P.4 CTC Laboratory Approved Program

P.6 Chromium VI Assessment in tanneries

P.8 Leather traceability: CTC’s unique design for a solution

Let us know what do you think about this new presentation and how we can continue to evolve

forms.gle/Q3UeHebHevD2tT9N8
SOLUTIONS FOR PPE GLOVES AND FOOTWEAR FOR US MARKET

Helping you to test and certify your PPE

CTC is a specialist for PPE assessment all over the world, at the workplace but also for domestic application.

CTC offers laboratory testing, certification and training.

CTC will provide you a personal team of experts (sales executives, coordinators and technical experts) that personally lead you through the procedure of the PPE testing, examination and/or certification.
Since 1899, CTC has been supporting you in leather goods, shoes, gloves and clothing.

We are your quality control and sustainable development partner for these products.

In order to meet the needs of your customers, regulatory changes, societal, environmental changes, etc., the responsiveness and robustness of your supply chain and the marketing of products are key points. The rise in power and the involvement of your partners or suppliers in this process are necessary, so that all the energies of your partners and collaborators go in the same direction. CTC continue to develop/optimize its service offers to address these concerns.

In this Newsletter, you will find:

- information on our «Chromium VI Assessment in Tanneries» program, which is based on CTC’s leather expertise, making it possible to secure and limit the presence of Chrome VI in your products. Zero risk does not exist, but the implementation of good practices validated and supported by CTC greatly reduce this risk!

- information on our «CTC laboratory approved program», which is based on CTC product and laboratory expertise, making your internal laboratories or those of your supplier partners more reliable in order to validate your sample, materials, etc. during production. Based on a didactic approach from CTC, this program allows you to register your internal laboratory in a real process of continuous improvement and is an effective way to optimize your innovation (new material), process and quality process.

- the introduction of our «hide and leather traceability solution» to ensure traceability from animal to the tannery. Based on CTC’s Leather and technological expertise, this tool has already been installed in several slaughterhouses and French tannery and will be deployed in the coming months.

We also remind you of our PPE Gloves and Footwear offer for the American market. Specialists and key player in the standardization of shoes and gloves, our teams remain at your disposal to assist you in the testing and validation of your products. Finally, our presence in Vietnam allows you to rely on our business expertise to support you in your quality controls within your factories.

Thanks again for your trust.

Good reading

FAIRS

APLF
Hong Kong
Scheduling soon on www.aplf.com

CIOSH
China International Occupational Safety & Health Goods Expo
3-5 July
Shanghai-China, Booth: E4-DB35

COS+H
China International Occupational Safety & Health Exhibition
9 - 11 September
Hangzhou-China

SEMINARS

Leather Seminar at APLF
Hong Kong
Scheduling soon on ctcgroupe.com

Protective Gloves Seminar
4th July, 10:00-11:00
New International Expo Center (CIOSH), Shanghai

Editorial by Jean-Luc Chaverot
Development and International Manager

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Thanks again for your trust.

Good reading

CNAS AND CMA EXTENSION OF CTC SHANGHAI LABORATORY

In October 2019, CTC Shanghai laboratory successfully passed the audit of CNAS and CMA change and extension.

From October 12 to 13, 2019, Xu Dejia, Wang Guifen and Li Shijun, three audit teachers of CNAS and CMA audit group, reviewed CTC SH laboratory’s qualification extension, laboratory address change and authorized signatory change according to relevant applicable regulations and standards. The evaluation team checked the business license, quality system documents and operation records, staff personnel files, equipment records, inspection reports and original records of the laboratory on site, and conducted on-site test assessment, and also carried on discussion and appraisal with the authorized signatory.

In the end, CTC Shanghai laboratory passed the audit successfully and was highly praised by the auditors. As an industry-leading testing laboratory, CTC will take this address change and extension audit as a new starting point, continue to improve laboratory management and technical capabilities to guarantee product quality!
CTC Laboratory Approved Program

CTC Laboratory Approved is an audit program of factory laboratories securing the relevance of the testing controls carried out by suppliers/factories. CTC expert label will demonstrate the quality of laboratories expertise and know-how.

The approach is based on Laboratory audit & correlation test. CTC international know-how & expertise will grant an excellent opportunity for in factory laboratory to benchmark their daily practices.

PROGRAM OBJECTIVES

CTC Laboratory approved program is securing factory laboratory as a reliable tool to validate the factory production quality with:
- reliable measurements and control,
- efficient management tool to secure performance and quality improvements.

