PAS 1018:2017

Indirect, temperature-controlled refrigerated delivery services –

Land transport of refrigerated parcels with intermediate transfer – Specification

bsi.

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Foreword

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It has been assumed in the preparation of this PAS that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this PAS are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Any website URLs cited in the PAS are provided as additional information only and are correct at the time of publication.

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0 Introduction

0.1 Why develop PAS 1018?

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.

These specific types of temperature-controlled refrigerated delivery services have been available in Japan since the 1980s for individual parcel use through gift and mail-order businesses, for example, and have contributed to the ability of producers of agricultural and fishery products to expand their businesses and increase their sales channels.

Temperature-controlled refrigerated delivery services can provide an affordable option for individuals and small businesses wishing to send chilled parcels and frozen parcels on an individual and/or small-scale basis without the need to separately package each parcel with specialist packaging and bulky cooling materials, or without entering into a larger bulk transport agreement within dedicated refrigerated transport.

As a result of the global trend towards more online trading, and a greater demand from the agricultural and fishing industries for individual and small business online sales and purchases, a number of countries outside of Japan, such as Taiwan, Singapore, Malaysia and China 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 and there is therefore a recognized need for the refrigerated delivery services to develop industry standards and good practice in this area.

0.2 What are the aims of PAS 1018?

PAS 1018 aims to set out the requirements for refrigerated delivery service providers in order to improve the quality and consistency of their refrigerated delivery services for both receiving small-scale refrigerated parcels and sending them through the refrigerated delivery service. The information that the refrigerated delivery service provider is required to give the delivery service user by PAS 1018 (see Clause **3**) could help the delivery service user to make a more informed choice when selecting a temperature-controlled refrigerated delivery service, and could overall improve consumer trust in using such refrigerated delivery services.

As a first attempt to standardize this particular area of industry, it is important to recognize that there are a number of challenges to producing a PAS with which every party can be entirely satisfied. The aim of the PAS, and those involved in its drafting, development and review, has been to produce a consensus-based document in a currently unstandardized area of industry with the expertise of key stakeholders. In line with the PAS development process, PAS 1018 can be reviewed two years after publication, and, as appropriate, it can be considered for revision and improvement using any additional knowledge and feedback that is provided from those who have used, or have a peripheral interest in the PAS within industry.

0.3 How has PAS 1018 been developed?

Refrigerated delivery services conforming to PAS 1018 can allow a delivery service user to consider the temperature of their refrigerated parcel and then to choose a refrigerated delivery service that offers a suitable corresponding service transport temperature. They could then send that refrigerated parcel to a recipient in the same way that they would send an ambient temperature parcel to a recipient through a postal service. The requirements within PAS 1018 focus on the service provided by, and the processes for, temperature control within the refrigerated delivery service offered. The exact temperature of the refrigerated delivery service offered, and the terms and conditions for refrigerated parcels carried, are decided by the refrigerated delivery service provider. Temperatures and terms and conditions are also likely to differ depending on the country within which the refrigerated delivery service is operating and therefore are not covered by the PAS.

It is also important to note that in PAS 1018, the requirements focus on the temperature control of the service provided by the refrigerated delivery service providers, rather than the temperature of the refrigerated parcels themselves. Many of the refrigerated delivery services that PAS 1018 aims to cover offer refrigerated delivery services for small-scale use or single use by the general public, rather than large-scale commercial operations. Within such small-scale or single use refrigerated delivery service operations, it might not always be possible, or necessary, to open each refrigerated parcel in order to monitor its temperature, as this would most likely expose the contents of the refrigerated parcel to the external environment, thereby increasing the risk of contamination and possible damage. Certain refrigerated delivery services might need to apply some additional requirements that fall outside of the PAS (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 PAS 1018 affect refrigerated delivery service providers specifically providing indirect refrigerated delivery services for food?

It is recognized that some products for carriage (for example, specific foods) might fall under legislation within some countries, and attention is drawn to the need for refrigerated delivery service providers to be aware of relevant legislation and legal responsibilities for either themselves or their delivery service users. It is important to note that PAS 1018 covers general refrigerated delivery services that could accept a range of refrigerated goods for delivery (depending on their defined terms and conditions) and are not specific to, or exclusively for, the delivery of refrigerated food and food products. 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. The PAS does not, and cannot, conflict with legislation, and for this reason precise temperatures for chilled and frozen 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.[1)] 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* [1], 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.[2)]

[1)] At the time of publication, further information regarding General Food Laws in the United Kingdom can be found on the Food Standards Agency website, https://www.food.gov.uk.
[2)] For further information and to download the Codex Alimentarius, refer to the website: http://www.fao.org/fao-who-codexalimentarius/en. This link is correct at the time of publication.

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1 Scope

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

PAS 1018 does not cover requirements for refrigerated parcel delivery via modes of transport such as airplane, ship or train. It also does not cover separate requirements for refrigerated parcels that may be transported in ambient temperatures due to the fact that they contain their own refrigeration materials (e.g. ice packs, refrigerated foam bricks, dry ice blocks) and are surrounded and enclosed by sealed thermoprotective 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.

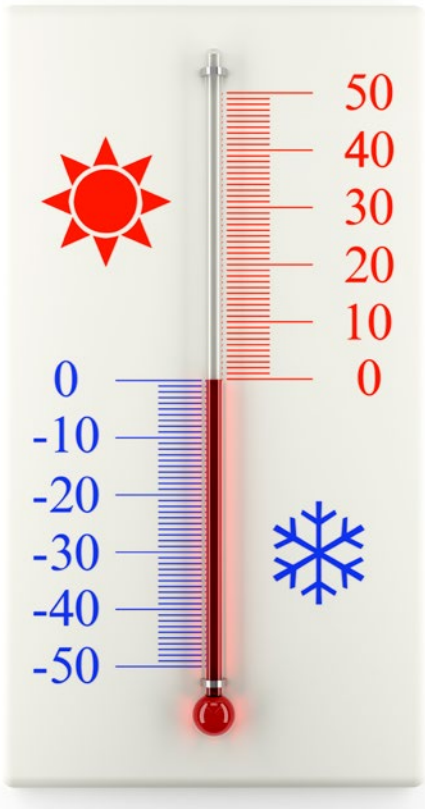
This PAS does not cover direct refrigerated courier services in which chilled parcels and frozen parcels are collected from the delivery service user and transported directly to a recipient without in-transit transfer. It does not cover requirements for the quality or specifically for measuring the temperature of the contents of the chilled parcels or frozen parcels being delivered and their pre-point of receipt state, but does set the requirements for the refrigerated delivery service carrying them. It also does not cover the transport of medical devices and medical equipment.

*COMMENTARY ON **SCOPE***

Resources covered by PAS 1018 requirements include facilities, refrigerated vehicles, cold stores, and staff members.

The PAS is not limited to covering specific sizes of vehicle, 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 the PAS.

While this PAS 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 the PAS, 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 PAS are not limited to edible or perishable products. Medical devices and medical equipment might be subject to specific legislation and require specific transport requirements, and are therefore excluded from the scope of PAS 1018.



2 Terms and definitions

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

2.1 acceptance

point at which a refrigerated parcel is passed from a delivery service user to the refrigerated delivery service provider for delivery

2.2 cold stores

NOTE *Whether the cold store is used for chilled parcels, frozen parcels or cooling materials is determined by the temperature to which the cold store is cooled and maintained.*

2.2.1 cooling material cold store

equipment having a compartment that is insulated and that has an independent means of cooling which is used for freezing and preserving cooling materials, and which is situated within an operation site

NOTE 1 *See also* ***9.4*** *and* ***9.5*** *for requirements for cooling materials and cooling material cold stores.*

NOTE 2 *A definition of cooling material is given in* ***2.3****.*

2.2.2 mobile cold store

equipment having an insulated compartment, which has an independent means of reaching temperatures within the applicable service transport temperature, is used for the purpose of accommodating multiple chilled parcels or multiple frozen parcels when in transit, and can be manually moved

2.2.3 stationary cold store

equipment having an insulated compartment, which has an independent means of reaching temperatures within the applicable service transport temperature, is used for the purpose of accommodating multiple chilled parcels or multiple frozen parcels, and is fixed within an operation site

2.3 cooling material

substance, or unit containing a substance, which is capable of lowering the temperature of an enclosed environment

NOTE *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 or a mobile cold store.*

2.4 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

2.5 designated destination

delivery address determined by the delivery service user

2.6 geographical routing system

process that defines and dictates the journey of a refrigerated parcel, depending on the designated destination

NOTE *This is similar to the geographical routing used in a typical postal service.*

2.7 insulated container

thermal receptacle, which can be temperature-controlled, and which can accommodate multiple chilled parcels or frozen parcels in the process of being transported

NOTE 1 *The method of temperature control might, for example, be through the use of a thermoelectric cooler (e.g. a Peltier cooler), or cooling material such as eutectic plates. See also* ***2.3****, Note.*

NOTE 2 *An insulated container can be either a separate container, or it can be a container within an insulated truck body (see* ***2.11****).*

2.8 operation site

location forming part of the transport network at which refrigerated parcels are:

a) transferred from one refrigerated vehicle to another as part of the geographical routing system; or at which

b) refrigerated parcels are submitted to the refrigerated delivery service by a delivery service user; or

c) collected by a recipient

2.9 operational manual

set of instructions regarding how equipment functions

2.10 recipient

person, or organization, named by the delivery service user as being located at the designated destination for the delivery of the refrigerated parcel

2.11 refrigerated compartment

chamber within a refrigerated vehicle that is artificially maintained at a service transport temperature and that can accommodate multiple chilled parcels or multiple frozen parcels during transport

NOTE *This could be the temperature-controlled body of a truck/lorry, mobile cold store, or insulated container containing cooling material.*

2.12 refrigerated delivery service provider

company or organization providing the refrigerated delivery services

2.13 refrigerated delivery services

2.13.1 direct refrigerated delivery service

operation that offers the transport of refrigerated parcels directly from a delivery service user to a recipient without either transference between refrigerated vehicles or through a temperature-controlled transport network

NOTE *Direct refrigerated delivery services are excluded from this PAS (see Clause **1**).*

2.13.2 indirect refrigerated delivery service

operation that offers the transport of refrigerated parcels from a delivery service user to a recipient through a temperature-controlled transport network, similar to a postal service

2.14 refrigerated parcels

*COMMENTARY ON **2.14***

A refrigerated parcel is most likely to contain temperature-sensitive goods, though the contents of the refrigerated parcel is up to the delivery service user, within the accepted parameters of the refrigerated delivery service provider. The refrigerated parcel may comprise more than one object packaged together.

