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Chain of custody — General terminology and models

Chaîne de contrôle — Terminologie générale et modèles

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Foreword

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Introduction

Understanding the origin of input materials, product components, product outputs and the conditions under which they are produced is becoming increasingly important. Manufacturers want to demonstrate compliance with requirements regarding health and safety, as well as environmental, social and quality-related aspects, while consumers or other end users need to be able to trust the claims made for these products. The main drivers are government policies, consumer and business demand. Companies directly active in a chain of custody (e.g. manufacturers, traders, logistic and transport service providers, retailers) as well as those investing in such companies (e.g. financial institutions, governments) need transparency to understand and manage risks, to secure quality and to facilitate the implementation of a reliable chain of custody system.

Chain of custody systems have become an indispensable element of many different applications, such as certification schemes for food safety, sustainable agriculture, forestry, aquaculture or fisheries, social compliance, manufacturing, construction and mineral mining. They enable information associated with a product and/or production characteristics to be shared among various organizations active in the chain of custody such as material and ingredient suppliers, processors, contractors, transportation companies, (private or regulatory) scheme owners, financial institutions, companies active in refurbishing and recycling, governmental organizations, end customers, and consumers or other end users.

Although these many systems differ in scope and use terminology relevant to the sector and product-specific needs, and might also diverge on semantics and presentation, they deal with the same challenges and are based on the same range of chain of custody models. The proliferation of systems and definitions causes unnecessary confusion, complexity and inconsistency. It also reduces the degree of trustworthiness of information (e.g. related claims) and increases costs for organizations active in the chain of custody. These complexities and resulting costs can be a barrier to market access, especially for smaller companies and developing countries.

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The aim of this document is to provide

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— unambiguous definitions of the different chain of custody models, and

— the corresponding requirements, which are independent of sectors, materials, products, and issues addressed.

These requirements are applicable to any organization operating at any step in the supply chain. Chain of custody models are also referred to as "chain of custody methods" or "chain of custody concepts". In this document, the term "chain of custody models" is used to describe the approach taken to control inputs and outputs and associated information in a particular chain of custody system. This multi-sector globally applicable International Standard serves as a reference point for existing and future commodity or sector specific chain of custody standards.

As each chain of custody model represents a different level of physical presence of the specified characteristic in the output, this document provides general guidance on the application of the defined chain of custody models, including initial guidance on the circumstances under which each chain of custody model might be appropriate.

This document does not specify or recommend a management system. Users can refer to this document, clearly stating which models of chain of custody described in this document are used as a basis in their chain of custody systems.

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Chain of custody — General terminology and models

1 Scope

This document defines a framework for chain of custody by providing:

— a consistent generic approach to the design, implementation and management of chains of custody;

— harmonized terminology;

— general requirements for different chain of custody models;

— general guidance on the application of the defined chain of custody models, including initial guidance on the circumstances under which each chain of custody model might be appropriate.

This document is applicable to all materials and products. It does not apply to services as final outputs.

This document can be used by any organization operating at any step in a supply chain, as well as by standard setting organizations as a reference point for specific chain of custody standards.

This document can enhance the transparency of specific claims regarding materials or products and thereby support the reliability of these claims. It is not intended to be used on its own to make or verify such claims.

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This document is not, on its own, able to support claims about an organization's materials or products. This is misleading, especially to consumers and other end customers, as the existence of a chain of custody system alone does not specify the characteristics or the conditions under which materials or products are produced. This document includes requirements and guidance regarding this issue.

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2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1 Terms related to chain of custody design

3.1.1
chain of custody
process by which *inputs* (3.2.2) and *outputs* (3.2.3) and associated information are transferred, monitored and controlled as they move through each step in the relevant *supply chain* (3.2.1)

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3.1.2
chain of custody system
set of measures designed to implement a *chain of custody* (3.1.1), including documentation of these measures

Note 1 to entry: The purpose of a chain of custody system is to provide credibility that the given material or product has a set of *specified characteristics* (3.2.5).

Note 2 to entry: The information linked to materials or products is transferred, monitored and controlled throughout the entire *supply chain* (3.2.1) or parts of it.