"CTC LABORATORY APPROVED PROGRAM" IS BASED ON:

Laboratory Assessment & Optimization: Annual Audit
- Assessment based on international standard ISO 17025.
- Thanks to CTC Auditor proficiency & experience in testing and quality, CTC will benefit laboratories with practical & concrete solutions to optimize laboratories practices.

Inter-Laboratory Testing Campaign (CIL)
- Verification of the reliability of laboratories results by comparison with minimum required samples & repetitions.
- Thanks to CTC know-how laboratories results are logged & evaluated under strict statistical analysis & criteria.

Annual testing campaign, combined with CTC Expert team improvement proposals shall secure you can demonstrate full reliability of your laboratory results

WITHIN “CTC LABORATORY APPROVED PROGRAM” LABORATORY MAY ALSO BENEFIT A PANEL OF CUSTOMIZED TRAINEE &/OR CONSULTING SERVICES:

Depending on your company’s objectives and priorities in terms of quality, a panel of "tailor-made" training and/or consultancy services is set up to enable you to obtain "CTC Laboratory Approved" recognition.

Metrological controls of your measurement and testing equipment
- International System of measurement standards.
- Knowledge of testing methods and equipment, which enables us to guarantee compliance with the essential requirements to be applied.
- Services offered on-site or in our calibration laboratory.

Training and empowering your teams with support of CTC Accredited Training Center
- To secure correct use & understanding of main International standard.
- To optimize samples and specimens preparation.
- To secure Know how & raw data exploitation.
- Also available: customized training program complying with training in quality management and testing techniques in accordance with international standards and with your products.
Laboratory Management Training
- To secure the full understanding of laboratory management under standard EN ISO 17025.
- Leading and monitoring a laboratory activity.
- To know & understand quality best practices in the laboratory.

Laboratory set-up and development
- Development of specifications adapted to your needs.
- Our areas of expertise: quality management, leather, clothing, PPE (gloves, footwear and clothing), town shoes and sports shoes, leather goods and luggage.

Our programs are accredited under test standards and methods:
- ISO
- CEN
- AFNOR
- CE
- ASTM
- IULTICS

Our consulting and support services
The advantages of CTC in the field of calibration, laboratory audit and training:
- CTC has over 30 years of experience in physical and mechanical, chemical and environmental testing as well as in quality management for accredited laboratories:
  > Accredited since 1990,
  > Certified since 1997 (1st center certified in France).
- Unique know-how, experience and skills in the following domains:
  > physical and mechanical testing,
  > chemical safety analyses,
  > environnemental chemical analyses.
- CTC experts are active contributors to national and international standardization organisations. They are equipped with a specific set of skills in calibration and backed by their extensive experience in vocational training:
  > 1st certifier of PPE gloves and shoes in Europe,
  > 1st certifier of PPE gloves in Asia,
  > international offer based on local teams.
Most of the leather produced worldwide is chrome tanned. It is the most versatile tanning agent and it is one of the key parameters for softness, comfort, color fastness, shrinkage temperature and durability.

Chromium is used in its trivalent state (Chromium III), with no arm to workers or people wearing the leather articles. Only chromium III has tanning properties. Chromium VI has no tanning properties and therefore it is never used by the tanners.

In some case, a fraction of the chromium III oxidizes to form a few mg/kg of chromium VI which is considered as a skin sensitizer for a small proportion of the population. Due to that potential skin contact allergy, the European Union has implemented a restriction on chrome VI in leather. It is restricted to 3 mg/kg of leather that comes into skin contact.

To make it even more complex, chromium VI concentration fluctuates according to time and conditions (temperature, humidity, light). Chromium VI concentration and its fluctuations depends on the tanning processes including a wide range of post tanning steps.
such as tanning, dyeing, retanning, fat-liquoring but also, more surprisingly, beamhouse operations. CTC has been working for several years on that issue and is now able to secure tanneries for their production or brands for their supplies.

What will happen if a client detects a non-conformance during a delivery or even worse during a control of the market by the local authorities? It will lead to a warning or a claim. It could also lead to financial compensation, to a fine, and sometimes a lawsuit. As a minimum, you’ll get a warning but more probably, there is a risk of being more closely scrutinized in the future. In any case, it means that the client’s confidence is weakened.

CHROMIUM VI ASSESSMENT

CTC proposes to check tannery processes to secured the market through a risk assessment methodology based on tannery audits.

- The Tannery audit is a one-day audit within the tannery where the process is dissected from raw hide to finished leather. It is both a documentary and a field approach. It includes the assessment of chemical safety management, process and practices. It is also the opportunity to collect leather samples. 5 samples corresponding to 5 different articles are taken and sent to CTC analytical laboratory for chromium VI analyses with and without ageing.

