AGREEMENT ON THE INTERNATIONAL CARRIAGE OF PERISHABLE FOODSTUFFS AND ON THE SPECIAL EQUIPMENT TO BE USED FOR SUCH CARRIAGE (ATP)

THE CONTRACTING PARTIES,

DESIROUS of improving the conditions of preservation of the quality of perishable foodstuffs during their carriage, particularly in international trade,

CONSIDERING that the improvement of those conditions is likely to promote the expansion of trade in perishable foodstuffs,

HAVE AGREED as follows:

Chapter I

SPECIAL TRANSPORT EQUIPMENT

Article 1

For the international carriage of perishable foodstuffs, equipment shall not be designated as "insulated", "refrigerated", "mechanically refrigerated", or "heated" equipment unless it complies with the definitions and standards set forth in annex 1 to this Agreement.

Article 2

The Contracting Parties shall take the measures necessary to ensure that the equipment referred to in article 1 of this Agreement is inspected and tested for compliance with the said standards in conformity with the provisions of annex 1, appendices 1, 2, 3 and 4, to this Agreement. Each Contracting Party shall recognize the validity of certificates of compliance issued in conformity with annex 1, appendix 1, paragraph 4 to this Agreement by the competent authority of another Contracting Party. Each Contracting Party may recognize the validity of certificates of compliance issued in conformity with the requirements of annex 1, appendices 1 and 2, to this Agreement by the competent authority of a State not a Contracting Party.

Chapter II

USE OF SPECIAL TRANSPORT EQUIPMENT FOR THE INTERNATIONAL CARRIAGE OF CERTAIN PERISHABLE FOODSTUFFS

Article 3

1. The provisions of article 4 of this Agreement shall apply to all carriage, whether for hire or reward or for own account, carried out

exclusively - subject to the provisions of paragraph 2 of this article - by rail, by road or by a combination of the two, of

- quick (deep)-frozen and frozen foodstuffs, and of
- foodstuffs referred to in annex 3 to this Agreement even if they are neither quick (deep)-frozen nor frozen,

if the point at which the goods are, or the equipment containing them is, loaded on to a rail or road vehicle and the point at which the goods are, or the equipment containing them is, unloaded from that vehicle are in two different States and the point at which the goods are unloaded is situated in the territory of a Contracting Party.

In the case of carriage entailing one or more sea crossings other than sea crossings as referred to in paragraph 2 of this article, each land journey shall be considered separately.

2. The provisions of paragraph 1 of this article shall likewise apply to sea crossings of less than 150 km on condition that the goods are shipped in equipment used for the land journey or journeys without transloading of the goods and that such crossings precede or follow one or more land journeys as referred to in paragraph 1 of this article or take place between two such land journeys.

3. Notwithstanding the provisions of paragraphs 1 and 2 of this article, the Contracting Parties need not apply the provisions of article 4 of this Agreement to the carriage of foodstuffs not intended for human consumption.

Article 4

1. For the carriage of the perishable foodstuffs specified in annexes 2 and 3 to this Agreement, the equipment referred to in article 1 of this Agreement shall be used unless the temperatures to be anticipated throughout carriage render this requirement manifestly unnecessary for the purpose of maintaining the temperature conditions specified in annexes 2 and 3 to this Agreement. The equipment shall be so selected and used that the temperature conditions prescribed in the said annexes can be complied with throughout carriage. Furthermore, all appropriate measures shall be taken, more particularly as regards the temperature of the foodstuffs at the time of loading and as regards icing or re-icing during the journey or other necessary operations.

Nevertheless, the provisions of this paragraph shall apply only in so far as they are not incompatible with international undertakings in the matter of international carriage arising for the Contracting Parties by virtue of conventions in force at the time of the entry into force of this Agreement or by virtue of conventions substituted for them.

2. If during carriage under this Agreement the provisions of paragraph 1 of this article have not been complied with,

(a) the foodstuffs may not be disposed of in the territory of a Contracting Party after completion of carriage unless the competent authorities of that Contracting Party deem it compatible with the requirements of public health to authorize such disposal and unless such conditions as the authorities may attach to the authorization when granting it are fulfilled; and

(b) every Contracting Party may, by reason of the requirements of public health or zooprophylaxis and in so far as it is not incompatible with the other international undertakings referred to in the last sentence of paragraph 1 of this article, prohibit the entry of the foodstuffs into its territory or make their entry subject to such conditions as it may determine.

3. Compliance with the provisions of paragraph 1 of this article shall be required of carriers for hire or reward only in so far as they have undertaken to procure or provide services intended to ensure such compliance and if such compliance depends on the performance of those services. If other persons, whether individuals or corporate bodies, have undertaken to procure or provide services intended to ensure compliance with the provisions of this Agreement, they shall be required to ensure such compliance in so far as it depends on performance of the services they have undertaken to procure or provide.

4. During carriage which is subject to the provisions of this Agreement and for which the loading point is situated in the territory of a Contracting Party, responsibility for compliance with the requirements of paragraph 1 of this article shall rest, subject to the provisions of paragraph 3 of this article,

- in the case of transport for hire or reward, with the person, whether an individual or a corporate body, who is the consignor according to the transport document or, in the absence of a transport document, with the person, whether an individual or a corporate body, who has entered into the contract of carriage with the carrier;

- in other cases with the person, whether an individual or a corporate body, who performs carriage.

Chapter III

MISCELLANEOUS PROVISIONS

Article 5

The provisions of this Agreement shall not apply to carriage in containers by land without transloading of the goods where such carriage is preceded or followed by a sea crossing other than a sea crossing as referred to in article 3, paragraph 2, of this Agreement.

Article 6

1. Each Contracting Party shall take all appropriate measures to ensure observance of the provisions of this Agreement. The competent administrations of the Contracting Parties shall keep one another informed of the general measures taken for this purpose.

2. If a Contracting Party discovers a breach committed by a person residing in the territory of another Contracting Party, or imposes a penalty upon such a person, the administration of the first Party shall inform the administration of the other Party of the breach discovered and of the penalty imposed.

Article 7

The Contracting Parties reserve the right to enter into bilateral or multilateral agreements to the effect that provisions applicable to special equipment and provisions applicable to the temperatures at which certain foodstuffs are required to be maintained during carriage may, more particularly by reason of special climatic conditions, be more stringent than those prescribed in this Agreement. Such provisions shall apply only to international carriage between

Contracting Parties which have concluded bilateral or multilateral agreements as referred to in this article. Such agreements shall be transmitted to the Secretary-General of the United Nations, who shall communicate them to Contracting Parties to this Agreement which are not signatories of the said agreements.

Article 8

Failure to observe the provisions of this Agreement shall not affect either the existence or the validity of contracts entered into for the performance of carriage.

Chapter IV

FINAL PROVISIONS

Article 9

1. States members of the Economic Commission for Europe and States admitted to the Commission in a consultative capacity under paragraph 8 of the Commission's terms of reference may become Contracting Parties to this Agreement

(a) by signing it;

(b) by ratifying it after signing it subject to ratification; or

(c) by acceding to it.

2. States which may participate in certain activities of the Economic Commission for Europe under paragraph 11 of the Commission's terms of reference may become Contracting Parties to this Agreement by acceding thereto after its entry into force.

3. This Agreement shall be open for signature until 31 May 1971* inclusive. Thereafter, it shall be open for accession.

4. Ratification or accession shall be effected by the deposit of an instrument with the Secretary-General of the United Nations.

