

PLANT DYES STANDARD

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1. Introduction

Nature has always dominated over synthetic or artificial, from the beginning of this world as nature was the only option for human being then, and now with advantageous characteristics of naturally derived materials over synthetics giving them priority. With the public's mature demand in recent times pressurized the textile industry for use of natural colorants, without any harmful effects on environment and aquatic ecosystem, and with more developed functionalities simultaneously. Advanced developments for the natural bio-resources and their sustainable use for multifunctional clothing are gaining pace now. As now public's awareness for eco-preservation, eco-safety and health concerns, environmentally benign and non-toxic sustainability in bio resourced colorants, have created a revolution in textile research and development. Both qualitative and quantitative research investigations have been undertaken all over the world on colorants derived from cleaner bio-resources having minimal ecological negative impacts. Consequently, strict Environmental and Ecological Legislations have been imposed by many countries including Germany, European Union, USA and India. As a result, eco-friendly non-toxic naturally occurring bio-colorants have gaining re-emergence as a subsequent alternative through green chemistry approaches with wide spread applicability to textile coloration and other biomedical aspects.

2. Aim of the Standard

The aim of this Standard is to ensure the colorants and auxiliaries are obtained from natural substances.

3. Scope of the Standard

The Standard covers the manufacturing, processing, labeling, trading and distribution of natural colorants and auxiliaries.

The standard does not address Environmental aspects of processing (e.g. energy or water usage), social issues, safety issues, or legal compliance.

Intended users of this Standard are manufacturers, brands and retailers, traders, Certification bodies and organizations supporting specific raw material initiatives.

This is a voluntary, international standard that is not intended to replace the legal or regulatory requirements of any country. It is the responsibility of each operation to demonstrate compliance with all applicable laws and regulations related to marketing, labor and business practices.

4. Raw material Sourcing criteria

The Standard aims to take a holistic and responsible approach in the making of products accounting for each step in the supply chain from farm or field to finishing.

Sustainability of products is based on the commitment to reduce the negative environmental impacts of its business across the supply chain and to support practices that create social and environmental benefits.

Specifically, any raw materials sourced and processed need to adhere to all the following principles that underpin the Standards:

- Avoidance of the degradation and destruction of natural ecosystems and promotion of environmentally friendly production methods
- Eliminating controversial supply chains that may negatively impact forest resources or endangered species habitats.
- Compliance with all national and international laws, conventions and regulations
- Application of the precautionary principle to not use a technique until there is a scientific consensus that it is safe for society and the environment
- Robust and verifiable traceability of raw materials.
- High standards of animal welfare in all aspects of handling, raising, transportation and slaughter of animals
- Guarantee of ethical treatment of people working in the supply chain, ensuring no forced labor and no child labor.
- Standard demands the precautionary principle and a commitment to pursue sustainable, holistic approaches have also led to not support GE or GMO raw materials.

5. Prohibition Criteria for Raw material and Chemical inputs

5.1 General requirements for chemical inputs in all processing stages

The following table lists chemical inputs that may (potentially) be used in conventional processing but that are explicitly banned or restricted for environmental and/or toxicological reasons in all processing stages of Natural Colorants/ Auxiliary Products. It is not to be seen as a comprehensive and inclusive list of all chemical inputs that are prohibited or restricted under Standard.

Substance group	Criteria
Aromatic and/or halogenated solvents	Prohibited
Chlorinated benzenes	Prohibited
Chlorophenols (including their salts and	Prohibited (such as mono, di, tri, tetra and pentachlorophenols)
Complexing agents and surfactants	Prohibited are: - all APs and APEOs (i.e. NP, OP, NPEO, OPEO, APEOs terminated with functional groups, APEO-polymers) - EDTA, DTPA, NTA - LAS, α -MES
Endocrine disruptors	Prohibited
Formaldehyde and other short-chain aldehydes	Prohibited are inputs that contain or generate formaldehyde or other short-chain aldehydes during designated application
Genetically modified organisms (GMO)	Prohibited are all inputs that: <ul style="list-style-type: none"> • contain GMO • contain enzymes derived from GMO • are made from GMO raw materials (e.g. starch, surfactants or oils from GM plants)
Heavy metals	Prohibited, inputs must be 'heavy metal free'. Impurities must not exceed the limit values as defined in annex A.