3.1.3
chain of custody model
approach taken to control *inputs* (3.2.2) and *outputs* (3.2.3) and associated information in a particular *chain of custody system* (3.1.2)

Note 1 to entry: A chain of custody model is typically designed to preserve a set of *specified characteristics* (3.2.5).

Note 2 to entry: The chain of custody models are defined in 3.3 and summarized in Table 1.

3.2 Terms related to supply chain

3.2.1
supply chain
series of processes or activities involved in the production and distribution of a material or product through which it passes from the *source* (3.2.8)

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Note 1 to entry: A supply chain is typically composed of a series of different organizations.

3.2.2
input
material or product that enters an organization or part of an organization

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Note 1 to entry: Input may be used at any stage of the *supply chain* (3.2.1).

Note 2 to entry: Input may also include reused and recycled materials or products.

Note 3 to entry: Input will have associated information.

[SOURCE: ISO 14044:2006+A1:2017, 3.21, modified — The wording and Note 1 to entry have been modified. Notes 2 and 3 to entry have been added.]

3.2.3
output
material or product that leaves an organization or part of an organization

Note 1 to entry: Output can be created at any stage of the *supply chain* (3.2.1).

Note 2 to entry: Output might include other products resulting from production processes.

Note 3 to entry: Output will have associated information.

[SOURCE: ISO 14044:2006+A1:2017, 3.25, modified — The wording and Note 1 to entry has been modified. Notes 2 and 3 to entry have been added.]

3.2.4
characteristic
distinguishing feature

[SOURCE: ISO 9000:2015, 3.10.1, modified — Notes 1 to 3 to entry have been deleted.]

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3.2.5
specified characteristic
set of *product characteristics* (3.2.6) and/or *production characteristics* (3.2.7) that the chain of custody is designed to maintain

3.2.6
product characteristic
distinguishing feature of a material or product

Note 1 to entry: A product characteristic can be qualitative or quantitative.

3.2.7
production characteristic
distinguishing feature of one or more production processes in the *supply chain* (3.2.1)

Note 1 to entry: Production characteristics sometimes create *product characteristics* (3.2.6). Examples include the grinding of wood, the chemical treatment of wood for pulp production and food cooked at a low temperature. Examples of production characteristics that do not normally create a product characteristic include production according to a particular specification, such as the sustainable production of the material; the absence of child labour; particular human rights standards or the identity of the primary processor.

Note 2 to entry: Production characteristics can include the type of transportation and storage.

3.2.8
source
specific originator at a location of a material or product with a *specified characteristic* (3.2.5)

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Note 1 to entry: The originator is typically a specific supplier but can also be a specific manufacturer or specific processor adding a particular characteristic.

3.2.9
site

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location with geographical boundaries at which defined activities under the control of an organization are carried out

Note 1 to entry: Sites may be in one geographical area but need not be contiguous. For example, a road can separate two geographical areas that are operated as a single site.

Note 2 to entry: Activities can include material extraction, production, manufacturing, recycling, storage, trade and/or transportation.

3.2.10
process
set of interrelated or interacting activities that use *inputs* (3.2.2) to deliver an intended *output* (3.2.3)

Note 1 to entry: A process can include services.

[SOURCE: ISO 9000:2015, 3.4.1, modified — The word “result” has been replaced by “output”. Notes 1 to 6 to entry have been deleted.]

3.3 Terms related to chain of custody models

3.3.1
identity preserved model
chain of custody model (3.1.3) in which the materials or products originate from a single *source* (3.2.8) and their *specified characteristics* (3.2.5) are maintained throughout the *supply chain* (3.2.1)

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3.3.2
segregated model
chain of custody model (3.1.3) in which *specified characteristics* (3.2.5) of a material or product are maintained from the initial *input* (3.2.2) to the final *output* (3.2.3)

Note 1 to entry: Addition of material with different characteristics and/or grade to the input is not allowed.

Note 2 to entry: Commonly, material from more than one source contributes to a chain of custody under the segregated model.

3.3.3
controlled blending model
chain of custody model (3.1.3) in which materials or products with a set of *specified characteristics* (3.2.5) are mixed according to certain criteria with materials or products without that set of characteristics resulting in a known proportion of the specified characteristics in the final *output* (3.2.3)

Note 1 to entry: This chain of custody model is also referred to as the "single percentage method".