Article 10

1. Any State may at the time of signing this Agreement without reservation as to ratification or of depositing its instrument of ratification or accession or at any time thereafter declare by notification addressed to the Secretary-General of the United Nations that the Agreement does not apply to carriage performed in any or in a particular one of its territories situated

* In conformity with the decision taken by the Inland Transport Committee at its thirtieth session.

outside Europe. If notification as aforesaid is made after the entry into force of the Agreement in respect of the notifying State the Agreement shall, ninety days after the date on which the Secretary-General has received the notification, cease to apply to carriage in the territory or territories named in that notification.

2. Any State which has made a declaration under paragraph 1 of this article may at any time thereafter declare by notification addressed to the Secretary-General of the United Nations that the Agreement will be applicable to carriage performed in a territory named in the notification made under paragraph 1 of this article and the Agreement shall become applicable to carriage in that territory one hundred and eighty days after the date on which the Secretary-General has received that notification.

Article 11

1. This Agreement shall come into force one year after five of the States referred to in its article 9, paragraph 1, have signed it without reservation as to ratification or have deposited their instruments of ratification or accession.

2. With respect to any State which ratifies, or accedes to, this Agreement after five States have signed it without reservation as to ratification or have deposited their instruments of ratification or accession, this Agreement shall enter into force one year after the said State has deposited its instrument of ratification or accession.

Article 12

1. Any Contracting Party may denounce this Agreement by giving notice of denunciation to the Secretary-General of the United Nations.

2. The denunciation shall take effect fifteen months after the date on which the Secretary-General received the notice of denunciation.

Article 13

This Agreement shall cease to have effect if the number of Contracting Parties is less than five throughout any period of twelve consecutive months after its entry into force.

Article 14

1. Any State may at the time of signing this Agreement without reservation as to ratification or of depositing its instrument of ratification or accession or at any time thereafter declare by notification addressed to the Secretary-General of the United Nations that this Agreement will be applicable to all or any of the territories for the international relations of which that State is responsible. This Agreement shall be applicable to the territory or territories named in the notification as from the ninetieth day after receipt of the notice by the Secretary-General or, if on that day the Agreement has not yet entered into force, as from its entry into force.

2. Any State which has made a declaration under paragraph 1 of this article making this Agreement applicable to a territory for whose international relations it is responsible may denounce the Agreement separately in respect of that territory in conformity with article 12 hereof.

Article 15

1. Any dispute between two or more Contracting Parties concerning the interpretation or application of this Agreement shall so far as possible be settled by negotiation between them.

2. Any dispute which is not settled by negotiation shall be submitted to arbitration if any one of the Contracting Parties concerned in the dispute so requests and shall be referred accordingly to one or more arbitrators selected by agreement between those Parties. If within three months from the date of the request for arbitration, the Parties concerned in the dispute are unable to agree on the selection of an arbitrator or arbitrators, any of those Parties may request the Secretary-General of the United Nations to designate a single arbitrator to whom the dispute shall be referred for decision.

3. The decision of the arbitrator or arbitrators designated under the preceding paragraph shall be binding on the Contracting Parties concerned in the dispute.

Article 16

1. Any State may, at the time of signing, ratifying, or acceding to, this Agreement, declare that it does not consider itself bound by article 15, paragraphs 2 and 3 of this Agreement. The other Contracting Parties shall not be bound by these paragraphs with respect to any Contracting Party which has entered such a reservation.

2. Any Contracting Party which has entered a reservation under paragraph 1 of this article may at any time withdraw the reservation by notification addressed to the Secretary-General of the United Nations.

3. With the exception of the reservation provided for in paragraph 1 of this article, no reservation to this Agreement shall be permitted.

Article 17

1. After this Agreement has been in force for three years, any Contracting Party may, by notification addressed to the Secretary-General of the United Nations, request that a conference be convened for the purpose of revising this Agreement. The Secretary-General shall notify all Contracting Parties of the request and a revision conference shall be convened by the Secretary-General if, within a period of four months from the date of the notification sent by the Secretary-General, not less than one-third of the Contracting Parties signify their assent to the request.

2. If a conference is convened in pursuance of paragraph 1 of this article, the Secretary-General shall so advise all the Contracting Parties and invite them to submit within a period of three months, the proposals which they wish the conference to consider. The Secretary-General shall circulate the provisional agenda for the conference, together with the text of such proposals, to all Contracting Parties not less than three months before the date on which the conference is to open.

3. The Secretary-General shall invite to any conference convened in pursuance of this article all the countries referred to in article 9, paragraph 1, of this Agreement, and also the countries which have become Contracting Parties under the said article 9, paragraph 2.

Article 18

1. Any Contracting Party may propose one or more amendments to this Agreement. The text of any proposed amendment shall be communicated to the Secretary-General of the United Nations, who shall communicate it to all Contracting Parties and bring it to the notice of all the other States referred to in article 9, paragraph 1, of this Agreement.

2. Within a period of six months following the date on which the proposed amendment is communicated by the Secretary-General, any Contracting Party may inform the Secretary-General

(a) that it has an objection to the amendment proposed, or

(b) that, although it intends to accept the proposal, the conditions necessary for such acceptance are not yet fulfilled in its country.

3. If a Contracting Party sends the Secretary-General a communication as provided for in paragraph 2 (b) of this article, it may, so long as it has not notified the Secretary-General of its acceptance, submit an objection to the proposed amendment within a period of nine months following the expiry of the period of six months prescribed in respect of the initial communication.

4. If an objection to the proposed amendment is stated in accordance with the terms of paragraphs 2 and 3 of this article, the amendment shall be deemed not to have been accepted and shall be of no effect.

5. If no objection to the proposed amendment has been stated in accordance with paragraphs 2 and 3 of this article, the amendment shall be deemed to have been accepted on the date specified below:

(a) if no Contracting Party has sent a communication to the Secretary-General in accordance with paragraph 2 (b) of this article, on the expiry of the period of six months referred to in paragraph 2 of this article;

(b) if at least one Contracting Party has sent a communication to the Secretary-General in accordance with paragraph 2 (b) of this article, on the earlier of the following two dates:

- the date by which all the Contracting Parties which sent such communications have notified the Secretary-General of their acceptance of the proposed amendment, subject however to the proviso that if all the acceptances were notified before the expiry of the period of six months referred to in paragraph 2 of this article the date shall be the date of expiry of that period;

- the date of expiry of the period of nine months referred to in paragraph 3 of this article.

6. Any amendment deemed to be accepted shall enter into force six months after the date on which it was deemed to be accepted.

7. The Secretary-General shall as soon as possible inform all Contracting Parties whether an objection to the proposed amendment has been stated in accordance with paragraph 2 (a) of this article and whether one or more Contracting Parties have sent him a communication in accordance with paragraph 2 (b) of this article. If one or more Contracting Parties have sent him such a communication, he shall subsequently inform all the Contracting Parties whether the Contracting Party or Parties which have sent such a communication raise an objection to the proposed amendment or accept it.

8. Independently of the amendment procedure laid down in paragraphs 1 to 6 of this article, the annexes and appendices to this Agreement may be modified by agreement between the competent administrations of all the Contracting Parties. If the administration of a Contracting Party has stated that under its national law its agreement is contingent on special authorization or on the approval of a legislative body, the consent of the Contracting Party concerned to the modification of an annex shall not be deemed to have been given until the Contracting Party has notified the Secretary-General that the necessary authorization or approval has been obtained. The agreement between the competent administrations may provide that, during a transitional period, the old annexes shall remain in force, wholly or in part, concurrently with the new annexes. The Secretary-General shall specify the date of the entry into force of the new texts resulting from such modifications.