*The refrigerated delivery service might specify accepted packaging conditions and materials (see **3.6**). Packaging might use materials such as paper, cardboard or other packaging materials.*

*The parameters of a service transport temperature for refrigerated deliveries depends on the refrigerated delivery service provider and the refrigerated delivery service being offered. It might also depend upon relevant legislation and regulations, especially with regard to refrigerated parcels containing food or food-based products. Attention of the PAS user is drawn to relevant national legislation or regulations for refrigerated delivery services. It is advisable for the PAS user to identify relevant legislation and regulations (see **10.1**).*

2.14.1 chilled parcel

packaged goods, which have been refrigerated to within a service transport temperature specified by the refrigerated delivery service provider in order to be carried or sent by the refrigerated delivery service

NOTE *There are a number of different temperature categories and requirements for different types of chilled goods, especially with regard to chilled food and food-based products. This may determine the service transport temperature parameters given by a refrigerated delivery service provider. See also **3.4**.*

2.14.2 frozen parcel

packaged goods, which have been refrigerated to a temperature that falls below a service transport temperature specified by the refrigerated delivery service provider in order to be carried or sent by the refrigerated delivery service

NOTE *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 might be deep frozen or quick frozen, for example). See also **3.4**.*

2.15 refrigerated vehicle

method of transport containing at least one refrigerated compartment that is used to transport refrigerated parcels

NOTE 1 *A refrigerated vehicle may contain one or multiple refrigerated compartments, see **9.2.1**.*

NOTE 2 *The term commonly used for the journey of a refrigerated vehicle used for inter-site journeys between operation sites is "trunking".*

2.16 responsible person

individual appointed by the refrigerated delivery service provider to manage the people, processes and resources of an operation site

NOTE *This might be an Operational Site Manager or equivalent role.*

2.17 temperature-controlled environment

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

NOTE *This might be, for example, a cold store, refrigerated compartment within a refrigerated vehicle, or a refrigerated room.*

2.18 temperature ranges and maximum temperatures

NOTE 1 *Defrost events are necessary for frozen parcel delivery to remove the build-up of ice on refrigeration units and to enable refrigeration to continue. However, these may cause the service transport temperature or maximum temperatures to be temporarily exceeded within the refrigerated vehicle or stationary cold store. 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 **3.4**.*

NOTE 2 *Attention is drawn to national statutory or regulatory requirements for service transport temperatures. See also commentary on **2.14**.*

2.18.1 operational transport temperature

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

a) for chilled parcel delivery or frozen parcel 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 as that within which, or below which, the refrigerated delivery service operations of refrigerated compartments and cold stores are conducted

NOTE *The operational transport temperature should be a temperature range or level for the refrigerated delivery service within which, or below which the refrigerated delivery service operations are maintained. This temperature range is likely to be a smaller range that falls within the service transport temperature of the refrigerated delivery service [see **2.18.2** a)], or a lower temperature that falls below the service transport temperature [see **2.18.2** b)].*

2.18.2 service transport temperature

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

a) for chilled parcel delivery or frozen parcel 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 as that within which, or below which, the refrigerated parcels are to be delivered

NOTE 1 *The service transport temperature is not the temperature of the refrigerated parcels.*

NOTE 2 *See **3.4.3** regarding temperature ranges or maximum temperatures for frozen parcel delivery.*

2.19 transfer

process of moving a refrigerated parcel:

a) into the refrigerated delivery service from a delivery service user;

b) between refrigerated compartments and/or stationary cold stores; or

c) from the refrigerated delivery service to a recipient;

within the refrigerated delivery service

NOTE 1 *Transfer might include, for example, points at which the refrigerated parcel is transferred from an inter-site refrigerated vehicle to another refrigerated compartment. Transfer may happen through a temperature-controlled environment or a non-temperature-controlled environment. 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 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 **6.3** and **10.3**.*

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

2.20 transfer time

period of time, expressed in seconds, for which a refrigerated parcel is out of a temperature-controlled environment during transfer

2.21 transport network

system comprising operation site(s) and refrigerated vehicles that might be used in the provision of a refrigerated delivery service

2.22 vehicle schedule

timetable for refrigerated vehicles moving between operation sites

2.23 work instruction

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

3 Refrigerated delivery service definition and communications

3.1 Refrigerated delivery service attributes

The refrigerated delivery service provider shall determine, document and make publicly available the following refrigerated delivery service attributes:

a) name of the refrigerated delivery service (see **3.2**);
b) refrigerated delivery service provider's contact details and customer service (see **3.3**);
c) service transport temperature of the refrigerated delivery service (see **3.4**) available for the delivery service users;
d) targeted delivery service users (see **3.5**); and
e) accepted terms and conditions for refrigerated parcels (see **3.6**), including:
    1) items not accepted for transport by the refrigerated delivery service provider (see **3.6.2**);
    2) areas for refrigerated parcel acceptance and areas for refrigerated parcel delivery to/ collection by a recipient (see **3.6.3**);
    3) refrigerated delivery service operation business days and hours (see **3.6.4**);
    4) opening hours and days of the week for acceptance and delivery locations (see **3.6.5**);
    5) standard delivery timescales (times/days) (see **3.6.6**);
    6) non-delivery of refrigerated parcels, including holding times and/or returns, as applicable and recalled refrigerated parcels(see **3.6.7**); and
    7) fees and payment options (see **3.6.8**).

When changes are made to the refrigerated delivery service attributes, the relevant documents shall be updated, made publicly available and communicated to delivery service users.

The refrigerated delivery service attributes shall be communicated to delivery service users upon request, and at the point of agreeing to use the refrigerated delivery service.

3.2 Name of the refrigerated delivery service

The refrigerated delivery service shall have a name or a refrigerated delivery service description that clearly describes that the refrigerated delivery service provides the temperature-controlled delivery of refrigerated parcels.

*COMMENTARY ON **3.2***

The point of agreeing to use the refrigerated delivery service and accepting all terms and conditions might be online, when an order is placed to use the refrigerated delivery service, or in person when the refrigerated delivery service provider subsequently accepts the refrigerated parcel for delivery.

It should be clearly understandable from the refrigerated delivery service name or delivery service description that the transport provided is not within an ambient temperature environment.

3.3 Refrigerated delivery service provider's contact details and customer service

The refrigerated delivery service provider shall make publicly available its contact details for the purpose of addressing any enquiries, complaints or feedback that potential and current delivery service users, and/or refrigerated parcel recipients might have.

***NOTE** The contact details might go through to a call centre, website, or operation site, for example. Contact might be provided through an email address, online feedback form, or phone number. BS 8477 is a code of practice which gives recommendations for customer service good practice.*

3.4 Service transport temperature of the refrigerated delivery service

3.4.1 General

A service transport temperature shall be identified for the refrigerated delivery service in accordance with **3.4.2** or **3.4.3**, as applicable.

NOTE 1 *This service transport temperature excludes temperature fluctuations caused by defrost events within a refrigeration unit (see **2.18**) which are likely to temporarily exceed the refrigerated delivery service temperature limits.*

Where refrigerated parcels might be exposed to temperatures exceeding the defined service transport temperature in the process of the refrigerated delivery service (e.g. during transfer times or unforeseen circumstances), these situations shall be identified.

NOTE 2 *A refrigerated delivery service provider might choose to detail their contingency plans or work instructions for managing such situations [see **10.2.1** f)].*

3.4.2 Chilled parcels

The refrigerated delivery service provider shall identify the maximum temperature limit and the minimum temperature limit of the service transport temperature of the refrigerated delivery service for chilled parcels.

3.4.3 Frozen parcels

The refrigerated delivery service provider shall identify, as a minimum, the maximum temperature limit of the service transport temperature of the refrigerated delivery service for frozen parcels. This shall not include temperature rises during periods of defrost.

NOTE *While it is critical to identify the highest acceptable temperature for a frozen parcel service transport temperature, it would not, in most cases, be necessary to identify the minimum temperature limit for the frozen parcel service transport temperature as there would be little impact on the frozen parcels from being subjected to increasingly lower temperatures. Where it is necessary, the maximum and minimum temperature limits of the temperature range should be identified by the refrigerated delivery service provider and/or agreed with the delivery service user.*

3.5 Targeted delivery service users

Where a refrigerated delivery service provider is providing its refrigerated delivery service for a specific market, it shall define its targeted delivery service users.