Substance group	Criteria
<i>Inputs</i> (e.g. azo dyes and pigments) releasing carcinogenic arylamine compounds (MAK III, category 1,2,3,4)	Prohibited
<i>Inputs</i> containing functional nano particles (= particles with a size < 100 nm)	Prohibited
<i>Inputs</i> with halogen containing compounds	Prohibited are <i>inputs</i> that contain > 1% permanent AOX. Exceptions valid for pigments are set in chapter 2.4.7.
Organotin compounds	Prohibited (such as DBT, MBT, TBT, DOT, TPhT, MMT, MOT, DMT, DPhT, MPhT,
Plasticizers	Prohibited are: PAH, phthalates, Bisphenol A and all other plasticizers with endocrine disrupting potential
Per- and Polyfluorinated compounds (PFC)	Prohibited. (such as PFCA (incl. PFOA), PFSA (incl. PFOS) FTOH, PFNA, PFHpA, PFDA)
Quaternary ammonium compounds	Prohibited are: DSDMAC, DSDMAC and DHTDMAC
Short-chain chlorinated paraffins (SCCPs, C10-13)	Prohibited
<i>Substances</i> and <i>preparations</i> that are prohibited for application in textiles with a recognized internationally or a nationally valid legal character	Prohibited
<i>Substances</i> and <i>preparations</i> having restrictions in usage for application in textiles with a recognized internationally or nationally legal character	The same restrictions apply, provided the <i>substances</i> and <i>preparations</i> are not already prohibited or have stricter restrictions criteria according to this Standard. <i>Substances</i> listed in regulation EC 552/2009 (amending regulation

5.2 Requirements related to hazards and toxicity

Substance group	Criteria
<p><i>Inputs</i> which are classified with specific hazard statements (risk phrases) related to health hazards</p>	<p>Prohibited are:</p> <ul style="list-style-type: none"> - <i>substances</i> which are classified with any of the following hazard statements, if applied as direct input - <i>preparations</i> which are classified with any of the following hazard statements - <i>preparations</i> which contain at least one substance which is classified with any of the following hazard statements <ul style="list-style-type: none"> in accordance with the codification system of the Global Harmonized System (GHS) as published by the United Nations, annex 3: H300 Fatal if swallowed H310 Fatal in contact with skin H330 Fatal if inhaled H340 May cause genetic defects H341 Suspected of causing genetic defects H350 May cause cancer H351 Suspected of causing cancer H360 May damage fertility or the unborn child H361 Suspected of damaging fertility or the unborn child H370 Causes damage to organs H371 May cause damage to organs H372 Causes damage to organs through prolonged or repeated exposure <p>For <i>inputs</i> assessed on basis of GHS, where the implementation system does not provide for the codified H-statements, the corresponding hazard classes and categories of GHS, annex 3 apply. For <i>inputs</i> assessed according to the 'risk phrase' classification (Directive 67/548EEC amended and repealed by Regulation EC 1272/2008) the equivalent risk phrases apply.</p>

<p><i>Inputs</i> which are classified with specific hazard statements / risk phrases related to environmental hazards</p>	<p>Prohibited are:</p> <ul style="list-style-type: none"> - <i>substances</i> which are classified with any of the following hazard statements / risk phrases, if applied as direct input - <i>preparations</i> which are classified with any of the following hazard statements / risk phrases <ul style="list-style-type: none"> a) in accordance with the codification system of the Global Harmonized System (GHS) as published by the United Nations, annex 3: <ul style="list-style-type: none"> H400: Very toxic to aquatic life H410: Very toxic to aquatic life with long lasting effects H411: Toxic to aquatic life with long lasting effects <p>For <i>inputs</i> assessed on basis of GHS, where the implementation system does not provide for the codified H-statements, the corresponding hazard classes and categories of GHS, annex 3 apply. For <i>inputs</i> assessed according to the 'risk phrase' classification (Directive 67/548EEC amended and repealed by Regulation EC 1272/2008) the equivalent risk phrases apply.</p> and b) in accordance with the codification system of the EU-GHS (Regulation EC 1272/2008): <ul style="list-style-type: none"> EUH059: Hazardous to the ozone layer and c) in accordance with the 'risk phrase' classification: <ul style="list-style-type: none"> R54: Toxic to flora R55: Toxic to fauna R56: Toxic to soil organisms R58: May cause long-term adverse effects in the environment
<p><i>Inputs</i> which are bio-accumulative and not rapidly degradable</p>	<p>Prohibited are substances, if applied as direct input, and <i>preparations</i> classified with H413: 'May cause long-lasting effects to aquatic life' (respective R53) that are both, 'bio-accumulative' and not rapidly degradable</p>

