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Indirect, temperature-controlled refrigerated delivery services — Land transport of parcels with intermediate transfer

Services de livraison frigorifiques indirects sous température dirigée — Transport terrestre de colis comprenant un transbordement

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Project Committee ISO/PC 315, *Indirect, temperature-controlled refrigerated delivery services — land transport of parcels with intermediate transfer*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

0.1 Why develop this document?

In recent years there has been a growth in temperature-controlled refrigerated delivery services in response to the growing need to deliver temperature-sensitive goods in the form of chilled parcels and frozen parcels. Such temperature-controlled refrigerated delivery services have been modelled on typical postal and distribution services to support the development of e-commerce.

These specific types of temperature-controlled refrigerated delivery services can contribute to the ability of local food producers to expand their businesses and increase their sales channels.

Temperature-controlled refrigerated delivery services can provide an affordable option to send chilled parcels and frozen parcels without the need to add cooling materials inside them. As a result of the global trend towards more online trading for food industries, a number of countries have started to implement temperature-controlled refrigerated delivery services of this nature.

There is an expectation for further growth of refrigerated delivery services across more countries. Therefore, there is a recognised need for the refrigerated delivery services to develop industry standards and good practice in this area. However, because of the temperature sensitivity of the transported goods and the specific rules for food safety, there is a need to recognise a lack in existing food safety or refrigerated transport standards to cover the specificities of this new activity.

0.2 What are the aims of this document?

This document sets out the requirements for refrigerated delivery service providers in order to improve the quality and consistency of their refrigerated delivery services for both receiving refrigerated parcels and sending them through the refrigerated delivery service.

In addition, this document aims to be a guideline for refrigerated delivery service providers to support consumer safety through a total control of the cold chain while the refrigerated parcel is in the possession of the refrigerated delivery service provider.

The information that the refrigerated delivery service provider is required to give the delivery service user through this document (see Clause 4) could help the delivery service user to make a more informed choice when selecting a temperature-controlled refrigerated delivery service and could improve overall consumer trust in using such refrigerated delivery services.

0.3 Which service does this document target?

Refrigerated delivery service users may choose service temperature ranges from among refrigerated services offers that are suitable for their shipments. The requirements within this document focus on the service provided by, and the processes for, temperature control within the refrigerated delivery service offered. The exact temperature ranges of the refrigerated delivery service offered and the terms and conditions for the different temperature range of refrigerated transported parcels are decided by the refrigerated delivery service provider. Temperatures, terms and conditions may differ depending on the country within which the refrigerated delivery service is operating and therefore are not covered.

The scope of this document covers the carriage of individual parcels by refrigerated delivery services and the temperature of the goods can be associated with the temperature of the parcel's environment. This document's requirements focus on the temperature control of the service, rather than the temperature of the goods themselves. Therefore, it is not necessary to open each refrigerated parcel to monitor the temperature of the goods.

Certain refrigerated delivery services might need to apply some additional requirements that fall outside of this document (these might include temperature measuring of the refrigerated parcels themselves – see also 0.4) but in such instances it is the responsibility of the refrigerated delivery service provider to find out what these are and implement them as appropriate.

0.4 How does this document affect refrigerated delivery service providers specifically providing indirect refrigerated delivery services for food?

Some products might fall under local legislation, therefore attention is drawn to the need for refrigerated delivery service providers to be aware of relevant rules and requirements (for example, food safety). It is important to note that this document covers refrigerated delivery services of refrigerated goods which are not specific, or exclusive for food products. However, in this case the absence of cross-contamination should be verified as soon as other refrigerated goods are loaded alongside food within the refrigerated delivery service provider network.

It is also acknowledged that different countries might also have different legal definitions for either refrigerated delivery services or for the transport of food in terms of transport conditions and/or the temperature or type of chilled and frozen food or food products. Precise temperatures for chilled and frozen transport have not been defined within its requirements, and, where applicable, attention has been drawn to the need to refer to any relevant legislation.