NOTE *For example, commercial delivery service users, or private delivery service users.*

3.6 Accepted terms and conditions for refrigerated parcels

3.6.1 General

The refrigerated delivery service provider shall determine their terms and conditions for carriage of refrigerated parcels, including, as a minimum, their:

a) maximum size;

b) maximum mass;

c) packaging conditions, including protection against cross-contamination based on the contents of the refrigerated parcel (see **7.3** and Annex **A**); and

d) pre-cooling/pre-freezing conditions by the delivery service users (see **7.3**).

*COMMENTARY ON **3.6.1***

*Packaging conditions might include, for example, that the delivery service user should package the refrigerated parcel in clean, secure wrapping that contains no tears, prevents leakage and cross-contamination to other refrigerated parcels, and packaging that also prevents odours from escaping, where the contents of the refrigerated parcel have a strong odour. Advice could also be provided regarding the need to protect the contents of the refrigerated parcel and that further information may be sought by the delivery service user through the refrigerated delivery service provider's customer services (see **3.3**).*

Refrigerated delivery service providers should request that refrigerated parcels are pre-cooled/pre-frozen by the delivery service users prior to handing over their refrigerated parcels to the refrigerated delivery service provider. The pre-cooling/pre-freezing conditions requested by the refrigerated delivery service provider might, for example, be for the delivery service user to confirm the temperature of the refrigerated parcel upon handover to the refrigerated delivery service provider, or for the delivery service user to specify the temperature and length of time within which the refrigerated parcel was kept in a temperature-controlled environment prior to handover to the refrigerated delivery service provider.

3.6.2 Items not accepted for transport by the refrigerated delivery service provider

The refrigerated delivery service provider shall define a list of prohibited items for transport.

NOTE *These items might be prohibited by law, and/or items not accepted by the refrigerated delivery service provider.*

3.6.3 Areas for refrigerated parcel acceptance and areas for refrigerated parcel delivery to/collection by a recipient

The refrigerated delivery service provider shall define the geographical areas and locations within which it operates for both the acceptance and delivery to/collection by a recipient of a refrigerated parcel.

NOTE *This might include home acceptance or a refrigerated delivery service location and should also include the regions covered by the refrigerated delivery service.*

3.6.4 Refrigerated delivery service operation business days and hours

The refrigerated delivery service provider shall determine the business days and/or hours covered by the refrigerated delivery service operation.

COMMENTARY ON ***3.6.4***

The business days and hours could be if the refrigerated delivery service operates, for example, 24 hours a day, 7 days a week; or Monday to Friday from 9:00 am to 5:00 pm; or 365 days a year.

Where the refrigerated delivery service provider accepts a refrigerated parcel but it does not leave the acceptance location on the same day, the delivery service user should be made aware of the day/time that the refrigerated parcel is scheduled to depart. For example, if a refrigerated parcel is accepted after the last refrigerated vehicle of the day has departed, it might not leave the acceptance location until the following day, or, for example, if the refrigerated delivery service provider only provides the refrigerated delivery service on three days a week but accepts refrigerated parcels on five days a week, the refrigerated parcels might remain at the acceptance location on non-delivery days.

3.6.5 Opening hours and days of the week of acceptance and delivery locations

The refrigerated delivery service provider shall determine the opening hours and days of operation sites that are accessible to the public.

NOTE *It is necessary to clarify the opening hours so that delivery service users know when the operation sites are available for the acceptance, or collection, of refrigerated parcels.*

3.6.6 Standard delivery timescales (times/days)

The refrigerated delivery service provider shall provide indicative delivery durations for the refrigerated parcels from the point of acceptance from the delivery service user to the point of delivery at the designated destination.

NOTE *For example, the number of days required for the delivery of a refrigerated parcel from Tokyo to Osaka.*

Where applicable to the refrigerated delivery service being offered, the options for delivery times and delivery dates shall be determined by the refrigerated delivery service provider.

3.6.7 Non-delivery of refrigerated parcels, including holding times, returns, and recalls

The refrigerated delivery service provider shall determine the options for the recipient in the event that the recipient is absent at the time of delivery.

The refrigerated delivery service provider shall indicate the maximum amount of time that refrigerated parcels are to be held, either for redelivery, return to delivery service user or disposal.

COMMENTARY ON ***3.6.7***

In the case of recipient absence, the refrigerated delivery service provider might, for example, offer the re-delivery of the refrigerated parcel or collection by the recipient at an operation site. Where this is given as an option, the latest date for re-delivery or collection should be given.

It is normal practice for the refrigerated delivery service provider to define compensation in the event that refrigerated parcels are damaged, go missing, or are not delivered at the service transport temperature or within the conditions offered by the refrigerated delivery service provider.

A recalled refrigerated parcel is one which is in the process of being transported to the recipient, but which has been requested by the delivery service user not to be delivered to the recipients, and instead returned to the delivery service user. This might be because the refrigerated parcel does not contain the correct contents, or it has been sent to the wrong recipient, or it is not of the correct quality, or because the recipient does not want the refrigerated parcel, for example.

3.6.8 Fees and payment options

The refrigerated delivery service provider shall provide prices for the refrigerated delivery service.

Where there are additional, or varying costs for different delivery options, these shall also be determined and provided to the delivery service user prior to acceptance of the refrigerated parcel.

NOTE *Fees and payments should include the various factors that make up the total cost, for example, the costs for refrigerated parcels of different masses, sizes or service transport temperatures, transport distances, and delivery options such as specific delivery times.*

The refrigerated delivery service provider shall determine payment options. Where additional charges are made for different payment options, these shall also be determined.

4 Business licence for refrigerated delivery service providers

Where it is necessary for the refrigerated delivery service provider to obtain a business licence(s) to operate a refrigerated delivery service, it shall implement a procedure to check the presence and the validity of the business licence(s) or the documentation, and to undertake further action where required.

5 Transport network

5.1 General

The refrigerated delivery service provider shall establish a transport network within the areas covered by the refrigerated delivery service (see **3.6.3**) in order to provide transport routes for the refrigerated delivery service within the standard delivery timescales (see **3.6.6**).

The refrigerated delivery service provider shall measure, document and retain the following:

a) the distance between each operation site connected by a transport link; and

b) the time taken for each refrigerated vehicle to travel between each connected operation site.

NOTE 1 *Attention is drawn to applicable national and local legislation for travel speed limits and traffic regulations, when measuring the travel times between operation sites.*

The document of distances and times shall be updated when the transport network changes (i.e. when operation sites are created, closed or moved, or whenever transport routes are changed).

NOTE 2 *Distances and times might be used to make the vehicle schedules and inform the standard delivery timescales (see **3.6.6**).*

The refrigerated delivery service provider shall create and document vehicle schedules for refrigerated vehicles moving between operation sites. The vehicle schedules shall be updated and communicated to the relevant responsible person(s) (see **5.4.2**) when the transport network changes, or when there is an increase in demand (see **5.3**) and additional resources are required.

The refrigerated delivery service provider shall implement a system to monitor and locate each refrigerated parcel within the refrigerated delivery service [see **12.1** c)].

NOTE 3 *This system might be a tracking and tracing system.*

5.2 Geographical routing system

The refrigerated delivery service provider shall determine and implement a geographical routing system within the transport network.

The geographical routing system, any geographical codes (e.g. post codes, operation-site codes) and the operation sites where the geographical routing operations are carried out shall be defined and documented. The documents shall be updated when the geographical routing system or the transport network changes.

***NOTE** See also **6.2** d) and **6.6** regarding geographical routing.*

5.3 Demand and available resources

The refrigerated delivery service provider shall:

a) monitor and record the number of chilled parcels and/or frozen parcels accepted for delivery on a daily basis;

b) undertake an analysis of the maximum expected number of chilled parcels and/or frozen parcels within a defined period at each operation site and across the whole transport network;

c) undertake an analysis of the maximum number of chilled parcels and/or frozen parcels that can be accepted at each operation site and across the whole transport network. This shall be documented, reviewed and updated a minimum of once a year; and

d) undertake a check that the refrigerated delivery service has the correct resources to provide the refrigerated delivery service for the maximum expected number of chilled parcels and/or frozen parcels within a particular period at each operation site and across the whole transport network.

Where there are peak periods in which the demand is expected to rise, a contingency plan shall be implemented to either obtain additional resources for each operation site, or to limit the acceptance of chilled parcels and/or frozen parcels.

***NOTE** Peak periods might include December, for example, when many people are expected to be sending gifts through postal services. The resources available during such peak periods are expected to be at the appropriate level to provide the refrigerated delivery service in accordance with the service transport temperature (see **3.4**) and the standard delivery timescales (see **3.6.6**).*

Where the increase in demand is consistent, an assessment regarding the viability of extending existing operation sites (e.g. additional resources) or establishing new operation sites shall be carried out, and a plan created for actions to be taken.

5.4 Operation sites

5.4.1 General

The refrigerated delivery service provider shall define and document the function of each operation site.

The resources required for each operation site to carry out its function shall be defined in accordance with **5.3** and provided.

The operation site shall be able to accommodate the refrigerated vehicles and other resources allocated to the operation site.

Where there is a change to the function of an operation site, the relevant documents shall be updated. A review of the required resources to accommodate the change in function shall be undertaken and action taken to implement additional resources, where required.

5.4.2 Responsible person

The refrigerated delivery service provider shall:

a) assign a responsible person to each operation site; and

b) communicate to the responsible person in writing their expected duties.