- Intermediate results: The day following the audit, the auditor gives a presentation including information about the basis of chromium VI in leather and also the intermediate results of the audit. As the analytical results are not available at that time, it is only an intermediate result.

- Final report: Combining field audit and analytical approach, the expert assesses and concludes on the conformity of the 5 leathers articles. Once it complies to the protocol, these leather articles are considered chrome VI assessed and the tanners signs the code of conduct.

In case the minimum protocol level is not achieved, the audit system suggests improvement proposals. If it is not enough, CTC proposes expertise for the improvement of the process.
Implementing a reliable, simple and financially viable traceability system in the leather industry would provide it with an essential tool to secure its supply chain and respond appropriately to increasingly pressing societal concerns. After ten years of research, CTC is now proud to present a complete solution that allows players in the industry to face this major challenge.

A TRACEABILITY SYSTEM TO GAIN RELIABLE KNOWLEDGE OF THE ORIGIN OF HIDES

In a context where hides with only few defects are rare, it is important to improve the quality of leather through sustainable corrective actions, from the birth of the animal to the tannery, including transport, flaying and conservation.

CTC has developed and implemented a comprehensive solution with multiple benefits:
- a reliable knowledge of the origin of finished leather,
- securing supply sources through partnerships,
- access to information pertaining to animal welfare.

THE FOUR PHASES OF CTC’S TRACEABILITY SYSTEM

The comprehensive solution we have designed and developed and are currently industrializing and implementing can be broken down into four phases.

Phase 1: securing the transfer of meat traceability to hides

Ideally, the system relies on the meat traceability requirements that are enforced in most industrialized countries. Where there are none, slaughterhouses can generate a unit identification code. Our solution’s first phase therefore consists in transferring this unitary identification number from the animal to the hide. This phase must take place on the slaughter line before the flaying station, so as to reliably keep the traceability chain continuous.

There are two options:
- either the animal’s earring is instantly and autonomously flashed, a label is then printed in real time and the operator attaches this label to the hide’s flank, thus allowing to track it until the next phase of the process,
- or the printer is directly connected to the slaughterhouse’s digital management system, which will initiate the order of editing a label with the unit identification number of the hide so that it is present at the pre-flaying application station.

The cost of this equipment is relatively low (less than €4k) and the cost of consumables is very low (under €0.067 excl. VAT per printed label).

This first phase allows small slaughterhouses to transfer meat traceability onto hides so as to provide reliably traceable hides to their clients at an economically viable cost, and also allows large slaughterhouses to ensure the continuity of traceability between the slaughter lines and the salting workshop where hides can be marked at their core.
Phase 2: securing the transfer of traceability by marking at the hide at its core

We were quick to notice that no label or matter added on the hide could resist the tannery entry process (wet work / tanning), which means the unit mark must be copied into the core of the material. We have therefore opted to transfer it there by means of an innovative technology that fits right into our industry – laser marking.

> Laser marking
CTC has developed a high-power CO2 laser marking system. Transferring a 14-character code to the core of the hide by marking on the hair side takes a few seconds. This duration makes it possible to fully automate the operation and complete it in a masked time, during the process of salting or sorting raw hides. After several studies, it was agreed that the best area for marking was on the shoulder, 15 cm to the left of the back line and 10 cm below the hide’s edge.

The cost of the industrial system deployed in several French slaughterhouses and tanneries ranges from €100k to €150k depending on the level of automation and integration chosen.

Phase 3: patented solution – automatic reading of the mark from the tanned stage onward

> A functional and precise process
The marking process has proved itself on bovine leather (ranging from calf to bull) and exotic hides (alligator, snake), and tests are underway on lamb hides. This operation can be carried out at all stages from the extraction of the hide on the slaughter line to tannery entry if the hide bears a label as previously described.

Another crucial point in the success of this solution is the form and nature of the marked code. This code must respect a strict typology defined in terms of:
- size and type of marking font,
- marking power according to animal species,
- code structure (number and length of each line and information carried by each line).

All these settings are crucial to achieve very high automatic reading rates in the next phase.

CVIGIER@CTCGROUPE.COM
Cédric Vigier
Head of the Department of Technological Innovation
along with it. This process cannot realistically be exported to an industrial operation, as it would both take too long and lack reliability. CTC has therefore developed automatic mark reading stations, for use during the sorting operation at the tanned stage (wet-blue, wet-white) first, and then at later stages of the process.

> Artificial intelligence (AI) for reliable and lasting character recognition

For this purpose, we have developed various leather image acquisition stations to suit the different configurations of sorting stations at each tannery. To date, we have three types of acquisition station (to capture images of the marked area), all of which use algorithms based on artificial intelligence (specifically neural networks). We could have used more common OCR-type image processing algorithms but the results would not have met expectations.

