



bluesign® CRITERIA for production sites

ANNEX: Leather processing

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Contents

1	Scope.....	2
2	Definitions	2
3	Best Available Techniques	2
4	Industry specific requirements	2
5	Verification of compliance	5
6	Validity.....	5
7	Other applicable documents	6

1 Scope

Comprehensive requirements for companies with production sites are determined in the *bluesign® CRITERIA for production sites*.

This document defines additional provisions for processing of natural leather.

2 Definitions

Leather manufacturing encompasses - among others - the following processes:

- Washing
- Unhairing
- Liming
- Deliming
- Bateing
- Pickling
- Tanning
- Re-tanning
- Finishing

For a comprehensive list of terms and abbreviations, please refer to the document *bluesign® glossary*.

3 Best Available Techniques

A manufacturer of leather shall be aware of Best Available Techniques that are relevant for leather production and tanning processes (see for example: <http://eippcb.jrc.ec.europa.eu/reference/>; tanning of hides and skins - BREF document).

4 Industry specific requirements

4.1 General

Chromium III based tanning is the most widely used tanning technique (although chromium free tanning techniques are available as well). Chromium III based tanning can, due to failures during tanning, transport and storage, result in the formation of chromium VI compounds with allergenic and carcinogenic properties. Higher Cr VI concentrations render the leather noncompliant to BLUESIGN requirements (see *BSSL*) and non-marketable for many markets. Hence the companies involved in leather processing have to take precautions to prevent the formation of Cr VI compounds in the leather. Leather manufacturing without the potential for Cr VI generation is state of the art. The following measures shall be applied during the processing of leather, skins and hides (see also <https://www.cads-shoes.com>):

- Strict control of pH of chromium-containing liquors and effluent; no Cr VI should be contained
- Use of oxidizing agents after chrome-based tanning should be avoided
- Use of fatliquors, oils and waxes with a high degree of saturation, suitable for application on chrome tanned leather
- Careful selection of re-tanning agents and/or complexing agents
- Prevention of higher pH values; treat leather sufficiently to obtain a uniform low pH
- Use of denatured salt
- Thorough degreasing and removal of natural fats
- Stoichiometric dosage of chromium salts for tanning purposes
- Retention of brine from skin curing by suitable methods, such as dry disposal or reuse
- Selection and use of the appropriate cleaning and disinfection products
- Mold prevention
- Use of suitable biocides (e.g. TCMTB, OIT, CMK, OPP) and combinations thereof
- Cr VI monitoring/testing
- Regular substitution check for tanning chemicals (including chromium free tanning)

4.2 Water emissions

In order to reduce water emissions, wastewater treatment consisting of an appropriate on-site and/or off-site combination of the following Best Available Techniques (BAT) should be used:

- Mechanical treatment
- Physical-chemical treatment
- Biological treatment
- Biological nitrogen elimination

4.2.1 Direct wastewater discharge

The limit values and sampling requirements for direct wastewater discharge are compiled in Table 4.1.

In order to control the efficiency of the wastewater treatment plant, it is recommended that relevant parameters are measured not only in the treated (clean) stream but also in the untreated (raw) wastewater.

- Sampling shall be conducted according to *ISO 5667-13:2011 (Parts 1, 3, 10, 13 and 15), "Water Quality Sampling Guidance for the preservation and handling of water samples,"* either by qualified lab personnel or the by the external lab which conducts the related analysis under representative conditions (i.e. not after production breaks, heavy rainfall, etc.).
- The system partner shall define a sampling/measuring plan to ensure analyses are conducted at regular intervals.
- Sampling interval as listed Table 4.1 shall be observed; sampling intervals depend on the dimensions and complexity of the plant as well as on the findings. The sampling plan shall include regular third-party measurements by an accredited laboratory.
- APEO can be introduced to the system in various ways. Therefore, for all sites with wet processing, APEO (NPEO, OPEO, NP and OP) shall be measured two times per year in the raw wastewater. If the concentrations in the raw wastewater exceed 5 µg/L, a system partner shall conduct a root cause analysis to identify the sources and phase out materials containing APEO or chemicals as soon as possible.
- A full measuring campaign shall be conducted at least 2 times per year with one of the following sampling methods:
 - Composite sampling (preferred): composite sampling should be performed for no less than six hours, with no more than one hour between discrete samples. Each discrete sample shall be of equal volume. Sampling using calibrated autosamplers is preferred.
 - Qualified spot sampling: should be performed over two hours with samples taken at regular intervals of 15 minutes using an automatic composite sampler;
or
a minimum of five samples should be taken during a maximum of two hours, with at least two minutes between discrete samples.
- Compliance is present if four out of the five last measurements meet the below listed limits.