Where a refrigerated delivery service provider is specifically providing indirect refrigerated delivery services for temperature-sensitive or refrigerated food, relevant government departments, trade associations and professional bodies within the country of business can often be consulted to provide advice, guidance and particular requirements regarding the operation of indirect refrigerated delivery services for food within that particular jurisdiction. Perishable foodstuffs can be a particularly sensitive area, and it might be useful to consult a document such as the United Nations ATP publication, the Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage[8], which has been developed and adopted by a number of countries, for further guidance and/or applicability for such specialist temperature-controlled refrigerated delivery services. The Codex Alimentarius (the "Food Code"), which was established by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) might also provide relevant international standards regarding food.

Indirect, temperature-controlled refrigerated delivery services — Land transport of parcels with intermediate transfer

1 Scope

This document specifies requirements for the provision and operation of indirect, temperature-controlled refrigerated delivery services for refrigerated parcels which contain temperature-sensitive goods (including foods) in land transportation. It includes all refrigerated delivery service stages from acceptance (receipt) of a chilled or frozen parcel from the delivery service user to its delivery at the designated destination, including intermediate transfer of the refrigerated parcels between refrigerated vehicles or container and via a geographical routing system. This document also includes requirements for resources, operations and communications to delivery service users. It is intended for application by refrigerated delivery service providers.

This document does not cover requirements for:

a) refrigerated parcel delivery via modes of transport such as airplane, ship or train;

b) refrigerated parcels that are transported in ambient temperatures due to the fact that they contain their own refrigeration materials (for example, ice packs, refrigerated foam bricks, dry ice blocks) and are surrounded and enclosed by sealed thermo protective packaging that creates a separate refrigerated climate to that provided within the delivery service. However, these types of refrigerated parcels may be transported through a refrigerated delivery service;

c) direct refrigerated delivery services in which chilled parcels and frozen parcels are collected from the delivery service user and transported directly to a recipient without in-transit transfer;

d) the quality or the measurement of the temperature of the contents of the chilled parcels or frozen parcels being delivered and their pre-point of receipt state, however it does set the requirements for the refrigerated delivery service carrying them;

e) Medical devices and medical equipment and pharmaceuticals might be subject to specific legislation and require specific transport requirements and are therefore, excluded from the scope of this document.

NOTE Resources covered by requirements of this document include facilities, refrigerated vehicles, cold stores, and staff members. This document is not limited to covering specific sizes of vehicles, as long as the performance requirements can be met. Land transport refrigerated vehicles which are conveyed in a ship as roll-on/roll-off vehicles are covered by this document. While this document does not cover requirements directly relating to the quality or safety of the refrigerated parcels being delivered, attention is drawn to specific country legislation that might require a refrigerated delivery service provider to adhere to additional requirements outside of this document, such as monitoring the temperature of the refrigerated parcel itself, or specific requirements regarding the segregation of different types of refrigerated parcel. It is important to note that the contents of refrigerated parcels referenced within this document are not limited to edible or perishable products.

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
acceptance
point when a refrigerated parcel is passed from a *delivery service user* (3.4) to the *refrigerated delivery service provider* (3.12)

3.2 Cold stores

3.2.1
cooling material cold store
equipment having an insulated enclosure, which has an independent means of cooling, that is used for freezing and preserving *cooling materials* (3.3), for example, eutectic plates, dry ice, and that is situated within an *operation site* (3.8)

Note 1 to entry: See also 9.4 and 9.5 for requirements for cooling materials and cooling material cold stores.

3.2.2
cold store
equipment having an insulated enclosure, which has independent means of reaching temperatures within the applicable *service transport temperature* (3.18.2), accommodating multiple *chilled parcels* (3.14.1) or multiple *frozen parcels* (3.14.2), and that is located within an *operation site* (3.8)

3.3
cooling material
substance, or unit containing a substance, capable of lowering the temperature of an enclosed environment

Note 1 to entry: Cooling materials such as eutectic plates are also referred to within the industry as “cold plates”, “ice packs”, “cold storage agents”, “coolant blocks”, or “ice-plates”. Such cooling materials can be used within an insulated container.

