHC

MRS L V3.1 certifier (Level 1) and ZDHC approved wastewater laboratory

✓ World Food Programme

Partner laboratory

Sources: PNAC LAB 022 Rev. 09; Tti Labs FOOD Profile 2026; CPSC lab list (Lab ID 1168).

ONE GROUP, FIVE ENTITIES

Tti Testing Laboratories

Textile Testing International. Core consumer testing, ISO/IEC 17025, Lahore head office, founded 1995

Tti Inspections Pvt Ltd

On-site inspection, ISO/IEC 17020, PSQCA approved

Tti Labs Training Institute

Technical and management sciences training

Tti Labs Sustainability Center

ESG, GHG, carbon credits, ZDHC, LCA, SBTi

Fahm-ul-Halal

Halal development and compliance consultancy

WORK WITH US

01

Quotations.

Quotations for testing and inspection, by email.

quotations@tttilabs.net

02

Customer portal.

Submit requisitions, track samples and retrieve reports online.

etrftttilabs.net

03

Book an inspection.

Booking within 24 hours, from fabric inspection to loading supervision.

ISO/IEC 17020

04

Get the report.

Inspection reports within 24 hours after the inspection; laboratory results in a 3-day standard turnaround.

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Tti Testing Laboratories

Tested in the lab. Checked at the factory.

"We report what is true, even when it is inconvenient. Precision is not a feature — it is our responsibility."

HAMED K. LATEEF, FOUNDER & CHIEF EXECUTIVE OFFICER

ISO/IEC 17025 Accredited

ISO/IEC 17020 Accredited

PSQCA Approved Inspection Agency

Division 06 · Institutional

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Images are illustrative and AI-generated. They do not show Tti Labs premises, tested products or any institution's uniforms or equipment. PNAC LAB 022 Rev. 09 lists the methods shown; confirm scope and edition when you order.