As a minimum, the responsible person shall be expected to implement processes in the operation site so that:

1) daily checks are carried out so that the required resources for the operation site to function are present (see also **5.4.1**);

2) daily checks are carried out that resources function correctly; and

3) remedial action is undertaken if the checks from 1) and 2) show that the required resources are not present, or are not functioning correctly.

The daily checks carried out in 1) and 2) shall be recorded and retained.

NOTE *The duration of the retention of documents from the daily checks might differ, depending on the location of the refrigerated delivery service provider. Attention is drawn to national legislation/regulations regarding timeframes for retention of documents.*

5.4.3 Transport

The refrigerated delivery service provider shall allocate refrigerated vehicles as a resource to each operation site.

The specification of the allocated refrigerated vehicles shall be based on the capabilities required for the function of each operation site (see **5.4.1**).

The number of refrigerated vehicles allocated to each operation site shall be:

a) consistent with the demands for each operation site; and

b) consistent with the demands of the transport network (see **5.3**).

The refrigerated vehicles shall conform to **9.2**.

6 Refrigerated parcels

6.1 Acceptance of refrigerated parcels

At the time of acceptance of a refrigerated parcel, the refrigerated delivery service provider shall exchange the information in **7.2, 7.3** and **7.4** with the delivery service user.

6.2 Labelling, marking and visible information

The refrigerated delivery service provider shall label or mark each refrigerated parcel, at the time of acceptance, with the following information, as a minimum:

a) the refrigerated parcel identification number;

b) the contents of the refrigerated parcel;

c) the service transport temperature of the refrigerated delivery service (see **3.4**);

d) the designated destination (see **2.5**) or the geographical code (see **5.2**);

e) the date of acceptance and the expected date of delivery; and

f) the name of the refrigerated delivery service (see **3.2**).

The refrigerated delivery service provider shall also attach the documented information (see **7.1**) to the refrigerated parcel. The refrigerated delivery service provider shall check that the information labelled or marked is visible on an external face of the refrigerated parcel.

*COMMENTARY ON **6.2***

The documented information might be in the form of an invoice or shipping form.

It is important to label or mark a refrigerated parcel with the service transport temperature or the name of the refrigerated delivery service, especially when the refrigerated delivery service provider offers refrigerated delivery services for different service transport temperatures, as this can prevent the refrigerated parcels from being handled within the wrong service transport temperature.

It is recommended that, where practicable, the marking or labelling is consistent across all of the refrigerated parcels in a refrigerated delivery service and placed on the most visible surface. This can help to speed up the location of specific refrigerated parcels within the refrigerated delivery service system.

6.3 Transferring refrigerated parcels into a refrigerated compartment or stationary cold store

The refrigerated delivery service provider shall confirm that the refrigerated compartment (see **2.11**) or stationary cold store is within the service transport temperature (as defined in accordance with **3.4**), before transferring a refrigerated parcel into it.

Where the refrigerated compartment or stationary cold store is not within the service transport temperature (as defined in accordance with **3.4**), relevant action in accordance with the work instructions (see **10.2**) shall be taken to achieve the service transport temperature (see also **9.2** and **9.3**).

Where it is necessary to pre-cool or pre-freeze the refrigerated compartment or stationary cold store for it to be within the service transport temperature (as defined in accordance with **3.4**), the required time [see **10.5** c)] shall be allocated and the temperature confirmed to be within the service transport temperature before refrigerated parcels are transferred into it.

*COMMENTARY ON **6.3***

*For the relevant definition of transfer, refer to **2.19** a).*

When placing refrigerated parcels on, or near, other refrigerated parcels in a refrigerated compartment or stationary cold store, it is important to prevent damage from being caused to any of the refrigerated parcels due to the mass of other refrigerated parcels, the fragility of a refrigerated parcel, or careless handling.

It is advisable to consider using additional refrigeration protection, such as insulated containers, insulated blankets and/or additional cooling materials, when transferring a refrigerated parcel into the refrigerated compartment or stationary cold store. This should be based on a number of factors such as the time taken to load a refrigerated parcel into the refrigerated compartment or stationary cold store, and the temperature of the outside air (which could be dependent on time of year and location).

6.4 Transferring refrigerated parcels between refrigerated compartments and/or stationary cold stores

Where refrigerated parcels are transferred between refrigerated compartments and/or stationary cold stores, the refrigerated delivery service provider shall transfer the refrigerated parcels in accordance with **10.3**, the operational guidelines for transfers.

The refrigerated compartments and/or stationary cold stores to which a refrigerated parcel is being transferred shall be checked to have a temperature within the service transport temperature as defined in accordance with **3.4**, before transferring a refrigerated parcel into it.

Where the refrigerated compartments and/or stationary cold stores to which the refrigerated parcel is being transferred is not within the service transport temperature (see **3.4**), relevant action in accordance with the work instructions (see **10.2**) shall be taken to achieve the service transport temperature (see also **9.2** and **9.3**).

Where it is necessary to pre-cool or pre-freeze the refrigerated compartment and/or stationary cold store to which the refrigerated parcel is being transferred for it to be within the service transport temperature (see **3.4**), the required time [see **10.5** c)] shall be allocated before a refrigerated parcel is transferred into it.

*COMMENTARY ON **6.4***

*For the relevant definition of transfer, refer to **2.19** b).*

Attention is drawn to national legislation and regulations which might affect the transfer requirements of different types of refrigerated parcels.

It is advisable to consider using additional refrigeration protection, such as insulated containers, insulated blankets and/or additional cooling materials, when transferring the refrigerated parcels between refrigerated compartments and/or stationary cold stores. This should be based on a number of factors such as the time taken to transfer the refrigerated parcel to the other refrigerated vehicle, and the temperature of the outside air (which could be dependent on the time of year and location).

6.5 Temporary storage of refrigerated parcels in operation sites

Where a refrigerated parcel is in an operation site, the refrigerated parcel shall be held in the stationary cold store within the service transport temperature (see **3.4**).

Where a refrigerated parcel has been temporarily stored in a stationary cold store in an operation site, a process shall be implemented to carry out checks on a daily basis to see if further action is required.

*COMMENTARY ON **6.5***

*A refrigerated parcel might need to be temporarily stored in an operation site, for example, when delivery to a recipient is not possible (see **3.6.7**) or between the vehicle schedules for the refrigerated vehicles (see **5.1** and Commentary on **3.6.4**).*

*It is important that temporarily stored refrigerated parcels are continually checked to prevent them from remaining in the operation site for longer than is necessary (e.g. the length of holding time defined in **3.6.7**). In the event of a non-delivery of a refrigerated parcel, it might, for example, be necessary to redeliver the refrigerated parcel on a certain date or for it to be collected by the recipient by a certain date.*

6.6 Geographical sorting of refrigerated parcels

Where more than one refrigerated delivery service having different service transport temperatures are operating within an operation site in which refrigerated parcels are being geographically sorted, the refrigerated parcels from each service transport temperature shall be kept separate.

***NOTE** Attention is drawn to national legislation which might require the segregation of certain types of refrigerated parcels.*

6.7 Delivery to the recipient

At the time of delivery to/collection by a recipient of a refrigerated parcel, the refrigerated delivery service provider shall exchange the information in accordance with Clause **8** with the recipient.

Where the recipient is absent on attempted delivery, the refrigerated delivery service provider shall:

a) inform the recipient that they have tried to deliver the refrigerated parcel by providing a communication (e.g. message card, email, online system), containing the following information:
   1) the name of the refrigerated delivery service provider;
   2) the parcel identification number;
   3) the date and time of the attempted delivery;
   4) the contact details of the refrigerated delivery service provider (see **3.3**);
   5) the options for the recipient to receive the refrigerated parcel (e.g. redelivery, collection by a recipient at the operation site) (see **3.6.7**); and
   6) that it is a refrigerated parcel (i.e. chilled or frozen) and any time restraints for collection by a recipient, where applicable (see **3.6.7**); and

b) place the refrigerated parcel in a refrigerated compartment or stationary cold store within the service transport temperature, as defined in **3.4**.

Where the refrigerated parcel is loaded back into the refrigerated compartment or stationary cold store, this shall be carried out in accordance with **10.3**.

*COMMENTARY ON **6.7***

*Where required within the operational guidelines (see **10.3**), additional refrigeration protection, such as insulated containers, insulated blankets and/or additional cooling materials, should be used when delivering a refrigerated parcel from a refrigerated compartment or stationary cold store to the recipient. This should be based on a number of factors such as the time taken to deliver the refrigerated parcel from the refrigerated compartment or stationary cold store and the temperature of the outside air (which could be dependent on time of year and location).*

To limit the number of failed deliveries of refrigerated parcels, it is recommended that refrigerated delivery service providers communicate with the recipient prior to delivery to advise of a delivery time and provide an opportunity for the recipient to reschedule the delivery time, where practicable.

*For the relevant definition of transfer, refer to **2.19** c).*

7 Information exchanged between the refrigerated delivery service provider and the delivery service user

7.1 Documented information

The refrigerated delivery service provider shall document and maintain the information provided and obtained in **7.2**, **7.3** and **7.4** and a copy of the information shall be provided to the delivery service user on acceptance of a refrigerated parcel for delivery.

7.2 Information to be obtained from the delivery service user

The refrigerated delivery service provider shall obtain the following information from the delivery service user on acceptance of a refrigerated parcel for delivery:

a) the name, address and other contact details (e.g. phone numbers, email address) of both the delivery service user and of the recipient;

b) the service transport temperature (see **3.4**) selected for delivery;

c) contents of refrigerated parcel; and/or

d) special conditions required, where applicable.