All preparations applied must further comply with the following requirements:

Parameter	Criteria
Oral Toxicity	LD50 > 2000 mg/kg
Aquatic Toxicity	LC50, EC50, IC50 > 1 mg/l

Relation of biodegradability / eliminability to aquatic toxicity	<p>Only allowed, if:</p> <ul style="list-style-type: none"> < 70% and > 100 mg/l > 70% and > 10 mg/l > 95% and > 1 mg/l
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5.3 Specific requirements for colorants and auxiliaries

Parameter	Criteria
Selection of dyes, pigments and auxiliaries	<p>Allowed are colorants and auxiliaries that meet the requirements as set in point 5.1 and 5.2.</p> <p>Ammonia is allowed as required buffer in pigment printing pastes.</p> <p>Prohibited are dyes and pigments containing heavy metals as an integral part of the dye molecule (e.g. heavy metal dyes, certain reactive dyes) under consideration of the following exceptions:</p> <ul style="list-style-type: none"> - General exception for Iron - Specific exception for copper: permitted up to 5% per weight in blue, green and turquoise dyestuffs and pigments only. <p>While in general inputs that contain > 1% permanent AOX are prohibited, exceptionally for yellow, green and violet pigments the limit is 5%.</p> <p>Prohibited are printing methods using aromatic solvents, phthalates or chlorinated plastics (e.g. PVC).</p> <p>The use of natural dyes and auxiliaries that are derived from a threatened species listed on the Red List of the IUCN is prohibited.</p>

6. Operational Requirements

The following requirements are intended for the certified Organization in its ongoing operational compliance with the standard.

6.1 Management System

- Procedures
 - The Organization shall establish, implement and maintain procedures and/or work Instructions covering all applicable requirements of the standard.
 - Organization shall maintain a documented system plan that describes Processing stages including the points of risk and the material flow diagram.

- Record Keeping
 - The Organization shall maintain complete, up-to-date, easily auditable and understandable records to demonstrate conformity with all requirements of the Standard.
 - The Organization shall keep complete and up-to-date records of the description, quantities, origins and/or destinations of all raw material inputs and Goods received and delivered.
 - For each production step, the records shall demonstrate the balance between the raw material inputs and the outputs. These records shall enable the CB to perform Volume Reconciliations.
 - The certified Organization shall have a valid contract with each subcontractor stipulating the conditions of the relevant job work assigned. Certified Organizations shall remain fully responsible for compliance with all requirements of the standard. These contracts shall be made available to CBs.
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6.2 Managing Product during production

- Production Controls

The Organization shall demonstrate control over the flow of Products within the unit (e.g. processing/manufacturing steps performed), recipes used, composition, and stock quantities.
- Identification

Materials or Products shall be clearly identified as they move through production. This may include, but is not limited to, direct labeling of Natural Materials or Products, machines, storage vessels, or storage areas.

6.3 Managing Product during Post-Production

- Packaging and Transporting standard Products
 - The Organization shall ensure that the products containing Natural Material shall be transported to other units, including wholesalers and retailers, only in appropriate packaging, containers, or vehicles that are closed in such a manner that Substitution of the content cannot be achieved without manipulation or damage to the container.
 - All shipments of Natural Products shall be labeled with identification that clearly links them to the relevant invoices or shipping documents.

- Storing of Products

The storage of products shall be managed in order to segregate Natural Materials ensure easy identification of lots. Procedures shall be in place to prevent commingling or substitution of the Natural Materials with other Materials or products.