3.3.4
mass balance model
chain of custody model (3.1.3) in which materials or products with a set of *specified characteristics* (3.2.5) are mixed according to defined criteria with materials or products without that set of characteristics

Note 1 to entry: The proportion of the *input* (3.2.2) with specified characteristics might only match the initial proportions on average and will typically vary across different *outputs* (3.2.3).

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3.3.5
book and claim model
chain of custody model (3.1.3) in which the administrative record flow is not necessarily connected to the physical flow of material or product throughout the *supply chain* (3.2.1)

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Note 1 to entry: This chain of custody model is also referred to as "certificate trading model" or "credit trading".

Note 2 to entry: This is often used where the certified/specified material cannot, or only with difficulty, be kept separate from the non-certified/specified material, such as green credits in an electricity supply.

3.4 Terms related to roles and responsibilities

3.4.1
organization
entity or group of people and facilities with an arrangement of responsibilities, authorities and relationships and identifiable objectives

Note 1 to entry: An organization may encompass multiple (production /geographical) sites.

[SOURCE: ISO 26000:2010, 2.12]

3.4.2
top management
person or group of people who directs and controls an organization at the highest level

[SOURCE: ISO 9000:2015, 3.1.1, modified — Notes 1 to 3 to entry have been deleted.]

3.4.3
requirements setter
person or organization that specifies the requirements for a particular chain of custody

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3.5 Terms related to conformity assessment

3.5.1
conformity
fulfillment of a specified requirement

[SOURCE: ISO 9000:2015, 3.6.11, modified — The definition has been modified.]

3.5.2
conformity assessment
demonstration that specified requirements are fulfilled

Note 1 to entry: Conformity assessment can be performed as *first-party activity* (3.5.3), *second-party activity(3.5.4)* or *third-party activity* (3.5.5).

[SOURCE: ISO/IEC 17000:2020, 4.1, modified — Notes 1 to 4 to entry have been deleted. A new Note 1 to entry has been added.]

3.5.3
first-party conformity assessment activity
conformity assessment (3.5.2) activity that is performed by the person or organization that provides or that is the object of conformity assessment

[SOURCE: ISO/IEC 17000:2020, 4.3, modified — Notes 1 and 2 to entry have been deleted.]

3.5.4
second-party conformity assessment activity
conformity assessment (3.5.2) activity that is performed by a person or organization that has a user interest in the object of conformity assessment

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[SOURCE: ISO/IEC 17000:2020, 4.4, modified — Notes 1 and 2 to entry have been deleted.]

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3.5.5
third-party conformity assessment activity
conformity assessment (3.5.2) activity that is performed by a person or organization that is independent of the provider of the object and has no user interest in the object

[SOURCE: ISO/IEC 17000:2020, 4.5, modified — Note 1 to entry has been deleted.]

3.5.6
audit
process (3.2.10) for obtaining relevant information about an object of *conformity assessment* (3.5.2) and evaluating it objectively to determine the extent to which specified requirements are fulfilled

[SOURCE: ISO/IEC 17000:2020, 6.4, modified — Notes 1 to 3 to entry have been deleted.]

3.5.7
inspection
examination of an object of *conformity assessment* (3.5.2) and determination of its conformity with detailed requirements or, on the basis of professional judgement, with general requirements

[SOURCE: ISO/IEC 17000:2020, 6.3, modified — Notes 1 to 3 to entry have been deleted.]

3.5.8
verification
confirmation of truthfulness, through the provision of objective evidence that specified requirements have been fulfilled

Note 1 to entry: The objective evidence needed for a verification can be the result of an *inspection* (3.5.7), *audit* (3.5.6) or other forms of determination such as performing alternative calculations or reviewing documents.

Note 2 to entry: The activities carried out for verification are sometimes called a "qualification process" and can result in *certification* (3.5.9).

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Note 3 to entry: The word “verified” is used to designate the corresponding status.

[SOURCE: ISO 9000:2015, 3.8.12, modified — In Note 2 to entry, the wording has been modified.]