NOTE *Special conditions might include stating any limited holding times in the event of non-delivery where the refrigerated parcel needs to be delivered within a short time frame, or where a fragile refrigerated parcel requires additional care to be taken during delivery. Refrigerated delivery service providers covering the transport of refrigerated parcels containing foodstuff should refer to Annex **A** for further information. See also **3.6.1** c) regarding cross-contamination.*

Where the information required in a), b) and c) are not obtained, the refrigerated delivery service provider shall not accept the refrigerated parcel for delivery.

7.3 Delivery service user confirmation

The refrigerated delivery service provider shall obtain from the delivery service user:

a) confirmation that the refrigerated parcel(s) for delivery is in a pre-cooled/pre-frozen state in advance and that it meets the other required conditions in accordance with **3.6.1**; and

b) confirmation that the refrigerated parcel(s) for delivery is not prohibited and meets the required conditions in accordance with **3.6.2**.

NOTE *Ideally the confirmation of the refrigerated parcel would be obtained as a signature or an opt-in (i.e. a tick box).*

7.4 Information to be provided by the refrigerated delivery service provider

The refrigerated delivery service provider shall provide the following information to the delivery service user on acceptance of a refrigerated parcel for delivery:

a) the name of the refrigerated delivery service provider;

b) staff member identification;

c) the name of the refrigerated delivery service (see **3.2**);

d) the parcel identification number;

e) the date of acceptance and the standard delivery timescales (see **3.6.6**) or the expected date of delivery;

f) the size and/or mass of the refrigerated parcel; and

NOTE *This should be checked by the refrigerated delivery service provider on acceptance of the refrigerated parcel.*

g) the cost of the refrigerated delivery service.

8 Information exchanged between the refrigerated delivery service provider and the recipient

8.1 Information to be obtained from the recipient on delivery of the refrigerated parcel

The refrigerated delivery service provider shall request the following information from the recipient on delivery of a refrigerated parcel:

a) the name of the recipient; and

b) the signature confirming that the refrigerated parcel has been received.

8.2 Information to be obtained from the recipient on collection by the recipient of the refrigerated parcel from an operation site

The refrigerated delivery service provider shall request the following information from the recipient on collection of a refrigerated parcel:

a) the name and address of the recipient;

b) the identification of the recipient;

c) the parcel identification number; and

d) the signature confirming that the refrigerated parcel has been received.

***NOTE** When the recipient is absent at the time of delivery of the refrigerated parcel, the information that is contained within the communication which is provided to them in **6.7** can be helpful.*

8.3 Information to be provided by the refrigerated delivery service provider on delivery of the refrigerated parcel

The refrigerated delivery service provider shall provide the following information to the recipient on delivery of a refrigerated parcel:

a) the name of the refrigerated delivery service provider;

b) the staff member identification and purpose of the visit; and

c) the service transport temperature of the refrigerated parcel selected for delivery [see **3.4** and **7.2** b)]; or

d) the name of the refrigerated delivery service (see **3.2**).

***NOTE** It is recommended that the refrigerated delivery service provider advise the recipient to maintain the temperature of the refrigerated parcel after delivery (e.g. within a refrigerator or freezer).*

8.4 Information to be provided by the refrigerated delivery service provider on collection by a recipient of the refrigerated parcel from an operation site

The refrigerated delivery service provider shall provide the recipient with the following on collection of a refrigerated parcel:

a) the service transport temperature of the refrigerated parcel selected for delivery [see **3.4** and **7.2** b)]; or

b) the name of the refrigerated delivery service (see **3.2**).

9 Conditions for operation sites, refrigerated vehicles, cold stores and cooling materials

9.1 Operation site

The refrigerated delivery service provider shall implement security measures on each operation site to prevent theft and damage to the facility, refrigerated vehicles, cold stores and refrigerated parcels.

The refrigerated delivery service provider shall design each operation site such that it provides cover and protection from external weather during:

a) the transfer of a refrigerated parcel into a refrigerated compartment or stationary cold store in an operation site (see **6.3**);
b) the transfer of a refrigerated parcel between refrigerated compartments and/or stationary cold stores in an operation site (see **6.4**); and
c) the temporary storage of a refrigerated parcel within a stationary cold store in an operation site (see **6.5**).

NOTE *See also **5.4** regarding operation sites.*

9.2 Refrigerated vehicles

9.2.1 Refrigerated compartments

The refrigerated delivery service provider shall use refrigerated vehicles that contain at least one enclosed refrigerated compartment that can be temperature controlled and monitored within the service transport temperature (see **3.4**).

The refrigerated delivery service provider shall maintain the internal temperature of the refrigerated compartment within the service transport temperature defined by the refrigerated delivery service provider (see **3.4**) while the refrigerated vehicle is in operation. Where the refrigerated compartment requires cooling material that functions for a limited amount of time (e.g. an eutectic plate), the refrigerated delivery service provider shall check and replace or modify it, as applicable, in accordance with the work instructions (see **10.2**) and the operational manual for cooling materials (see **10.7**).

Where the refrigerated delivery service provider offers a refrigerated delivery service at two or more service transport temperatures (e.g. chilled and frozen), and refrigerated parcels are transported at different service transport temperatures within the same refrigerated vehicle, each refrigerated compartment shall be separated and temperature controlled.

The refrigerated compartment shall be openable and airtight when closed and in operation.

Unless the refrigerated compartment is being used for the transfer of refrigerated parcels, the refrigerated delivery service provider shall keep closed any openings to the refrigerated compartment when it is in use.

*COMMENTARY ON **9.2.1***

Refrigerated delivery service providers might use a refrigerated vehicle with a:

a) body that is able to control its internal temperature;
b) mobile cold store; or
*c) insulated container containing a cooling material or mechanical refrigeration capable of maintaining the required temperature conditions (see also **2.3**, **2.7** and **9.4**).*

Refrigerated compartments should be able to withstand forces to which they are expected to be subjected in the course of a typical transport journey.

It is recommended that refrigerated compartments have a structure or protection that prevents the outside air from entering and changing the internal temperature, such as a strip curtain or an air curtain.

9.2.2 Temperature monitoring of a refrigerated compartment

The refrigerated delivery service provider shall insert a calibrated temperature monitoring instrument into the refrigerated compartment to monitor its internal temperature. The internal temperature measured by the temperature monitoring instrument shall be visible during transport.

The temperature inside the refrigerated compartment shall be checked and recorded and these records retained for a defined period of time (e.g. 12 months), as a minimum:

a) after pre-cooling/pre-freezing the refrigerated compartment; and
b) at the start and end of every transport journey.

The temperature inside the refrigerated compartment shall also be checked, as a minimum, at every point of transfer, where this is not covered by b).

*COMMENTARY ON **9.2.2***

The display or indicator of the temperature monitoring instrument might be on the external surface of the refrigerated compartment, or on the dashboard of a refrigerated vehicle, for example.

Temperature monitoring instruments should be calibrated in accordance with the equipment manufacturer's instructions. Where the frequency of calibration is not covered by national regulations or legislation, the frequency of calibration should also be conducted in accordance with the manufacturer's instructions or advice sought from the manufacturer, where appropriate. Attention is drawn to national legislation and regulations which might cover calibration requirements for temperature monitoring instruments for some refrigerated delivery services.

Wherever practicable, the temperature of refrigerated compartments should also be checked during transport. This could be through a visible temperature gauge on the dashboard of the refrigerated vehicle, for example, or through periodic checks during which the driver stops to check the temperature of the refrigerated compartments. Whichever method is used, it should not impede the driving activity or be the cause of danger. It is also recommended that the temperature of the refrigerated compartment is checked every time after the refrigerated compartment has been opened in order to monitor variations in temperature.

It is recommended that at every point of transfer the temperature of the refrigerated compartment is also recorded and that these records are retained for a defined period of time (e.g. 12 months). Attention is drawn to national legislation which might specify a time period for the retention of such records. The temperatures of the refrigerated compartment may be recorded periodically by hand, or continuously using a temperature recorder, for example.

*See also **12.1** i),**12.3**, and Annex **B** regarding temperature monitoring and recording and classification of the refrigerated delivery service.*

Further information regarding temperature recorders or thermometers can be found in BS EN 12830, BS EN 13485 and BS EN 13486.

9.3 Stationary cold stores

9.3.1 Stationary cold stores in operation sites

The refrigerated delivery service provider shall use stationary cold stores that contain an enclosed refrigerated compartment(s) that can be temperature controlled within the service transport temperature (see **3.4**).

Stationary cold stores in operation sites shall be able to function continuously without interruption. In the event that a power source is interrupted, a contingency plan shall be in place.

***NOTE** Stationary cold stores in operation sites should be able to withstand any forces to which they are expected to be subjected. See also **10.6** regarding maintenance. In order to mitigate the risk of interruption to stationary cold store operation, a contingency plan might include, for example, a back-up generator, or the temporary use of cooling materials in the event of an electric outage.*

The refrigerated delivery service provider shall continuously maintain the internal temperature of stationary cold stores at the service transport temperature defined in accordance with **3.4** while in operation.

Where the refrigerated delivery service provider offers a refrigerated delivery service that operates at two or more service transport temperatures (e.g. chilled and frozen), and where refrigerated parcels to be maintained at different service transport temperatures are present at the same operation site, each temperature compartment of the stationary cold store shall be enclosed and separated.

Stationary cold stores shall be openable, and airtight when closed and in operation.