- Labeling of Products

The Logo shall not be used on any consumer products or consume – facing product Marketing.

7. Auditing Requirements

For the requirements related to the auditing process performed by the Certification Body to verify compliance with the standard, following are the guidelines.

7.1 General

- On-Site Audit

Organizations involved in the manufacturing and handling of Natural Colorants/ Auxiliary Products, from the initial processing of the received raw material to final packing, as well as traders of Natural Colorants/ Auxiliary Products, shall receive an On-Site Audit from a Certification Body (CB).

- Audit Frequency

On-Site Audits are to occur at least once a year, and within the validity period of the Scope Certificate.

- Non- Conformities

- The CB shall notify Organizations of any non-conformity (i.e. failure to meet a requirement of the Standard).
- The Organization shall submit a Corrective Action Plan (CAP) describing operational changes to become in compliance with the Standard to the CB.
- Major non-conformities shall be corrected within 30 days of the On-Site Audit.
- Minor non-conformities shall be corrected within 60 days of the On-Site Audit.

- Certification Decision

Certification decisions shall be made within 60 days of the Audit.

7.2 Types of Audit

- Unannounced On-Site Audits

The CB may carry out unannounced On-Site Audit visits to those units or situations where there may be specific risk of confusion or exchange of Natural Colorants/ Auxiliary Products with other products. No more than 48 hours' notice may be given in advance on an unannounced On-Site Audit.

- Trader Audits

- CBs may grant exemptions from the annual On-Site Audit cycle for Traders or Brands identified as low risk. In this case, a Remote Audit may be conducted to Replace the On -Site Audit for their second and third year of Certification. The fourth year shall begin a new cycle with an On-Site Audit followed by two years of Remote Audits. The CB may perform Remote Audits in this manner only if it is able to cover all applicable aspects of the Natural Colorants/ Auxiliary On-Site Audit protocols without being on-site.

- Traders with an annual turnover of less than \$10,000 (US) of Natural Colorants/ Auxiliary Product are Exempting from the Certification obligation; provided they are only involved in Post-Production activities with Natural Colorants/ Auxiliary Product. Exempted entities with less than \$10,000 annual turnover of Natural Colorants/ Auxiliary Product shall register with an Approved Certification Body and shall immediately inform the Certification Body if their annual turnover exceeds \$10,000, or if they plan to repackage Natural Colorants/ Auxiliary Product.
- Subcontractor Audits
 - The certified Organization shall have control and responsibility for the integrity of the Natural Colorants/ Auxiliary Product being subcontracted.
 - Subcontractors identified as higher risk through a CB risk assessment shall be Subject to On-Site Audits or Remote Audits. Subcontractors identified as low risk through a CB risk assessment may be exempt from On-Site Audits and Remote Audits.
 - Core production operations may not be exempt from On-Site Audits. Core processing is any process involved with the construction or transformation of the product.
 - Subcontractors shall not further subcontract their Natural Colorants/ Auxiliary Product-related activities to a separately owned entity.

7.3 On-Site Audit Conditions

- On-Site Audit Scope
 - During the On-Site Audit, the CB shall review and observe records, production processes, and storage units at each site.
 - Organization-owned ware houses managing Natural Colorants/ Auxiliary Product during Post-Production shall be identified and may be inspected at the discretion of the CB. Contracted warehouses only performing shipping or repacking functions for Natural Colorants/ Auxiliary Product Post-Production shall be reported to the CB but are not required to be On-Site Audited by the CB.
- On-Site Audit Access
 - The Organization shall give the CB, for inspection purposes, access to all parts of the unit and all premises, as well as to the accounts and relevant supporting documents. Auditors shall be allowed to interview staff without restriction. Full access shall be given both for Announced and unannounced visits.

- Subcontractors required to undergo an on–Site Audit shall give the Auditor the same level of access. The certified Organization shall ensure all subcontractors will give access to Auditor prior to handling Natural Colorants/ Auxiliary Product.