3.4
delivery service user
person or organization who requests a refrigerated delivery service and agrees to its terms and conditions in order to send a refrigerated parcel(s) to a *recipient* (3.10)

3.5
designated destination
delivery address determined by the *delivery service user* (3.4)

3.6
geographical routing system
process that defines and dictates the journey of a refrigerated parcel, depending on the *designated destination* (3.5)

Note 1 to entry: This is similar to the geographical routing used in a typical postal service.

3.7
thermally insulated container
mobile container constructed from materials to reduce the rate of heat transmission through its faces, that can be temperature controlled and accommodate multiple *chilled parcels* (3.14.1) or *frozen parcels* (3.14.2) in the process of being transported

Note 1 to entry: Thermally insulated containers are designed to maintain temperature and not to cool down parcels.

Note 2 to entry: An insulated container can be either a separate container, or it can be a container within a *refrigerated vehicle* (3.15) or non-refrigerated vehicle (see 3.11 and 3.15).

3.8
operation site
location forming part of the *transport network* (3.21) where refrigerated parcels are:

a) transferred from one *refrigerated enclosure* (3.11) to another as part of the *geographical routing system* (3.6); or

b) submitted to the refrigerated delivery service by a *delivery service user* (3.4); or

c) collected by a *recipient* (3.10)

3.9
operational manual
set of instructions regarding how equipment functions

3.10
recipient
person or organization named by the *delivery service user* (3.4) as being located at the *designated destination* (3.5) for the delivery of the refrigerated parcel

3.11
refrigerated enclosure
temperature-controlled enclosure within a *refrigerated vehicle* (3.15) or an insulated container, which has its own means of *cooling material* (3.3), that is artificially maintained at a *service transport temperature* (3.18.2) and that can accommodate multiple *chilled parcels* (3.14.1) or multiple *frozen parcels* (3.14.2) during transport

Note 1 to entry: This could be the temperature-controlled body of a truck, or insulated container containing *cooling material* (3.3).

3.12
refrigerated delivery service provider
company or organization providing the refrigerated delivery services

3.13
indirect refrigerated delivery service
operation that offers the transport of refrigerated parcels from a *delivery service user* (3.4) to a *recipient* (3.10) through a temperature-controlled *transport network* (3.21), similar to a postal service

Note 1 to entry: Direct refrigerated delivery service means an operation that offers the transport of refrigerated parcels directly from a delivery service user to a recipient without either transference between *refrigerated enclosure* (3.11) or through a temperature-controlled transport network. Direct refrigerated delivery services are excluded from this document (see Clause 1).

3.14 Refrigerated parcels

3.14.1
chilled parcel
packaged goods that have been refrigerated to within a positive *service transport temperature* (3.18.2) specified by the *refrigerated delivery service provider* (3.12) and agreed by service users in order to be carried or sent by the refrigerated delivery service

Note 1 to entry: There are different temperature categories and requirements for different types of chilled goods, especially with regard to chilled food and food-based products. This determines the service transport temperature parameters given by a refrigerated delivery service provider. See also 4.5.

3.14.2
frozen parcel
packaged goods which have been refrigerated to within a negative *service transport temperature* (3.18.2) specified by the *refrigerated delivery service provider* (3.12) and agreed by service users in order to be carried or sent by the refrigerated delivery service

Note 1 to entry: The service transport temperature for frozen parcels might, in addition, depend upon the frozen category within which the goods fall (for food or food-based products being transported, this is deep frozen or quick frozen, for example). See also 4.5.

3.15
refrigerated vehicle
road transport vehicle constructed with one or more temperature-controlled enclosures with an integrated cooling system which is used for the transport of packages requiring controlled temperature conditions in transit

Note 1 to entry: A refrigerated vehicle contains one or multiple *refrigerated enclosures* (3.11), see 9.2.1.