Unless stationary cold stores are being used for transferring refrigerated parcels, the refrigerated delivery service provider shall keep any openings to the compartment closed when the stationary cold store is in use.

9.3.2 Temperature monitoring of stationary cold stores in operation sites

The refrigerated delivery service provider shall insert a calibrated temperature monitoring instrument into each stationary cold store to continuously monitor the internal temperature. The internal temperatures of each stationary cold store shall be displayed separately.

The internal temperature measured by the temperature monitoring instrument shall be visible.

The temperature inside the stationary cold store shall be checked to conform to **3.4**, as a minimum, at three scheduled times a day. These temperatures shall be recorded and maintained for a defined period of time (e.g. 12 months).

*COMMENTARY ON **9.3.2***

For visibility, the display or indicator of the temperature monitoring instrument might be on the external surface of the stationary cold store.

Temperature monitoring instruments should be calibrated in accordance with the equipment manufacturer's instructions. Where the frequency of calibration is not covered by national regulations or legislation, the frequency of calibration should also be conducted in accordance with the manufacturer's instructions or advice sought from the manufacturer, where appropriate. Attention is drawn to national legislation and regulations which might cover the calibration of temperature monitoring instruments for some refrigerated delivery services.

It is recommended that the temperature of the stationary cold store is checked every time the compartment is opened. Checking schedules are likely to be dependent on the refrigerated delivery service provider; however, it is advisable that, as a minimum, a check is carried out in the morning, in the afternoon and at the end of the day.

*See also **12.1** i),**12.3**, and Annex **B** regarding temperature monitoring and recording and classification of the refrigerated delivery service.*

Further information regarding temperature recorders or thermometers can be found in BS EN 12830, BS EN 13485 and BS EN 13486.

9.4 Cooling materials

Where cooling materials are used, the refrigerated delivery service provider shall check that they maintain the temperature of the refrigerated compartment (see **9.2.1**) at the service transport temperature defined by the refrigerated delivery service provider (see **3.4**) while the refrigerated vehicle is in operation.

*COMMENTARY ON **9.4***

It is advisable that the type of cooling material used should be selected according to its duration and effectiveness. Where eutectic plates are selected for use, they should freeze at a lower temperature than the service transport temperature offered by the refrigerated delivery service; however, it is necessary to take into account that an eutectic plate freezing at a very low temperature may cause a chilled delivery environment to be lower than its defined service transport temperature. It is also advisable that a process is implemented for the reporting of broken or damaged cooling materials.

*See also **10.2.1** g), **10.4** f) and **10.7** with reference to work instructions and operational manuals.*

9.5 Cooling material cold stores

9.5.1 General

Where cooling materials are used within the refrigerated delivery service, the refrigerated delivery service provider shall use cooling material cold stores for their refrigeration and storage.

The cooling material cold stores in operation sites shall:

a) have an enclosed refrigerated compartment that can be maintained at, or below, the freezing temperature of the cooling materials; and

b) be able to function continuously without interruption. A contingency plan shall be implemented to cover power source interruptions.

***NOTE** Cooling material cold stores in operation sites should be able to withstand any forces to which they are expected to be subjected. In order to mitigate the risk of interruption to cooling material cold store operation, a contingency plan might include, for example, a back-up generator.*

The refrigerated delivery service provider shall maintain the internal temperature of the cooling material cold store below the freezing temperature of the cooling materials.

Unless the cooling material cold store is being used for loading or unloading cooling materials, the

refrigerated delivery service provider shall keep any openings to the compartment closed when the cooling material cold store is in use.

9.5.2 Temperature monitoring of cooling material cold stores

The refrigerated delivery service provider shall insert a calibrated temperature monitoring instrument into the cooling material cold store to monitor the internal temperature.

The internal temperature measured by the temperature monitoring instrument shall be visible.

The temperature inside the cooling material cold store shall be checked at three scheduled times a day, as a minimum.

*COMMENTARY ON **9.5.2***

It is advisable that the temperature monitoring instrument is visible without opening the cooling material cold store. For example, the display or indicator of the temperature monitoring instrument should be on the external surface of the cooling material cold store.

Temperature monitoring instruments should be calibrated in accordance with the equipment manufacturer's instructions. The frequency of calibration should also be conducted in accordance with the manufacturer's instructions or advice sought from the manufacturer, where appropriate.

The monitored temperatures should be recorded and held for a defined period (e.g. 12 months).

Checking schedules are likely to be dependent on the refrigerated delivery service provider; however, it is advisable that, as a minimum, a check is carried out in the morning, in the afternoon and at the end of the day.

10 Work instructions and operational manuals

10.1 General

The refrigerated delivery service provider shall identify and document relevant legislation and regulations applicable to its refrigerated delivery service.

The refrigerated delivery service provider shall determine and document the operational transport temperature.

The refrigerated delivery service provider shall align their work instructions (see **10.2**) and their operational manuals (see **10.4** to **10.8**) in accordance with:

a) the operational transport temperature; and

b) the operational guidelines (see **10.3**).

10.2 Work instructions

10.2.1 General

The refrigerated delivery service provider shall provide work instructions for each staff member working within the refrigerated delivery service, as applicable to their role.

The work instructions shall include, as a minimum, instructions for:

a) the handling of chilled parcels and/or frozen parcels (see **10.2.2**);

b) the transport network (see **5.1**);

c) the geographical routing system (see **5.2**);

d) the operation sites (e.g. security) (see **5.4**);

e) the procedure to confirm pre-cooling/pre-freezing conditions of refrigerated parcels with the delivery service user (see **7.3**);

f) the contingency plan(s) in the event that a refrigerated parcel is exposed to non-temperature-controlled environments exceeding those stated in the operational guidelines (see **10.3**), including if a refrigerated parcel is wrongly sorted into a different service transport temperature refrigerated delivery service; and

g) the handling of equipment, including procedures for the use of cooling materials (see **10.4** to **10.8**), including any potential contact with hazardous or dangerous substances.

Whenever there are changes made to the operational processes or procedures, the refrigerated delivery service provider shall update the relevant work instructions.

10.2.2 Handling of refrigerated parcels

The work instructions for the handling of chilled parcels and/or frozen parcels shall include that the refrigerated parcels shall not be:

1) damaged, defaced;

2) thrown, dropped, or placed directly on the ground;

3) exposed to conditions outside of the operational guidelines (see **10.3**); and

4) put into the wrong service transport temperature.

NOTE *For example, chilled parcels should not be put within the refrigerated compartments or stationary cold stores for frozen parcels because chilled parcels might become frozen, or partially frozen. If frozen parcels are held within the refrigerated compartments or stationary cold stores for chilled parcels, they might thaw.*

10.3 Operational guidelines for transferring refrigerated parcels

*COMMENTARY ON **10.3***

Attention is drawn to national legislation and regulations which might affect the operational processes, temperature-control and temperature-monitoring requirements of the refrigerated delivery service.

The aim of creating and maintaining operational guidelines is to maintain the integrity of the refrigerated parcel. In the development of the operational guidelines, it is advisable to review factors such as humidity, regional and seasonal temperatures and the characteristics of the temperature-sensitive goods that could be transported within the refrigerated delivery service, for example.

*Refrigerated delivery service providers covering the transport of refrigerated parcels containing foodstuff should refer to Annex **A** for further information.*

*"Data" (see **10.3.2**) may include electronic and written information, for example.*

10.3.1 The refrigerated delivery service provider shall have operational guidelines for:

a) the transfer of refrigerated parcels from the delivery service user to a refrigerated compartment or stationary cold store;

b) the transfer of refrigerated parcels between refrigerated compartments and/or stationary cold stores; and

c) the transfer of refrigerated parcels to the recipient from a refrigerated compartment or stationary cold store.

10.3.2 These operational guidelines shall cover:

a) the transfer time durations;

b) the temperature of the temperature-controlled environment, or non-temperature controlled environment; and

c) the recording, monitoring and storage of data covered by a) and b).

10.4 Operational manual for refrigerated vehicles

The refrigerated delivery service provider shall provide documented procedures for the following aspects of the refrigerated vehicles:

a) use and operation of the refrigerated compartment including defrost procedures;

b) pre-cooling/pre-freezing of the refrigerated compartment (see also **10.5**);

c) temperature monitoring of the refrigerated compartment when in operation (see **9.2.1**);

d) maintenance of the refrigerated compartment;

e) cleaning of the refrigerated compartment; and

f) where cooling materials are used, the duration of the cooling material in relation to:

   1) the type of cooling material;

   2) the amount of cooling material present;

   3) the volume of the refrigerated compartment; and

   4) the insulation properties of the refrigerated compartment.

NOTE *This is normally in relation to the amount and type of cooling material present.*

Whenever there are changes made to the refrigerated vehicles, the relevant documented procedures shall be updated.

10.5 Operational manual for the pre-cooling and pre-freezing of refrigerated compartments

The refrigerated delivery service provider shall provide documented procedures for the pre-cooling and pre-freezing of the refrigerated compartment covering the following:

a) method of refrigeration (e.g. cooling material, refrigeration unit);

b) order of steps;

c) time required to create the defined operational transport temperature (see **10.1**) of the refrigerated compartment; and

d) monitoring of the internal temperature.

10.6 Operational manual for stationary cold stores in operation sites

The refrigerated delivery service provider shall provide documented procedures for the following aspects of stationary cold stores in operation sites:

a) use and operation;

b) temperature monitoring when in operation;

c) maintenance;

d) cleaning; and

e) defrost of the stationary cold store for frozen parcels, where applicable.