Parameter	Method	Unit	Limit value	Interval
pH	DIN 38404-C5 ISO 10523 USEPA 150.1 GB/T 6920		6-9	continually
Temperature	DIN 38404-C4 USEPA 170.1 GB/T 13195	°C	Δ15 or max 35° C	continually
TSS	DIN EN 872 ISO 11923 USEPA 160.2 GB/T 11901	mg/L	<35	weekly
COD	DIN 38409-41 ISO 6060 USEPA 410.4 APHA 5220D GB/T 11914 validated cuvette methods (e.g. according to ISO 15705) can be used alternatively	mg/L	250*	weekly
BOD ₅	DIN EN 1899-1 ISO 5815-1/-2 USEPA 405.1 APHA 5210B HJ 505	mg/L	25**	weekly
NH ₄ -N	DIN 38406-5 ISO 11732, ISO 7150 USEPA 350.1 APHA 4500 NH ₃ N HJ 535, HJ 536	mg/L	10	weekly
Phosphorous(total)	ISO 11885, ISO 6878 USEPA 365.4 APHA 4500 P-J GB/T 11893	mg/L	2	6 months
AOX	ISO 9562 USEPA 1650 HJ/T 83-2001	mg/L	0.5	6 months
Fish egg toxicity	DIN EN ISO 15088	LID	2	6 months
Chromium (total)	ISO 11885 USEPA 200.7, USEPA 200.8 USEPA 6010c, USEPA 6020a GB 7475, HJ 700	mg/L	1	weekly
Chromium (VI)	DIN 38405-D24 ISO 18412 USEPA 218.6 GB 7467	mg/L	0.1	weekly
Sulfide	DIN 38405-26 ISO 10530 APHA 4500-S2-D GB/T 16489	mg/L	weekly	weekly

Table 4.1: Limit values for direct discharge to the aquatic body. The measuring point is after wastewater treatment, before discharge to the aquatic body.
* If the COD monthly average in raw wastewater exceeds 2500 mg/L then a reduction by at least 90 % is required.
** If BOD₅ monthly average exceeds 1000 mg/L in the raw wastewater then a reduction by at least 97.5 % is required.
Δ= difference in temperature between the wastewater and the receiving water body

National or local requirements that are stronger or more detailed than the bluesign® CRITERIA will supersede the limit values specified above.

4.2.2 Indirect wastewater discharge

See *bluesign® CRITERIA for production sites*.

Additionally, the following limits are valid for indirect discharge (monthly average values based on the average of representative composite samples taken over a month):

- Total Chromium: 1 mg/L
- Sulfide: 1 mg/L

Sampling/measuring point: before discharge to third party treatment.

4.3 Air emissions

Several sources of air emissions exist in the leather tanning and finishing process. Thus, if relevant, the following parameters shall be monitored:

- Ammonia (NH₃)
- Hydrogen sulfide (H₂S)
- Dust
- VOC

Depending on the annual solvent consumption, the system partner has to follow the criteria for VOC-relevant production sites (see *bluesign® CRITERIA for production sites - Annex: VOC management*).

Further measures (if relevant):

- To reduce the emission of odors from manufacturing processes and effluent treatment, ammonia and hydrogen sulfide shall be abated by scrubbing and/or biofiltration of extracted air in which odor of these gases is noticeable
- To reduce the airborne emissions of halogenated organic compounds, halogenated volatile organic compounds used in the process shall be replaced by substances that are not halogenated

Moreover, it is strongly recommended that the following actions are considered:

- Implementation of water-based coatings instead of organic solvents to reduce VOC emissions
- Installation of dust collectors and scrubbers to control particulate emissions

5 Verification of compliance

BLUESIGN verifies compliance with the bluesign® CRITERIA by means of a bluesign® COMPANY ASSESSMENT including an on-site inspection.

Re-assessments have to be carried out no later than every three years.

6 Validity

This document comes into effect from 2020-03. It replaces the *bluesign® CRITERIA for production sites - ANNEX: Leather processing* version 1.0.

For all companies that signed an agreement for an assessment or for a bluesign® SYSTEM PARTNERSHIP before 2020-03 the adapted and newly introduced requirements are binding after a transition period of one year from the date of release.

This document is subject to revisions. Details on the revision procedure for regular and unscheduled revisions are compiled in the *bluesign® SYSTEM* document.

7 Other applicable documents

The following documents complement the document at hand:

- *bluesign® SYSTEM*
- *bluesign® glossary*
- *bluesign® CRITERIA for production sites*
- *bluesign® CRITERIA for production sites - ANNEX: Exclusion criteria*
- *bluesign® CRITERIA for production sites - ANNEX: VOC management*
- *bluesign® SYSTEM BLACK LIMITS (BSBL) - Threshold limits for chemical substances in chemical products*
- *bluesign® SYSTEM SUBSTANCES LIST (BSSL) - Consumer safety limits*

Current versions are available for download at www.bluesign.com/criteria.

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