Article 19

In addition to communicating to them the notifications provided for in articles 17 and 18 of this Agreement, the Secretary-General of the United Nations shall notify the States referred to in article 9, paragraph 1, of this Agreement and the States which have become Contracting Parties under article 9, paragraph 2, of:

(a) signatures, ratifications and accessions under article 9;

(b) the dates of entry into force of this Agreement pursuant to article 11;

(c) denunciations under article 12;

(d) the termination of this Agreement under article 13;

(e) notifications received under articles 10 and 14;

(f) declarations and notifications received under article 16, paragraphs 1 and 2;

(g) the entry into force of any amendment pursuant to article 18.

Article 20

After 31 May 1971,* the original of this Agreement shall be deposited with the Secretary-General of the United Nations, who shall transmit certified true copies to each of the States mentioned in article 9, paragraphs 1 and 2, of this Agreement.

* In conformity with the decision taken by the Inland Transport Committee at its thirtieth session.

IN WITNESS WHEREOF, the undersigned, being duly authorized thereto, have signed this Agreement.

DONE at Geneva, this first day of September, one thousand nine hundred and seventy, in a single copy, in the English, French and Russian languages, the three texts being equally authentic.

Annex 1

DEFINITIONS OF AND STANDARDS FOR SPECIAL EQUIPMENT
FOR THE CARRIAGE OF PERISHABLE FOODSTUFFS

Annex 1

DEFINITIONS OF AND STANDARDS FOR SPECIAL EQUIPMENT[1/] FOR THE CARRIAGE OF PERISHABLE FOODSTUFFS

1. Insulated equipment. Equipment of which the body[2/] is built with insulating walls, doors, floor and roof, by which heat exchanges between the inside and outside of the body can be so limited that the overall coefficient of heat transfer (K coefficient), is such that the equipment is assignable to one or other of the following two categories:

   I_N = Normally insulated equipment - characterized by a K coefficient equal to or less than 0.7 $W/m^{2o}C$ ($\simeq$ 0.6 kcal/h $m^{2o}C$)

   I_R = Heavily insulated equipment - characterized by a K coefficient equal to or less than 0.4 $W/m^{2o}C$ ($\simeq$ 0.35 kcal/h $m^{2o}C$).

   The definition of the K coefficient, which is called U coefficient in some countries, and a description of the method to be used in measuring it, are given in appendix 2 to this annex.

2. Refrigerated equipment. Insulated equipment which, using a source of cold (natural ice, with or without the addition of salt; eutectic plates; dry ice, with or without sublimation control; liquefied gases, with or without evaporation control; etc.) other than a mechanical or "absorption" unit, is capable, with a mean outside temperature of +30°C, of lowering the temperature inside the empty body to, and thereafter maintaining it
   - at + 7°C maximum in the case of class A;
   - at -10°C maximum in the case of class B; and
   - at -20°C maximum in the case of class C,

1/ Wagons, lorries, trailers, semi-trailers, containers and other similar equipment.

2/ In the case of tank equipment, the term "body" means under this definition, the tank itself.

with the aid of appropriate refrigerants and fittings. Such equipment shall comprise one or more compartments, receptacles or tanks for the refrigerant. The said compartments, receptacles or tanks shall:

- be capable of being filled or refilled from the outside; and
- have a capacity such that the source of cold is capable of lowering the temperature to the level prescribed for the class in question and thereafter maintaining it at that level for not less than 12 hours without renewal of the supply of refrigerant or of power.

The K coefficient of equipment of classes B and C shall in every case be equal to or less than 0.4 $W/m^{2o}C$ $\simeq$ 0.35 kcal/h $m^{2o}C$).

3. Mechanically refrigerated equipment. Insulated equipment either fitted with its own refrigerating appliance, or served jointly with other units of transport equipment by such an appliance, (mechanical compressor unit, "absorption" unit, etc.). The appliance shall be capable, with a mean outside temperature of $+30^{o}C$, of lowering the temperature inside the empty body to, and thereafter maintaining it continuously in the following manner at:

- In the case of classes A, B and C, any desired practically constant value t_i in conformity with the standards defined below for the three classes:

Class A. Mechanically refrigerated equipment fitted with a refrigerating appliance such that t_i may be chosen between $+12^{o}C$ and $0^{o}C$ inclusive.

Class B. Mechanically refrigerated equipment fitted with a refrigerating appliance such that t_i may be chosen between $+12^{o}C$ and $-10^{o}C$ inclusive.

Class C. Mechanically refrigerated equipment fitted with a refrigerating appliance such that t_i may be chosen between $+12^{o}C$ and $-20^{o}C$ inclusive.

- In the case of classes D, E and F a fixed practically constant value t_i in conformity with the standards defined below for the three classes:

Class D. Mechanically refrigerated equipment fitted with a refrigerating appliance such that t_i is equal to or less than $+2^{o}C$.

Class E. Mechanically refrigerated equipment fitted with a refrigerating appliance such that t_i is equal to or less than -10°C.

Class F. Mechanically refrigerated equipment fitted with a refrigerating appliance such that t_i is equal to or less than -20°C.

The K coefficient of equipment of classes B, C, E and F shall in every case be equal to or less than 0.4 W/m^2°C ($\simeq$ 0.35 kcal/h m^2°C).

4. Heated equipment. Insulated equipment fitted with a heat-producing appliance which is capable of raising the temperature inside the empty body to, and thereafter maintaining it for not less than 12 hours without renewal of supply at, a practically constant value of not less than +12°C when the mean outside temperature of the body is that indicated below for the two classes:

Class A. Heated equipment for use when the mean outside temperature is -10°C; and

Class B. Heated equipment for use when the mean outside temperature is -20°C.

The K coefficient of equipment of class B shall in every case be equal to or less than 0.4 W/m^2°C ($\simeq$ 0.35 kcal/h m^2°C).

5. Transitional provisions. For a period of 3 years following the date of entry into force of this Agreement in conformity with the provisions of article 11, paragraph 1 thereof, the overall coefficient of heat transfer (K coefficient) may, in the case of equipment already in service at that date, be equal to or less than

- 0.9 W/m^2°C ($\simeq$ 0.8 kcal/h m^2°C) in the case of insulated equipment in category I_N, refrigerated equipment in class A, all mechanically refrigerated equipment, and heated equipment in class A; and
- 0.6 W/m^2°C ($\simeq$ 0.5 kcal/h m^2°C) in the case of refrigerated equipment in classes B and C and heated equipment in class B.

Moreover, after the period of 3 years referred to in the first sub-paragraph of this paragraph and until the equipment is finally withdrawn from service, the K coefficient of the mechanically refrigerated equipment in question of classes B, C, E and F may be equal to or less than 0.7 $W/m^{2o}C$ ($\simeq$ 0.6 kcal/h $m^{2o}C$).

These transitional provisions shall not, however, preclude the application of any stricter regulations enacted by certain States for equipment registered in their own territory.

Annex 1, Appendix 1

PROVISIONS RELATING TO THE CHECKING OF INSULATED, REFRIGERATED, MECHANICALLY REFRIGERATED OR HEATED EQUIPMENT FOR COMPLIANCE WITH THE STANDARDS

1. Except in the cases provided for in appendix 2, paragraphs 29 and 49, to this annex, checks for compliance with the standards prescribed in this annex shall be made at the testing stations designated or approved by the competent authority of the country in which the equipment is registered or recorded. They shall be made:

   (a) before the equipment is put into service;

   (b) periodically, at least once every 6 years; and

   (c) whenever required by the competent authority.