The solution developed by CTC makes it possible to recognize alphanumeric characters set in the hide, even when they were only partially marked or were warped during tanning. This integrated intelligence allows perfect reading rates to be achieved for more than 90% of production.

With a well built base, this approach allows for better efficiency than human operators could achieve in deciphering marks. AI makes it possible to adapt to the vast variations in the quality of markings that result from the processes of individual tanneries.

> Acquisition stations tailored for tanneries

The first acquisition station, which is the least technically complex, allowed us to carry out the feasibility study and algorithmic modeling. It is composed of an area scan camera and a portable grazing light. The operator places this station on the mark and presses a button to trigger the image capture. The system then automatically locates and rotates the mark, decodes all the characters, and sends it to a piece of software to be associated with the defects found on the hide.

The second acquisition station, which is fully automated, is designed for tanners equipped with a conveyor and an automatic stacker unit for sorting. Each hide passes under a linear camera and a grazing light, allowing for an image of the whole hide to be reconstructed, and the algorithms then automatically search for the mark, rotate it and decode it to store the code in a database.

Our latest acquisition station, which is also fully automated, is intended for tanneries that sort hides piled on a pallet placed on a lifting table in front of the sorter. This station consists of a simple very high resolution area scan camera and a specific light, it scans the shoulder and the entire decoding operation is carried out by artificial intelligence algorithms that adapt to changes in image capture conditions over the course of the sorting operation. The feasibility study for this station is currently coming to an end and had yielded promising results.

In all cases, algorithmic processing takes about a second, which is much less time than is needed to sort a wet-blue and determine its quality potential.

Following this series of studies, a harmonization phase allowed us to generalize the algorithm to all acquisition stations; this algorithm is improved as the learning progresses, thus ensuring that our solution is optimal and scalable over time.
The algorithms developed in this third phase are patented by CTC. This technology can also be applied to exotic hides, so as to transfer the CITES ring’s code to the core of the material and remove the ring itself, thus making it possible to work on the entire hide on through machines.

Phase 4: Centralized management system for material quality and traceability data

The last phase of the proposed comprehensive solution is to set up a data management system. To do so, we currently offer two solutions:
- the first is to use a regular database, in which information only flows downward. This solution aims at improving hide quality. With this in mind, we have defined a quality standard for hides, in collaboration with tanners and slaughterers.

This “Raw material quality” data architecture, combined with a single and complete tracking solution going back to the animal’s birth, opens up possibilities to implement quality charters specifying the origin of raw materials and providing information pertaining to animal welfare,
- the second data management solution consists in implementing a generalized information management system for the entire supply chain, based on a blockchain*. The principle would be to connect all the CTC tools described here within this blockchain, in order to automatically feed it with reliable and non-declaratory information. The blockchain will be secure and guarantees persistent and unforgeable storage of data entered by all actors in this database. In addition, many types of information pertaining to the craft could also be integrated to this blockchain, like for instance, the dates of interventions for corrective actions or notes on defects found on wet-blues.

This type of implementation (regular or blockchain database) makes it possible to meet all of the traceability project’s goals (improvement of hide quality, animal welfare, origin of hides and full monitoring of the supply chain).

CONCLUSION AND PROSPECTS

This research and development project conducted by CTC at the request of the French leather industry has provided the industry with a range of unique industrial tools ensuring reliable, simple and economically viable traceability. These tools are undeniably crucial building blocks for the implementation of corrective actions aimed at sustainably improving hide quality, as well as the implementation of charters to guarantee and secure hide supply sources while respecting animal welfare. These elements are the foundations of an eco-responsible supply chain.

*The term ‘blockchain’ is used in a broad sense and refers to any type of distributed ledger technology.
CTC VIETNAM,
THE QUALITY HUB OF CTC IN SOUTH EAST ASIA
Audit, QA, inspection, chemical laboratory and physical testing, expertise & consulting

The major development area for **footwear & leather good industry** since the past 5 years which also covers specific industrial zone around Hanoi.

The newest location in central Vietnam offering the best coverage of all Vietnam’s geographical zones and to follow new industrial needs specifically supporting quality of **fabrics and textile products.**

Our "Regional Laboratory Hub". In direct connection with the most important buying offices and economic actors of **Vietnam Fashion industry.**

To better service our clients and capture new opportunities, CTC Vietnam continues its effort in supporting:

- International testing capacity & laboratory environment for vendors & local suppliers
- Specific order traceability program
- Quality Assurance program & production coaching
- Consultancy
- Inspection of final products, during and at the end of production
- Technical audit
- Social audit
- Professional training

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