*COMMENTARY ON **10.6***

Some types of stationary cold stores (i.e. freezers) operating within freezing service transport temperatures might need to periodically defrost to function correctly. The frequency of defrost should be conducted in accordance with the equipment manufacturer's instructions, or advice sought from the manufacturer, where appropriate.

Humidity can negatively affect the function of stationary cold stores. It is recommended that refrigerated delivery services operating in humid environments reflect the likely impact of this in the frequency of inspections and maintenance included in the operational manual.

10.7 Operational manual for cooling materials

Where applicable, the refrigerated delivery service provider shall provide documented procedures for the following aspects of cooling materials used in the refrigerated delivery service:

a) use and operation;

b) visual monitoring when in operation;

c) maintenance or replacement; and

d) cleaning.

*COMMENTARY ON **10.7***

It is advisable that the nature of the cooling material is identified in the operational manual if the cooling material could be hazardous or dangerous in the event of leakage.

If the cooling materials are reusable or able to be used repeatedly by refreezing in cooling material cold stores (e.g. eutectic plates), it is important for them to be kept at freezing temperatures for a set period of time. The time for cooling materials to be completely frozen should be conducted in accordance with the manufacturer's instructions or advice sought from the manufacturer, where appropriate.

It is important that cooling materials that are not in their correct state (i.e. frozen, in the case of eutectic plates), are not used in operation. It might be necessary to separate cooling materials within a cooling material cold store, or in a separate cooling material cold store, based on the time at which they were inserted into it, and their state at the time of insertion, so that staff members are able to easily select the correct cooling materials for use.

10.8 Operational manual for cooling material cold stores

Where applicable, the refrigerated delivery service provider shall provide documented procedures in the form of an operational manual for the following aspects of cooling material cold stores used in the refrigerated delivery service operations:

a) use and operation;

b) operational temperature;

***NOTE 1** This should be below the freezing temperature of the cooling materials.*

c) temperature monitoring when in operation;

d) maintenance;

e) cleaning; and

f) defrost.

***NOTE 2** Cooling material cold stores operate within, or below, applicable freezing temperatures in order to freeze the cooling materials. To function correctly, they need to periodically defrost. The frequency of defrost should be conducted in accordance with the manufacturer's instructions, or advice sought from the manufacturer, where appropriate.*

11 Staffing

11.1 Training programme

The refrigerated delivery service provider shall design, document and provide relevant training programmes for new staff members engaged in the refrigerated delivery service operations in operation sites.

As a minimum, the training programme shall cover:

a) work instructions (see **10.1** and **10.2**);
b) operational guidelines (see **10.3**);
c) use of relevant cold stores (see **10.6**, **10.8**);
d) use of relevant refrigerated vehicles (see **10.4**, **10.5**, **10.7**);
e) handling and transferring refrigerated parcels, where applicable (see **10.2** and **10.3**);
f) contingency plans for problems within the refrigerated delivery service (e.g. cold store breakdown, service transport temperature breaches and manual errors) (see **5.3**, **9.3.1**, **9.5.1** and **10.2.1**); and
g) customer service procedures and behaviours, if applicable (see **3.1** and **3.3**).

When a new staff member has completed the training programme, the refrigerated delivery service provider shall record and retain the training records for a defined period of time (e.g. 12 months).

11.2 Additional training

The refrigerated delivery service provider shall provide additional training or repeated training where:

a) there is a change to the refrigerated delivery service attributes or operations;
b) there are new processes or procedures introduced in the refrigerated delivery service;
c) there are new cold stores or there are new refrigerated vehicles; or
d) a staff member is underperforming.

11.3 Staff members responsible for driving

The refrigerated delivery service provider shall, as a minimum:

a) request that potential staff members involved in driving activities provide evidence of their valid driving licence prior to being offered a position; and
b) check that the driving licences of the staff members involved in driving activities are valid on an annual basis.

NOTE *Attention is drawn to national and local legislation regarding driving licences.*

12 Monitoring and improving the refrigerated delivery service

12.1 Transport network

The refrigerated delivery service provider shall have a system in place to record and monitor the following:

a) the number of refrigerated parcels delivered through the transport network and each operation site daily (see **5.3**);

b) the identification number of each refrigerated parcel (see **6.2**);

c) the location of each refrigerated parcel (see **5.1**);

NOTE *When a refrigerated parcel is at the wrong location, it should be possible to locate it through the system.*

d) the designated destination (e.g. geographical code) of each refrigerated parcel;

e) the size and/or mass of each refrigerated parcel;

f) the time and date of acceptance of each refrigerated parcel;

g) the time and date of delivery to the designated destination of each refrigerated parcel;

h) the total time taken for each refrigerated parcel delivery from acceptance to arrival at the designated destination;

i) the temperature of the refrigerated compartments within which the refrigerated parcel has been transported since acceptance from the delivery service user, and, where applicable, the environmental temperatures during transfer times; and

j) non-deliveries of refrigerated parcels.

12.2 Delays and non-deliveries within standard delivery timescales

Where there is a consistent or rising pattern of refrigerated parcels not arriving at the designated destination within the standard delivery timescales (see **3.6.6**), the refrigerated delivery service provider shall investigate the cause of the delays or non-deliveries. Where issues and root causes are identified, a course of action shall be created and taken to rectify them.

NOTE *This can prevent the accumulation of undelivered refrigerated parcels at specific parts of the transport network, or prevent a problem from recurring. The specific conditions under which investigations are started should be defined by the refrigerated delivery service provider.*

12.3 Temperature monitoring and temperature recording of the transport network

The level of refrigerated delivery service temperature monitoring and temperature recording shall be defined and classified in accordance with Annex **B**. The temperature monitoring and temperature recording classifications shall be cited every time compliance with PAS 1018 is cited, in the following format:

PASXXXX:YEAR,TM:X, TR:X [3)]

Where:

PASXXXX:YEAR	=	the identifier and year of publication
TM:X	=	the temperature monitoring classification
TR:X	=	the temperature recording classification

EXAMPLE:

PAS1018:2017,TM:B,TR:2

12.4 Temperature control within the transport network

The refrigerated delivery service provider shall conduct testing of the temperature controls and processes within its refrigerated delivery service a minimum of once a month.

Where there is no applicable legislation or regulations covering the period of time such documents are to be maintained, the results of these tests shall be retained for a minimum of 12 months.

Where the results of the tests demonstrate vulnerabilities or inconsistencies in the refrigerated delivery service temperatures that exceed the service transport temperature, further investigation shall be undertaken and remedial action taken.

[3)] Marking PAS 1018:2017 on, or in relation to, a delivery service represents a refrigerated delivery service provider's declaration of conformity, i.e. a claim by or on behalf of the refrigerated delivery service provider that the refrigerated delivery service meets the requirements of the PAS. The accuracy of the claim is solely the claimant's responsibility. Such a declaration is not to be confused with third-party certification of conformity.

*COMMENTARY ON **12.4***

*Testing of the temperature controls and processes might be carried out by sending a test refrigerated parcel through the refrigerated delivery service that contains a temperature data logger to check the consistency of environmental temperatures to which it is subjected. Where test refrigerated parcels are used, the number used for testing should be determined by a sampling method and the number of refrigerated parcels delivered through the transport network, operation sites (see **12.1**) and areas for acceptance and delivery to/collection by a recipient (see **3.6.3**). Test refrigerated parcels should not be easily identifiable by staff members as a test refrigerated parcel so that they are handled in the same manner as other refrigerated parcels. It is recommended that testing is also conducted if a critical aspect of the transport network, equipment or processes are changed.*

Attention is drawn to national legislation which might cover the retention of documents regarding temperature controls and process controls for particular refrigerated delivery service providers.

12.5 Quality controls of refrigerated delivery service operations

The refrigerated delivery service provider shall implement procedures for checking that the correct duties (i.e. cleaning, maintenance of cold stores) have been carried out in accordance with the work instructions, operational manuals and other activities conforming to Clause **10**. The refrigerated delivery service provider shall define the criteria, method and frequency of each check in accordance with the work instructions (see **10.2**) and operational manuals (see **10.4** to **10.8**).

Where errors or defects are identified from the results of the checks, further investigation or corrective action shall be undertaken.

***NOTE** In many cases, the responsible person (see **5.4.2**) is likely to be responsible for carrying out the checks. Where appropriate, the results of the checks should be documented (for checks regarding cleaning, for example, documentation might not be necessary).*

Annex A (informative) Considerations for the transport of refrigerated parcels containing foodstuff

A.1 General

In some countries, transporting foodstuff is subject to particular legislation, regulations, rules or industry standards. While PAS 1018 does not focus specifically on the contents of the refrigerated parcels, it does draw the PAS user's attention to the need to adhere to applicable legislation and regulations, and specifically, to the fact that these could concern refrigerated delivery services which cover the transport of foodstuff.

For both chilled parcels and frozen parcels containing foodstuff, exposure to ambient temperatures outside of the required service transport temperature for prolonged periods can increase or decrease the temperature of the refrigerated parcel's surface and contents. The less insulating the packaging, or the smaller its volume, or the thinner the foodstuff, the faster any changes in the foodstuff's temperature will occur. These temperature changes can affect the safety or quality of food in either a negative or neutral manner. The physical properties of the foodstuff are also relevant: less dense types of food (e.g. ice cream) warm up more rapidly than more solid types of food (e.g. frozen meat), for example.