2. New equipment of a specific type serially produced, may be checked by sampling not less than 1% of the equipment of the same production series. The equipment shall not be regarded as belonging to the same production series as the reference equipment unless it satisfies the following minimum conditions with a view to ensuring that it conforms to the reference equipment:

   (a) if it is insulated equipment, in which case the reference equipment may be insulated, refrigerated, mechanically refrigerated or heated equipment,

   - the insulation shall be comparable and, in particular, the insulating material, the thickness of the insulating material and the method of insulation shall be identical;
   - the interior fittings shall be identical or simplified;
   - the number of doors and the number of hatches or other openings shall be the same or less; and
   - the inside surface area of the body shall not be as much as 20% greater or smaller;

   (b) if it is refrigerated equipment, in which case the reference equipment shall be refrigerated equipment,

   - the conditions set out under (a) above shall be satisfied;
   - inside ventilation appliances shall be comparable;
   - the source of cold shall be identical; and
   - the reserve of cold per unit of inside surface area shall be greater or equal;

(c) if it is mechanically refrigerated equipment, in which case the reference equipment shall be mechanically refrigerated equipment,

- the conditions set out under (a) above shall be satisfied; and
- the capacity of the refrigerating equipment per unit of inside surface area under the same temperature conditions shall be greater or equal;

(d) if it is heated equipment, in which case the reference equipment may be insulated or heated equipment,

- the conditions set out under (a) above shall be satisfied;
- the source of heat shall be identical; and
- the capacity of the heating appliance per unit of inside surface area shall be greater or equal.

3. The methods and procedures to be used in checking for compliance with the standards are described in appendix 2 to this annex.

4. A certificate of compliance with the standards shall be issued by the competent authority on a form corresponding to the model reproduced in appendix 3 to this annex. In the case of road vehicles, the certificate or a photographic copy thereof shall be carried on the vehicle during carriage and be produced whenever so required by the control authorities. If equipment cannot be designated as belonging to a category or class except by virtue of the transitional provisions contained in paragraph 5 of this annex, the validity of the certificate issued for such equipment shall be limited to the period laid down in the said transitional provisions.

5. Distinguishing marks and particulars shall be affixed to the equipment in conformity with the provisions of appendix 4 to this annex. They shall be removed as soon as the equipment ceases to conform to the standards laid down in this annex.

Annex 1, Appendix 2

METHODS AND PROCEDURES FOR MEASURING AND CHECKING THE INSULATING CAPACITY AND THE EFFICIENCY OF THE COOLING OR HEATING APPLIANCES OF SPECIAL EQUIPMENT FOR THE CARRIAGE OF PERISHABLE FOODSTUFFS

A. DEFINITIONS AND GENERAL PRINCIPLES

1. K coefficient. The over-all coefficient of heat transfer (K coefficient, called U coefficient in some countries), which represents the insulating capacity of the equipment, is defined by the following formula:

$$K = \frac{W}{S \cdot \Delta \theta}$$

where W is the thermal capacity required in a body of mean surface area S to maintain the absolute difference $\Delta \theta$ between the mean inside temperature θ_i and the mean outside temperature θ_e, during continuous operation, when the mean outside temperature θ_e is constant.

2. The mean surface area S of the body is the geometric mean of the inside surface area S_i and the outside surface area S_e of the body

$$S = \sqrt{S_i \cdot S_e}$$

In determining the two surface areas S_i and S_e, structural peculiarities and surface irregularities of the body, such as round-offs, wheel-arches and the like, shall be taken into account and shall be noted under the appropriate heading in the test report prescribed hereunder; however,if the body is covered with corrugated sheet metal the area considered shall be that of the plane surface occupied thereby, not that of the developed corrugated surface.

3. In the case of parallelepipedic bodies, the mean inside temperature of the body (θ_i) is the arithmetic mean of the temperatures measured 10 cm from the walls at the following 14 points:

   (a) the 8 inside corners of the body; and

   (b) the centres of the 6 inside faces of the body.

If the body is not parallelepipedic, the 14 points of measurement shall be distributed as satisfactorily as possible having regard to the shape of the body.

4. In the case of parallelepipedic bodies, the mean outside temperature of the body (θ_e) is the arithmetic mean of the temperatures measured 10 cm from the walls at the following 14 points:

(a) the 8 outside corners of the body,

(b) the centres of the 6 outside faces of the body.

If the body is not parallelepipedic, the 14 points of measurement shall be distributed as satisfactorily as possible having regard to the shape of the body.

5. The mean temperature of the walls of the body is the arithmetic mean of the mean outside temperature of the body and the mean inside temperature of the body

$$\left(\frac{\theta_e + \theta_i}{2}\right)$$

6. Continuous operation. Operation shall be considered to be continuous if both the following conditions are satisfied:

- the mean outside temperature and the mean inside temperature of the body, taken over a period of not less than 12 hours, shall not vary by more than $\pm$ 0.5°C; and
- the difference between the mean thermal capacities measured over a period of not less than 3 hours, before and after the aforesaid period of not less than 12 hours, shall be less than 3%.

B. INSULATING CAPACITY OF EQUIPMENT

Procedures for measuring the K coefficient

(a) Equipment other than liquid-foodstuffs tanks

7. Insulating capacity shall be measured in continuous operation either by the internal cooling method or by the internal heating method. In either case, the empty body shall be placed in an insulated chamber.

8. Whatever the method employed, the mean temperature of the insulated chamber shall throughout the test be kept uniform, and constant to within $\pm$ 0.5°C, at a level such that the temperature

difference between the inside of the equipment and the insulated chamber is not less than 20°C, the mean temperature of the walls of the body being maintained at about + 20°C.

9. When the over-all coefficient of heat transfer (K coefficient) is being determined by the internal cooling method, the dew point in the atmosphere of the insulated chamber shall be maintained at + 25°C ± 2°C. During the test, whether by the internal cooling method or by the internal heating method, the atmosphere of the chamber shall be made to circulate continuously so that the speed of movement of the air 10 cm from the walls is maintained at between 1 and 2 metres/second.

10. Where the internal cooling method is applied, one or more heat exchangers shall be placed inside the body. The surface area of these exchangers shall be such that if a fluid at a temperature not lower than 0°C[1/] passes through them the mean inside temperature of the body remains below + 10°C when continuous operation has been established. Where the internal heating method is applied, electrical heating appliances (resistors and the like) shall be used. The heat exchangers or electrical heating appliances shall be fitted with an air blower having a delivery rate sufficient to ensure that the maximum difference between the temperatures of any two of the 14 points specified in paragraph 3 of this appendix does not exceed 3°C when continuous operation has been established.

11. Temperature measuring instruments protected against radiation shall be placed inside and outside the body at the points specified in paragraphs 3 and 4 of this appendix.

12. The appliances for generating and distributing cold or heat and for measuring the quantity of cold or heat exchanged and the heat equivalent of the air-circulating fans shall be started up.

13. When continuous operation has been established, the maximum difference between the temperatures at the warmest and at the coldest points on the outside of the body shall not exceed 2°C.

1/ To prevent frosting.

14. The mean outside temperature and the mean inside temperature of the body shall each be read not less than 4 times per hour.

15. The test shall be continued as long as is necessary to ensure that operation is continuous (see paragraph 6 of this appendix). If not all measurements are automatic and recorded, the test shall be continued for a period of 8 consecutive hours in order to make sure that operation is continuous and to take the definitive readings.

(b) Liquid-foodstuffs tanks

16. The method described below applies only to single-compartment or multiple-compartment tank equipment intended solely for the carriage of liquid foodstuffs such as milk. Each compartment of such tanks shall have at least one manhole and one discharge-pipe connecting socket; where there are several compartments they shall be separated from one another by non-insulated vertical partitions.