3.5.9
certification
third-party attestation related to an object of *conformity assessment* (3.5.2), with the exception of accreditation

[SOURCE: ISO/IEC 17000:2020, 7.6]

3.5.10
claim
declared information regarding the *specified characteristics* (3.2.5) of a material or product

3.6 Terms related to traceability

3.6.1
traceability
ability to trace the history, application, location or source(s) of a material or product throughout the *supply chain* (3.2.1)

[SOURCE: ISO 9000:2015, 3.6.13, modified — The wording has been modified. Notes 1 and 2 to entry have been deleted.]

3.6.2
traceability system
manual or electronic system that provides the ability to access any or all information relating to the material or product under consideration throughout their life cycle, by means of accessing documented information

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Note 1 to entry: "Life cycle" should be understood in the broadest possible sense, to include, for example, raw material extraction, agricultural production, final disposal, and reuse or recycling, as well as all other stages connected with product manufacture and use.

4 Chain of custody design

4.1 General

Although frequently considered as interchangeable, the concepts of traceability and chain of custody are not identical. The difference between these two concepts is described in Annex A.

A chain of custody system encompasses the set of measures supporting responsibility for the custody of materials and products as ownership or control is transferred from one organization to another within the relevant supply chain. A chain of custody usually involves more than one organization.

This document provides a framework and fundamental requirements for a chain of custody system. Depending on, for example, the sector of application, material or product handled, product characteristics and/or specific claim, additional and more specific chain of custody requirements might need to be implemented. When using this document, the organization shall check and evaluate this need.

This document can enhance the transparency of specific claims regarding materials or products by providing common terminology and chain of custody models, and thereby support the reliability of these claims. However, organizations shall not use this document on its own to make or verify such claims. This would be misleading, especially to consumers and other end customers, as the existence of a chain of custody system alone does not specify characteristics or the conditions under which products are produced and therefore cannot support the characteristics or the conditions under which materials or products are produced. Also, any communication associated with materials or products solely concerning conformity to this document shall be avoided, especially towards consumers and other end customers.

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In order to make claims about an organization's materials or products, rather than the chain of custody itself, further evidence on conformity with specified characteristics shall be provided.

When materials or products come with a claim of adherence to a certification scheme, which has its own chain of custody rules, for example third-party assessment as certification or verification, and an organization aims to use that claim for its materials or products, the rules of that scheme shall be followed unless that scheme allows the use of this document instead.

4.2 Roles and responsibilities

The identification of actors (e.g. organizations), locations (including sites), inputs, outputs and associated information in the chain of custody is needed to implement any chain of custody model. Understanding which organizations play a role, and sometimes their relationship to each other, in the supply chain is important. In any chain of custody system, it is necessary to distinguish the various actors which play a particular role in the chain of custody or supply chain. Examples of actors in the supply chain include a manufacturer, trader, distributor, carrier, or retailer.

Since a chain of custody is intended to maintain specified characteristics, the functions in such an organized chain of custody are:

— Organizing: overseeing and managing the chain of custody so that there is an unbroken chain that complies with the requirements;

— Requirements setting: setting the specific requirements for the organized chain of custody;

NOTE 1 The specific requirements typically take into account:

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— the sector in which the chain of custody system is implemented;

— the specific role of an organization in the supply chain, the materials or products handled;

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— their characteristics and/or the type of claims an organization is allowed to make depending on the chain of custody model chosen.

— Conformity assessment: evaluating whether specific requirements are met;

NOTE 2 Verification of the assessment can be performed by the party organizing the chain of custody, managed by a scheme owner, or outsourced to the market. The conformity assessment of the fulfilment of the specific requirements can be a first-party conformity assessment activity (self-assessment), second-party conformity asesssment activity (peer assessment) or third-party conformity assessment activity (independent body).

— Implementing: Implementation by individual organizations active in the chain of custody.

Control procedures shall be put in place to avoid materials or products that do not conform to the minimum requirements from entering the chain of custody.

4.3 Properties of chain of custody models

This document defines five different chain of custody models for chain of custody systems. Each model has specific requirements that allow different claims to be made about materials or products and/or production processes that are delivered using that chain of custody model.

The five chain of custody models are:

1) identity preserved model;

2) segregated model;

3) controlled blending model;

4) mass balance model;

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