The refrigerated delivery service provider should take account of these factors when transferring all chilled parcels or frozen parcels, and also in the event that a mode of transport fails and chilled parcels or frozen parcels need to be transferred to other refrigerated vehicles *en route*.

A.2 Traceability

The refrigerated delivery service provider's ability to demonstrate that it has complied with the provisions of its refrigerated delivery service, and, where applicable, that it has complied with relevant legislation or regulations, is often critical in proving due diligence has been undertaken, when required to do so. Such traceability can be demonstrated through data captured, stored and made accessible throughout the refrigerated delivery service process, and it is advisable that a refrigerated delivery service provider considers this within its processes and procedures. Where foodstuff is being transported and is considered to be part of a food chain, such traceability might be required to demonstrate that there has been compliance with food safety regulations by a product manufacturer, a refrigerated delivery service provider, and/or other agents within the food cold chain.

See Annex **B** regarding the categorization of levels of temperature monitoring and temperature recording.

The traceability of feed and food chain is covered by BS EN ISO 22005.

A.3 Chilled parcels containing foodstuff

For a chilled parcel containing foodstuff, exposure to ambient temperatures that are higher than the applicable service transport temperatures for prolonged periods could lead to chilled parcel surface temperatures and the temperature of its contents increasing enough to allow pathogenic micro-organisms to grow and to pose a food safety risk. In general, the greater the temperature difference between the chilled parcel contents and the environment, the faster this process could occur. However, the rate of temperature change of the contents of a chilled parcel is dependent on various factors, such as the packaging conditions and material(s) surrounding the foodstuff, exposure time to ambient temperature, and the physical properties of foodstuff being transported. Exposure to ambient temperatures lower than 0°C could lead to surface freezing of the chilled parcel and its contents with consequent effects on the quality of the chilled food.

A.4 Frozen parcels containing foodstuff

For frozen parcels containing foodstuff, exposure to ambient temperatures higher than the applicable service transport temperatures for prolonged periods could also lead to the temperature of the frozen parcel surface and foodstuff increasing enough to thaw. This could allow pathogenic micro-organisms to grow and pose a food safety risk. In general, the greater the temperature difference between the frozen parcel contents and the environment, the faster this process could occur. Similarly to chilled parcels, the rate of temperature change of the contents of a frozen parcel is dependent on various factors, such as the packaging conditions and material(s) surrounding the foodstuff, the time it is exposed to ambient temperatures, and the type of foodstuff being transported.

There is also the additional risk that when frozen foodstuff thaws, it produces liquid, which could leak and cause cross-contamination to other frozen parcels if the packaging surrounding the foodstuff is not water-tight. In the UK and Europe, exposure to ambient temperatures lower than -18 °C is generally considered to have no effect on the frozen food's quality.

Refrigerated delivery service providers are advised to seek information and guidance (for example, regarding cross-contamination, the impact of environmental temperatures on internal refrigerated parcel temperatures and the rate of temperature change of the refrigerated parcel and its contents, and the impact of packaging types) from relevant industry associations and professional bodies (e.g. refrigerated warehousing associations, cold chain professional bodies and logistics organizations), where appropriate.

Annex B (normative)
Refrigerated delivery service classification type

B.1 General

The refrigerated delivery service shall be classified according to the temperature monitoring and temperature recording criteria, in accordance with **B.2** and **B.3**.

NOTE 1 *Attention is drawn to national regulations and legislation which might dictate the level of temperature monitoring and temperature recording conducted by a refrigerated delivery service. In some areas of the world, such as Europe, it is necessary for refrigerated delivery services to have temperature monitoring and temperature recording within categories TM:A or TM:B and TR:1 or TR:2. At the time of publication, where refrigerated delivery services are using the ATP agreement, it is likely that they would need to comply with category TM:B and TR:2 as a minimum and also to carry out sampling of the temperature monitoring of the surface of the refrigerated parcels. However, it is always advisable to seek advice from relevant sources.*

NOTE 2 *See **12.3** regarding marking claims of compliance with PAS 1018.*

B.2 Temperature monitoring

The temperature monitoring of the refrigerated delivery service shall be classified in accordance with Table B.1.

Table B.1 – Temperature monitoring

Classification	Description
TM:A	Temperature monitoring of the refrigerated compartments, stationary cold stores, temperature-controlled environments and non-temperature-controlled environments is continuous throughout the entire refrigerated delivery service process, including during transfer times
TM:B	Temperature monitoring of the refrigerated compartments, stationary cold stores and temperature-controlled environments is continuous throughout the refrigerated delivery service, except during transfer times within non-temperature-controlled environments
TM:C	Temperature monitoring of the refrigerated compartments, stationary cold stores and temperature-controlled environments is carried out at identified points throughout the refrigerated delivery service, but is not continuous

B.3 Temperature recording

The temperature recording of the refrigerated delivery service shall be classified in accordance with Table B.2.

Table B.2 – Temperature recording

Classification	Description
TR:1	Temperature recording of the refrigerated compartments, stationary cold stores, temperature-controlled environments and non-temperature-controlled environments is continuous throughout the entire refrigerated delivery service process, including during transfer times
TR:2	Temperature recording of the refrigerated compartments, stationary cold stores and temperature-controlled environments is continuous throughout the refrigerated delivery service, except during transfer times within non-temperature-controlled environments
TR:3	Temperature recording of the refrigerated compartments, stationary cold stores and temperature-controlled environments is carried out at identified points throughout the refrigerated delivery service, but is not continuous

Bibliography

Standards publications

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 8477, *Code of practice for customer service*

BS EN 12830, *Temperature recorders for the transport, storage and distribution of chilled, frozen, deep-frozen/quick-frozen food and ice cream – Tests, performance and suitability*

BS EN 13485, *Thermometers for measuring the air and product temperature for the transport, storage and distribution of chilled, frozen, deep-frozen/quick-frozen food and ice cream – Tests, performance, suitability*

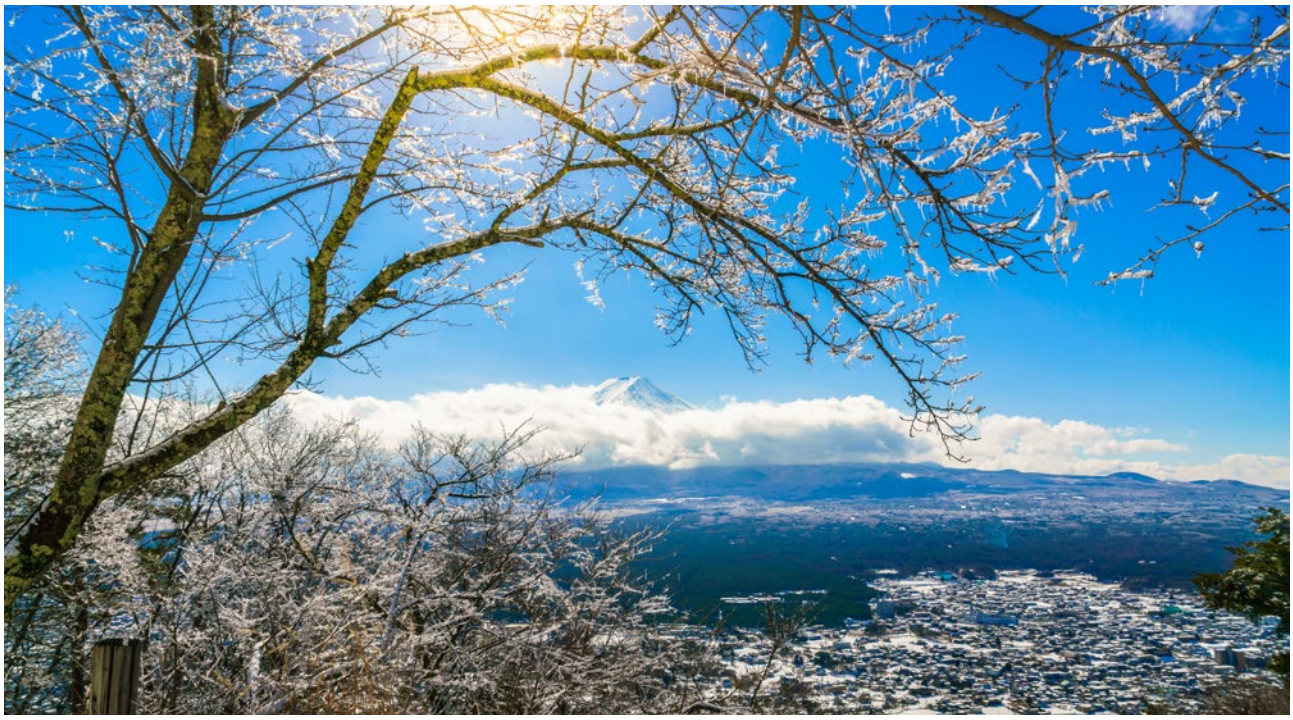
BS EN 13486, *Temperature recorders and thermometers for the transport, storage and distribution of chilled, frozen, deep-frozen/quick-frozen food and ice-cream – Periodic verification*

BS EN ISO 22005, *Traceability in the feed and food chain – General principles and basic requirements for system design and implementation*

BS EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

Other publications

[1] ECONOMIC COMMISSION FOR EUROPE INLAND TRANSPORT COMMITTEE. ATP as amended on 30 September 2015 – *Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage.* ECE/TRANS/249. United Nations: New York and Geneva, 2015.[4)]



[4)] At the time of publication, this document can be downloaded from the United Nations Economic Commission for Europe (UNECE) website, http://www.unece.org/trans/main/wp11/atp.html.

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