17. Insulating capacity shall be tested in continuous operation by internal heating of the empty tank in an insulated chamber.

18. Throughout the test, the mean temperature of the insulated chamber shall be kept uniform, and constant to within $\pm$ 0.5°C, at a level between + 15°C and + 20°C; the mean temperature inside the tank shall be kept at between + 45°C and +50°C in continuous operation, the mean temperature of the tank walls being between + 30°C and + 35°C.

19. The atmosphere of the chamber shall be made to circulate continuously so that the speed of movement of the air 10 cm from the walls is maintained at between 1 and 2 metres/second.

20. A heat exchanger shall be placed inside the tank. If the tank has several compartments, a heat exchanger shall be placed in each compartment. The exchangers shall be fitted with electrical resistors and a fan with a delivery rate sufficient to ensure that the difference between the maximum temperature and the minimum temperature inside each compartment does not exceed 3°C when continuous operation has been established. If the tank comprises several compartments, the difference between the mean temperature

in the coldest compartment and the mean temperature in the warmest compartment shall not exceed 2°C, the temperatures being measured as specified in paragraph 21 of this appendix.

21. Temperature measuring instruments protected against radiation shall be placed inside and outside the tank 10 cm from the walls, as follows:

(a) If the tank has only one compartment, the points of measurement shall be:

- the 4 extremities of 2 diameters at right angles to one another, one horizontal and the other vertical, near each of the 2 ends of the tank;
- the 4 extremities of 2 diameters at right angles to one another, inclined at an angle of 45° to the horizontal, in the axial plane of the tank; and
- the centres of the 2 end of the tank.

(b) If the tank has several compartments, the points of measurement shall be as follows:

for each of the 2 end compartments:

- the extremities of a horizontal diameter near the end and the extremities of a vertical diameter near the partition; and
- the centre of the end;

and for each of the other compartments, at least the following:

- the extremities of a diameter inclined at an angle of 45° to the horizontal near one of the partitions and the extremities of a diameter perpendicular to the first and near the other partition.

The mean inside temperature and the mean outside temperature of the tank shall respectively be the arithmetic mean of all the measurements taken inside and all the measurements taken outside the tank. In the case of a tank having several compartments, the mean inside temperature of each compartment shall be the arithmetic mean of the measurements, numbering not less than 4, relating to that compartment.

22. The appliances for heating and circulating the air and for measuring the quantity of heat exchanged and the heat equivalent of the air-circulating fans shall be started up.

23. When continuous operation has been established, the maximum difference betweenthe temperatures at the warmest and at the coldest points on the outside of the tank shall not exceed 2°C.

24. The mean outside temperature and the mean inside temperature of the tank shall each be read not less than 4 times per hour.

25. The test shall be continued as long as is necessary to ensure that operation is continuous (see paragraph 6 of this appendix). If not all measurements are automatic and recorded, the test shall be continued for a period of 8 consecutive hours in order to make sure that operation is continuous and to take the definitive readings.

(c) Provisions common to all types of insulated equipment

(i) Verification of the K coefficient

26. Where the purpose of the tests is not to determine the K coefficient but simply to verify that it is below a certain limit, the tests carried out as described in paragraphs 7 to 25 of this appendix may be stopped as soon as the measurements made show that the K coefficient meets the requirements.

(ii) Accuracy of measurements of the K coefficient

27. Testing stations shall be provided with the equipment and instruments necessary to ensure that the K coefficient is determined with a maximum margin of error of $\pm$ 10%.

(iii) Test reports

28. A test report of the type appropriate to the equipment tested shall be drawn up for each test in conformity with one or other of the models 1 and 2 hereunder.

Checking the insulating capacity of equipment in service

29. For the purpose of checking the insulating capacity of each piece of equipment in service as prescribed in appendix 1, paragraphs 1(b) and 1(c), to this annex, the competent authorities may:

- apply the methods described in paragraphs 7 to 27 of this appendix; or
- appoint experts to assess the fitness of the equipment for retention in one or other of the categories of insulated equipment. These experts shall take the following particulars into account and shall base their conclusions on the criteria set forth hereunder:

(a) General examination of the equipment

This examination shall take the form of an inspection of the equipment to determine the following in the following order:

(i) the general design of the insulating sheathing;

(ii) the method of application of insulation;

(iii) the nature and condition of the walls;

(iv) the condition of the insulated compartment;

(v) the thickness of the walls;

and to make all appropriate observations concerning the insulating capacity of the equipment. For this purpose the experts may cause parts of the equipment to be dismantled and require all documents they may need to consult (plans, test reports, specifications, invoices, etc.) to be placed at their disposal.

(b) Examination for air-tightness (not applicable to tank equipments)

The inspection shall be made by an observer stationed inside the equipment, which shall be placed in a brightly-illuminated area. Any method yielding more accurate results may be used.

(c) Decisions

(i) If the conclusions regarding the general condition of the body are favourable, the equipment may be kept in service as insulated equipment of its initial class for a further period of not more than 3 years. If the conclusions of the expert or experts are unfavourable, the equipment may be kept in service only if it passes at a testing station the tests described in paragraphs 7 to 27 of this appendix; it may then be kept in service for a further period of 6 years.

(ii) If the equipment consists of units of serially-produced equipment of a particular type satisfying the requirements of appendix 1, paragraph 2, to this annex and belonging to one owner, then in addition to an inspection of each unit of equipment the K coefficient of not less than 1% of the number of units may be measured in conformity with the provisions of paragraphs 7 to 27 of this appendix. If the results of the examinations and measurements are favourable, all the equipment in question may be kept in service as insulating equipment of its initial class for a further period of 6 years.

Transitional provisions applicable to new equipment

30. For 4* years from the date of the entry into force of this Agreement in conformity with the provisions of article 11, paragraph 1 thereof, if owing to lack of testing stations the K coefficient of equipment cannot be measured by the procedures described in paragraphs 7 to 27 of this appendix, the compliance of new insulated equipment with the standards prescribed in this annex may be verified by applying the provisions of paragraph 29 and, in addition, evaluating the insulating capacity in the light of the following consideration:

The insulating material of the main components (side walls, floor, roof, hatches, doors, etc.) of the equipment shall be of a substantially uniform thickness exceeding in metre-length terms the figure obtained by dividing the coefficient of thermal conductivity of the material in a humid environment by the K coefficient required for the category in which inclusion of the equipment is requested.

C. EFFICIENCY OF THERMAL APPLIANCES OF EQUIPMENT

Procedures for determining the efficiency of thermal appliances of equipment

31. The efficiency of the thermal appliances of equipment shall be determined by the methods described in paragraphs 32 to 47 of this appendix.

Refrigerated equipment

32. The empty equipment shall be placed in an insulated chamber whose mean temperature shall be kept uniform, and constant to within $\pm$ 0.5°C, at + 30°C. The atmosphere of the chamber, which shall be kept humid by regulating the dew point to + 25°C $\pm$ 2°C, shall be made to circulate as described in paragraph 9 of this appendix.

33. Temperature measuring instruments protected against radiation shall be placed inside and outside the body at the points specified in paragraphs 3 and 4 of this appendix.

34. (a) In the case of equipment other than equipment with fixed eutectic plates, the maximum weight of refrigerant specified by the manufacturer or which can normally be accommodated shall be loaded into the spaces provided when the mean inside temperature of the body has reached the mean outside temperature of the body (+ 30°C). Doors, hatches and other openings shall be closed and

* In conformity with the decision taken by the Inland Transport Committee at its thirtieth session.

the inside ventilation appliances, if any, of the equipment shall be started up at maximum capacity. In addition, in the case of new equipment, a heating appliance with a heating capacity equal to 35% of the heat exchanged through the walls in continuous operation shall be started up inside the body when the temperature prescribed for the class to which the equipment is presumed to belong has been reached. No additional refrigerant shall be loaded during the test.