- Audit Information

The Organization shall provide the CB with any updated and accurate information deemed necessary for the purposes of the On-Site Audit, including but not limited to:

- ✓ The name, location, and activity being performed at each site;
- ✓ A diagram and description of all material and product flows;
- ✓ All documents that verify the Natural Colorants/ Auxiliary Material input’s Certification or unique qualities;
- ✓ All documents that track the flow of Natural Colorants/ Auxiliary Products;
- ✓ Details of procedures, handling requirements, or other practical measures For attaining and maintaining compliance to the Standard;
- ✓ A full list of all products being certified to the Natural Colorants/ Auxiliary, including material compositions;
- ✓ A complete list of suppliers of Natural Colorants/ Auxiliary or input materials;
- ✓ Results of its own voluntary inspection and sampling programs;
- ✓ Any relevant verification documents and/or test results necessary to ensure the identity of the Natural Colorants/ Auxiliary Material;
- ✓ A declaration that the Organization is performing its operations in accordance with the Standard.

A description of, practical measures list for, and statement of compliance with the Standard shall be signed by a representative of the Organization.

- This document will be verified by the CB during the Certification process. If deficiencies or non-compliances are found, the CB will issue an Audit report to the Organization. The Organization shall countersign this report and take necessary corrective measures. Certification will only be given after deficiencies or non-compliance issues have been corrected by the applying Organization and confirmed by the CB.

7.4 Auditing Outgoing Natural Colorants/ Auxiliary Product

- **Transaction Certificates Issuance**

- Certified Organizations shall request TCs from their responsible CB for all-Natural Colorants/ Auxiliary Products sold in business to business transactions, except when sold to a final retailer. Certified Organizations shall provide TCs upon request.
- Buyers of Natural Colorants/ Auxiliary Product may choose not to request a TC, such as in the case of a non-certified retailer.
- The seller shall provide documented proof of the Natural Colorants/ Auxiliary Product sale to their Responsible CB. The information that the CB may look for and verify includes, but is not limited to:
 - ✓ Invoices and shipping documents that show outgoing products have been sold to the named buyer of the products
 - ✓ The identity of the Claimed Materials or Natural Colorants/ Auxiliary Products and quantities
 - ✓ A balanced Volume Reconciliation
 - ✓ Records for any products purchased or sold.

8. Risk Assessment

To ensure the approved inputs and certified goods meet the necessary requirements of the Standard, the Certified Entities and Approved Certifiers are free to choose their own experience of testing / risk assessment based on chemistry and industry practices.

Following are guidance risk parameters:

Natural material inputs	Final Product (Natural Auxiliaries)	Final Product (Natural Colorants)
GMO	Chlorophenols	Aromatic & Halogenated solvents
Fungicides	Formaldehyde	AOX
Pesticides	Heavy Metals	Heavy Metals
Heavy Metals	APEOs	GMO
-	Organotin Compounds	APEO
-	GMO	Formaldehyde

Annex

A. Heavy Metal Free

An input is considered as 'heavy metal free' if it does not contain heavy metals as a functional constituent and any impurities contained do not exceed the following limit values (as set by ETAD for dyes):

Metal	Limit value (mg/kg)	Metal	Limit value (mg/kg)
Antimony	50	Lead	100
Arsenic	50	Manganese	1000
Barium	100	Nickel	200
Cadmium	20	Mercury	4
Cobalt	500	Selenium	20
Copper	250	Silver	100
Chromium	100	Zinc	1500
Iron	2500	Tin	250

9. Certification Grading:

Different grades will be given depending upon the level of competency. Grading system shall provide brands with a harmonized approach to look at certification and value chain. Higher the grades, more is the confidence for brands upon certified products consistently meeting and confirming to the standard requirements.

BRONZE

The lowest level of confidence in meeting the standard requirements. The company meets < 80% of Operational / Quality requirements set by the standard.

SILVER

The company meets 80% to 95% of the Operational / Quality requirements of the standard, with no critical Non-Conformity.

GOLD

The company meets > 95% of the Operational / Quality requirements of the standard, with no critical Non-Conformity.

PLATINUM

The company successfully meets >95% of the Operational / Quality requirements of the standard, with no critical Non-Conformity for consecutive years.