3.16
responsible person
individual appointed by the *refrigerated delivery service provider* (3.12) to manage the people, processes and resources of an *operation site* (3.8)

Note 1 to entry: This might be an operational site manager or equivalent role.

3.17
temperature-controlled environment
area in which the environment is maintained at a specific temperature or within a specified temperature range

Note 1 to entry: This might be for example, a *cold store* (3.2.2), *refrigerated enclosure* (3.11) within a *refrigerated vehicle* (3.15), or a refrigerated room.

3.18 Temperature ranges and maximum temperatures

3.18.1
operational transport temperature
temperature range, or level of refrigeration, excluding temperature rises caused by defrost events, given either:

a) for *chilled parcel* (3.14.1) delivery or *frozen parcel* (3.14.2) delivery, as a temperature range containing a maximum and minimum temperature limit; or

b) for frozen parcel delivery, as a maximum temperature limit;

which is defined and accepted by the *refrigerated delivery service provider* (3.12) as that within which, or below which, the refrigerated delivery service operations of *refrigerated enclosures* (3.11) and cold stores are conducted

3.18.2
service transport temperature
temperature range, or level of refrigeration, excluding temperature rises caused by defrost events, given either:

a) for *chilled parcel* (3.14.1) delivery or *frozen parcel* (3.14.2) delivery, as a temperature range containing a maximum and minimum temperature limit; or

b) for frozen parcel delivery, as a maximum temperature limit;

which is defined by the *refrigerated delivery service provider* (3.12) as that within which, or below which, the refrigerated parcels are to be delivered

Note 1 to entry: The service transport temperature is not the temperature of the refrigerated parcels.

Note 2 to entry: Service transport temperature is given as a temperature range and a maximum temperature limit, see 4.5.3 regarding temperature ranges or maximum temperatures for frozen parcel delivery.

Note 3 to entry: Defrost events are necessary for *frozen parcel* (3.14.2) delivery to remove the build-up of ice on refrigeration units and to enable refrigeration to continue. However, these cause the *service transport temperature* (3.18.2) or maximum temperatures to be temporarily exceeded within the *refrigerated enclosure* (3.11) or *cold store* (3.2.2). Defrost events should be conducted to maintain functional operations without adversely affecting the refrigerated parcels. The frequency with which defrosts are carried out should be conducted in accordance with the manufacturer's instructions or advice sought from the manufacturer, where appropriate. See also 4.5.

Note 4 to entry: Attention is drawn to national statutory or regulatory requirements for service transport temperatures.

3.19
transfer
process of moving a refrigerated parcel:

a) into the refrigerated delivery service from a *delivery service user* (3.4);

b) between *refrigerated enclosures* (3.11)*;* and/or *cold stores* (3.2.2); or

c) from the refrigerated delivery service to a *recipient* (3.10); within the refrigerated delivery service

Note 1 to entry: Transfer might include, for example, points at which the refrigerated parcel is transferred from an inter-site *refrigerated vehicle* (3.15) to another refrigerated enclosure. Transfer happens through a temperature-controlled environment or a non-*temperature-controlled environment* (3.17). It is important to inform the delivery service user of this as it could be a critical factor for their selection of a particular refrigerated delivery service. The level of information provided by the *refrigerated delivery service provider* (3.12) is likely to depend on the type of refrigerated delivery service offered. However, it is recommended that the number of times and conditions under which a refrigerated parcel are likely to be exposed are stated. See also 7.3 and 10.3.

Note 2 to entry: The process of moving a refrigerated parcel from one refrigerated vehicle to another is referred to as "cross-docking".

3.20
transfer time
period of time, expressed in seconds, for which a refrigerated parcel is out of a *temperature-controlled environment* (3.17) during *transfer* (3.19)

3.21
transport network
system comprising *operation site(s)* (3.8) and *refrigerated vehicles* (3.15) that might be used in the provision of a refrigerated delivery service

3.22
vehicle schedule
timetable for *refrigerated vehicles* (3.15) moving between *operation sites* (3.8)

3.23
work instruction
documented directions for staff members regarding how to carry out an activity within their job