(b) In the case of equipment with fixed eutectic plates the test shall comprise a preliminary phase of freezing of the eutectic solution. For this purpose, when the mean inside temperature of the body and the temperature of the plates have reached the mean outside temperature (+ 30°C), the plate-cooling appliance shall be put into operation for 18 consecutive hours after closure of the doors and hatches. If the plate-cooling appliance includes a cyclically-operating mechanism the total duration of operation of the appliance shall be 24 hours. In the case of new equipment, as soon as the cooling appliance is stopped a heating appliance with a heating capacity equal to 35% of the heat exchanged through the walls in continuous operation shall be started up inside the body when the temperature prescribed for the class to which the equipment is presumed to belong has been reached. The solution shall not be subjected to any re-freezing operation during the test.

35. The mean outside temperature and the mean inside temperature of the body shall each be read not less often than once every 30 minutes.

36. The test shall be continued for 12 hours after the mean inside temperature of the body has reached the lower limit prescribed for the class to which the equipment is presumed to belong (A = + 7°C; B = - 10°C; C = - 20°C) or, in the case of equipment with fixed eutectic plates, after stoppage of the cooling appliance. The test shall be deemed satisfactory if the mean inside temperature of the body does not exceed the aforesaid lower limit during the aforesaid period of 12 hours.

Mechanically refrigerated equipment

37. The test shall be carried out in the conditions described in paragraphs 32 and 33 of this appendix.

38. When the mean inside temperature of the body reaches the outside temperature (+ 30°C), the doors, hatches and other openings shall be closed and the refrigerating appliance and the inside ventilating appliances (if any) shall be started up at maximum capacity. In addition, in the case of new equipment a heating appliance with a heating capacity equal to 35% of the heat exchanged through the walls in continuous operation shall be started up inside the body when the temperature prescribed for the class to which the equipment is presumed to belong has been reached.

39. The mean outside temperature and the mean inside temperature of the body shall each be read not less often than once every 30 minutes.

40. The test shall be continued for 12 hours after the mean inside temperature of the body has reached:

- either the lower limit prescribed for the class to which the equipment is presumed to belong in the case of classes A, B and C (A = 0°C; B = - 10°C; C = - 20°C); or
- a level not lower than the upper limit prescribed for the class to which the equipment is presumed to belong in the case of classes D, E and F (D = + 2°C; E = - 10°C; F = - 20°C).

The test shall be deemed satisfactory if the refrigerating appliance is able to maintain the prescribed temperature conditions during the 12 hours aforesaid, periods, if any, of automatic defrosting of the refrigerating unit not being taken into account.

41. If the refrigerating appliance with all its accessories has undergone separately, to the satisfaction of the competent authority, a test to determine its effective refrigerating capacity at the prescribed reference temperatures, the transport equipment may be accepted as refrigerated equipment without undergoing an efficiency test if the refrigerating capacity of the appliance in continuous operation exceeds the heat losses through

the walls, for the class considered, multiplied by the factor 1.75. However, these provisions shall not apply to equipment adopted as reference equipment as referred to in appendix 1, paragraph 2, to this annex.

42. If the mechanically refrigerating unit is replaced by a unit of a different type, the competent authority may:

(a) require the equipment to undergo the determinations and verifications prescribed in paragraphs 37 to 40; or

(b) satisfy itself that the effective refrigerating capacity of the new mechanically refrigerating unit is, at the temperature prescribed for equipment of the class concerned, at least equal to that of the unit replaced; or

(c) satisfy itself that the effective refrigerating capacity of the new mechanically refrigerating unit meets the requirements of paragraph 41.

Heated equipment

43. The empty equipment shall be placed in an insulated chamber whose temperature shall be kept uniform and constant at as low a level as possible. The atmosphere of the chamber shall be made to circulate as described in paragraph 9 of this appendix.

44. Temperature measuring instruments protected against radiation shall be placed inside and outside the body at the points specified in paragraphs 3 and 4 of this appendix.

45. Doors, hatches and other openings shall be closed and the heating equipment and the inside ventilating appliances, if any, shall be started up at maximum capacity.

46. The mean outside temperature and the mean inside temperature of the body shall each be read not less often than once every 30 minutes.

47. The test shall be continued for 12 hours after the difference between the mean inside temperature and the mean outside temperature of the body has reached the level corresponding to the conditions prescribed for the class to which the equipment is presumed to belong, increased by 35% in the case of new equipment. The test shall be deemed satisfactory if the heating appliance is able to maintain the prescribed temperature difference during the 12 hours aforesaid.

Test report

48. A test report of the type appropriate to the equipment tested shall be drawn up for each test in conformity with one or other of the models 3 to 5 hereunder.

Verifying the efficiency of thermal appliances of equipment in service

49. To verify as prescribed in appendix 1, paragraphs 1 (b) and 1 (c), to this annex the efficiency of the thermal appliance, of each item of refrigerated, mechanically refrigerated or heated equipment in service, the competent authorities may:

- apply the methods described in paragraphs 32 to 47 of this appendix; or
- appoint experts to apply the following provisions:

(a) Refrigerated equipment

It shall be verified that the inside temperature of the empty equipment, previously brought to the outside temperature, can be brought to the limit temperature of the class to which the equipment belongs, as prescribed in this annex, and maintained below the said limit temperature for a period t such that $t \geq \frac{12\Delta\theta}{\Delta\theta'}$ in which $\Delta\theta$ is the difference between + 30°C and the said limit temperature, and $\Delta\theta'$ is the difference between the mean outside temperature during the test and the aforesaid limit temperature, the outside temperature being not lower than + 15°C. If the results are favourable, the equipment may be kept in service as refrigerated equipment of its initial class for a further period of not more than 3 years.

(b) Mechanically refrigerated equipment

It shall be verified that, when the outside temperature is not lower than + 15°C, the inside temperature of the empty equipment can be brought:

- in the case of equipment in classes A, B or C, to the minimum temperature, as prescribed in this annex,
- in the case of equipment in classes D, E or F, to the limit temperature, as prescribed in this annex.

If the results are favourable, the equipment may be kept in service as mechanically refrigerated equipment of its initial class for a further period of not more than 3 years.

(c) Heated equipment

It shall be verified that the difference between the inside temperature of the equipment and the outside temperature which governs the class to which the equipment belongs as prescribed in this annex (a difference of 22°C in the case of class A and of 32°C in the case of class B) can be achieved and be maintained for not less than 12 hours. If the results are favourable, the equipment may be kept in service as heated equipment, of its initial class for a further period of not more than 3 years.

(d) Provisions common to refrigerated, mechanically refrigerated and heated equipment

(i) If the results are unfavourable, refrigerated, mechanically refrigerated or heated equipment may be kept in service in its initial class only if it passes at a testing station the tests described in paragraphs 32 to 47 of this appendix; it may then be kept in service in its initial class for a further period of 6 years.

(ii) If the equipment consists of units of serially-produced refrigerated, mechanically refrigerated or heated equipment of a particular type satisfying the requirements of appendix 1, paragraph 2 to this annex and belonging to one owner, then in addition to an inspection of the thermal appliances to ensure that their general condition appears to be satisfactory, the efficiency of the cooling or heating appliances of not less than 1% of the number of units may be determined at a testing station in conformity with the provisions of paragraphs 32 to 47 of this appendix. If the results of the examinations and of the determination of efficiency are favourable, all the equipment in question may be kept in service in its initial class for a further period of 6 years.

Transitional provisions applicable to new equipment

50. For 4* years from the date of the entry into force of this Agreement in conformity with the provisions of article 11, paragraph 1 thereof, if owing to lack of testing stations the efficiency of the thermal applicances of equipment cannot be determined by the procedures described in paragraphs 32 to 47 of this appendix, the compliance with the standards of new refrigerated, mechanically refrigerated or heated equipment may be verified by applying the provisions of paragraph 49 of this appendix.

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* In conformity with the decision taken by the Inland Transport Committee at its thirtieth session.

TEST REPORT, MODEL 1

Test report

prepared in conformity with the provisions of the Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be used for such Carriage (ATP)

Measurement of the overall coefficient of heat transfer of equipment other than liquid-foodstuffs tanks

Approved testing station: name . . . . . .
address . . . . . .

Equipment: identification number . . . . . .
body built by . . . . . .
owned or operated by . . . . . .
. . . . . .
submitted by . . . . . .
date of entry into service . . . . . .

Type of equipment submitted[1] . . . . . .

Make . . . . . .

Serial number . . . . . .

Tare weight[2] . . . . . kg

Carrying capacity[2] . . . . . kg

Total internal volume of body[2] . . . . . m^3

Principal internal dimensions . . . . . .

Total floor area of body . . . . . m^2

Total outside surface area S_e of body . . . . . m^2

Total inside surface area S_i of body . . . . . m^2

Mean surface area: $S = \sqrt{S_i \cdot S_e}$ . . . . . m^2

Specification of body casing[3]:

top . . . . . .

bottom . . . . . .

sides . . . . . .

1/ Wagon, lorry, trailer, semi-trailer, container, etc.

2/ State source of information.

3/ Nature of insulating and surfacing materials, mode of construction, thickness, etc.

Structural peculiarities of body[1/] . . . . . .

. . . . . .

. . . . . .

Number, positions and dimensions (of doors . . . . . .

(of vents . . . . . .

(of ice-loading apertures . . . . . .

Accessories[2/] . . . . . .

Testing method[3/] . . . . . .

. . . . . .

. . . . . .

. . . . . .

. . . . . .

Date and time of closure of equipment's doors and other openings . . . . . .

Date and time of beginning of test . . . . . .

Averages obtained for . . . . . hours of continuous operation (from . . . a.m./p.m. to . . . a.m./p.m.)

(a) Mean outside temperature of body:

θ_e = ... °C ± . . . °C

(b) Mean inside temperature of body:

θ_i = ... °C ± . . . °C

(c) Mean temperature difference achieved:

$\Delta\theta$ = ... °C ± . . . °C

Maximum temperature spread:

inside body . . . . . °C

outside body . . . . . °C

1/ Where the body is not parallelepipedic, specify the points at which its outside and inside temperatures were measured. If there are surface irregularities, show how S_i and S_e were determined.

2/ Meat bars, flettner fans, etc.

3/ Give a brief description of the test conditions in regard to the generation and distribution of cold or heat, to the measurement of cold or heat exchange capacity, and to the measurement of the heat equivalent of the air-circulating fans.

Mean temperature of walls (i.e. top, bottom and sides)
of body . . . . . °C
Operating temperature of heat exchanger . . . . . °C
Dew point of atmosphere outside body during
continuous operation . . . . . °C + . . . °C
Total duration of test . . . . . h
Duration of continuous operation . . . . . h
Power consumed in exchangers: W_1 . . . . . W
Power absorbed by fans: W_2 . . . . . W
Overall coefficient of heat transfer calculated by the formula[1/]

Inside-cooling test

$$K = \frac{W_1 - W_2}{S.\Delta\theta}$$

Inside-heating test

$$K = \frac{W_1 + W_2}{S.\Delta\theta}$$

K = ... $W/m^{2o}C$
Maximum error of measurement with test used . . . . . .
. . . . . .
. . . . . .

Remarks . . . . . .
. . . . . .
. . . . . .
Done at . . . . . on . . . . . .

. . . . . .
Testing Officer

1/ Strike out formula not used.

TEST REPORT, MODEL 2

Test report

prepared in conformity with the provisions of the Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be used for such Carriage (ATP)

Measurement of the overall coefficient of heat transfer of equipment in the form of liquid-foodstuffs tanks

Approved testing station: name . . . . . .
address . . . . . .

Equipment: identification number . . . . . .
body built by . . . . . .
owned or operated by . . . . . .
. . . . . .
submitted by . . . . . .
date of entry into service . . . . . .

Type of tank submitted[1] . . . . . .

Number of compartments . . . . . .

Make . . . . . .

Serial number . . . . . .

Tare weight[2] . . . . . kg

Carrying capacity[2] . . . . . kg

Total internal volume of tank[2] . . . . . litres

Inside volume of each compartment . . . . . litres

Principal internal dimensions . . . . . .

Total outside surface area S_e . . . . . m^2

Total inside surface area S_i . . . . . m^2

Mean surface area: $S = \sqrt{S_i \cdot S_e}$ . . . . . m^2

Specification of casing[3] . . . . . .

1/ Wagon, lorry, trailer, semi-trailer, tank-container, etc.

2/ State source of information.

3/ Nature of insulating and surfacing materials, mode of construction, thickness, etc.

Description and dimensions of manholes . . . . . .

Description of manhole cover . . . . . .

Description and dimensions of discharge-pipe connecting socket . . . . . .

Testing method[1] . . . . . .

. . . . . .

. . . . . .

. . . . . .

Sites of temperature measuring instruments . . . . . .

. . . . . .

Date and time of closure of equipment's openings . . . . . .

Date and time of beginning of test . . . . . .

Mean values obtained for . . . . . hours of continuous operation (from . . . $^{a.}_{p.}$m. to . . . $^{a.}_{p.}$m.)

(a) Mean outside temperature of tank:

θ_e = ... °C ± . . . °C

(b) Mean inside temperature of tank:

θ_i = ... °C ± . . . °C

(c) Mean temperature difference achieved:

$\Delta\theta$ = ... °C ± . . . °C

Maximum temperature spread:

inside tank . . . . . °C

inside each compartment . . . . . °C

outside tank . . . . . °C

Mean temperature of walls (i.e. top, bottoms and sides) of tank . . . . . °C

Total duration of test . . . . . h

Duration of continuous operation . . . . . h

Power consumed in exchangers: W_1 . . . . . W

Power absorbed by fans: W_2 . . . . . W

1/ Give a brief description of the test conditions in regard to the generation and distribution of heat, to the measurement of heat exchange capacity, and to the measurement of the heat equivalent of the air-circulating fans.

Overall coefficient of heat transfer calculated by the formula:

$$K = \frac{W_1 + W_2}{S.\Delta\theta}$$

K = ... $W/m^{2o}C$

Maximum error of measurement with test used . . . . . .

. . . . . .

. . . . . .

Remarks . . . . . .

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. . . . . .

Done at . . . . . on . . . . . .

. . . . . .

Testing Officer

TEST REPORT, MODEL 3

Test report

prepared in conformity with the provisions of the Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be used for such Carriage (ATP)

Efficiency of cooling appliances of refrigerated equipment[1/]

Approved testing station: name . . . . . .
address . . . . . .

Equipment: identification number . . . . . .
body built by . . . . . .
owned or operated by . . . . . .
. . . . . .
submitted by . . . . . .
date of entry into service . . . . . .

Type of equipment submitted[1/] . . . . . .

Make . . . . . .

Serial number . . . . . .

Tare weight[2/] . . . . . .kg

Carrying capacity[2/] . . . . . .kg

Total internal volume of body[2/] . . . . . .m^3

Principal internal dimensions . . . . . .

Total floor area of body . . . . . .m^2

Total outside surface area S_e of body . . . . . .m^2

Total inside surface area S_i of body . . . . . .m^2

Mean surface area: $S = \sqrt{S_i \cdot S_e}$ . . . . . .m^2

Specification of body casing[3/]:

top . . . . . .

bottom . . . . . .

sides . . . . . .

1/ Wagon, lorry, trailer, semi-trailer, container, etc.

2/ State source of information.

3/ Nature of insulating and surfacing materials, mode of construction, thickness, etc.

Insulating capacity of body:

value of K coefficient . . . . . $W/m^2{}^oC$

date of measurement of K coefficient . . . . . .

reference number of test report . . . . . .No. . . . .

registration number of body on which

K coefficient measured . . . . . .

Description of cooling appliance . . . . . .

. . . . . .

Nature of refrigerant . . . . . .

Nominal refrigerant filling capacity specified by manufacturer . . . .

. . . . . .kg

Actual filling of refrigerant used for test . . . . . .kg

Filling device (description; where situated) . . . . . .

Inside ventilating appliances:

description (number of appliances, etc.) . . . . . .

power of electric fans . . . . . W

delivery rate . . . . . $.m^3/h$

dimensions of ducts . . . . . m

Mean outside temperature and mean inside temperature of body at beginning

of test . . . . . .$^oC \pm$ . . .^oC and . . .$^oC \pm$ . . .^oC

Dew point in test chamber . . . . . .$^oC \pm$ . . .^oC

Power of internal heating system[1/] . . . . . W

Date and time of closure of equipment's doors and

other openings . . . . . .

Date and time of beginning of test . . . . . .

How long cold accumulated in case of equipment with

eutectic plates . . . . . h

Record of mean inside and outside temperatures of body, or curve

showing variation of these temperatures with time . . . . . .

. . . . . .

. . . . . .

1/ To be completed only in the case of new equipment.

Time between beginning of test and attainment of prescribed mean inside temperature of body . . . . . h

Remarks . . . . . .

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Done at . . . . . on . . . . . .

. . . . . .

Testing Officer

TEST REPORT, MODEL 4

Test report

prepared in conformity with the provisions of the Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be used for such Carriage (ATP)

Efficiency of cooling appliances of mechanically refrigerated equipment [1]

Approved testing station: name . . . . . .
address . . . . . .
Equipment: identification number . . . . . .
body built by . . . . . .
owned or operated by . . . . . .
. . . . . .
submitted by . . . . . .
date of entry into service . . . . . .
Type of equipment submitted [1] . . . . . .
Make . . . . . .
Serial number . . . . . .
Tare weight [2] . . . . . .kg
Carrying capacity [2] . . . . . .kg
Total internal volume of body [2] . . . . . .m^3
Principal internal dimensions . . . . . .
Total floor area of body . . . . . .m^2
Total outside surface area S_e of body . . . . . .m^2
Total inside surface area S_i of body . . . . . .m^2
Mean surface area: $S = \sqrt{S_i \cdot S_e}$ . . . . . .m^2
Specification of body casing [3]:
top . . . . . .
bottom . . . . . .
sides . . . . . .

1/ Wagon, lorry, trailer, semi-trailer, container, etc.

2/ State source of information.

3/ Nature of insulating and surfacing materials, mode of construction, thickness, etc.

Insulating capacity of body:

value of K coefficient . . . . . .$W/m^{2o}C$

date of measurement of K coefficient . . . . . .

reference number of test report . . . . . .No. . . . .

registration number of body on which

K coefficient measured . . . . . .

Mechanical refrigerating appliances:

description, make, number . . . . . .

effective refrigerating capacity stated by manufacturer for an outside temperature of + 30°C and an inside temperature of:

0°C . . . . . .

-10°C . . . . . .

-20°C . . . . . .

Inside ventilation appliances:

description (number of appliances, etc.) . . . . . .

power of electric fans . . . . . . W

delivery rate . . . . . .m^3/h

dimensions of ducts . . . . . m

Mean outside temperature and mean inside temperature of body at beginning of test . . . . . .°C ± . . .°C and . . .°C ± . . .°C

Dew point in test chamber . . . . . .°C ± . . .°C

Power of internal heating system[1/] . . . . . W

Date and time of closure of equipment's doors and other openings . . . . . .

Date and time of beginning of test . . . . . .

Record of mean inside and outside temperatures of body, or curve showing variation of these temperatures with time . . . . . .

. . . . . .

. . . . . .

1/ To be completed only in the case of new equipment.

Time between beginning of test and attainment of prescribed mean inside temperature of body . . . . . .h

Remarks . . . . . .

. . . . . .

. . . . . .

Done at . . . . . on . . . . . .

. . . . . .

Testing Officer

TEST REPORT, MODEL 5

Test report

prepared in conformity with the provisions of the Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be used for such Carriage (ATP)

Efficiency of heating appliances of heated equipment[1/]

Approved testing station: name . . . . . .
address . . . . . .

Equipment: identification number . . . . . .
body built by . . . . . .
owned or operated by . . . . . .
. . . . . .
submitted by . . . . . .
date of entry into service . . . . . .

Type of equipment submitted[1/] . . . . . .

Make . . . . . .

Serial number . . . . . .

Tare weight[2/] . . . . . .kg

Carrying capacity[2/] . . . . . .kg

Total internal volume of body[2/] . . . . . .m^3

Principal internal dimensions . . . . . .

Total floor area of body . . . . . .m^2

Total outside surface area S_e of body . . . . . .m^2

Total inside surface area S_i of body . . . . . .m^2

Mean surface area: $S = \sqrt{S_i \cdot S_e}$ . . . . . .m^2

Specification of body casing[3/]:

top . . . . . .

bottom . . . . . .

sides . . . . . .

1/ Wagon, lorry, trailer, semi-trailer, container, etc.

2/ State source of information.

3/ Nature of insulating and surfacing materials, mode of construction, thickness, etc.

Insulating capacity of body:

value of K coefficient . . . . . $W/m^2{}^oC$

date of measurement of K coefficient . . . . . .

reference number of test report . . . . . .No. . . . .

registration number of body on which

K coefficient measured . . . . . .

Mode of heating . . . . . .

Where applicable, effective power ratings of

heating appliance, in kW, as specified by

manufacturer . . . . . .

Operating time of heating appliance

at full output without recharging . . . . . h

Sites of heating appliances and

areas of exchange surfaces . . . . . .

. . . . . .

Overall areas of heat exchange surfaces . . . . . m^2

Inside ventilation appliances:

description (number of appliances, etc.) . . . . . .

power of electric fans . . . . . W

delivery rate . . . . . m^3/h

dimensions of ducts . . . . . m

Mean outside temperature and mean inside temperature of body at

beginning of test . . . . . $^oC \pm$ . . . ^oC and . . . $^oC \pm$ . . . ^oC

Date and time of closure of equipment's doors and

other openings . . . . . .

Date and time of beginning of test . . . . . .

Record of mean inside and outside temperatures of body, or curve

showing variation of these temperatures with time . . . . . .

. . . . . .

. . . . . .

Time between beginning of test and attainment of prescribed mean inside temperature of body . . . . . h

Where applicable, mean heating output during test to maintain prescribed temperature difference[1/] between inside and outside of body . . . . . W

Remarks. . . . . .

. . . . . .

. . . . . .

Done at . . . . . on . . . . . .

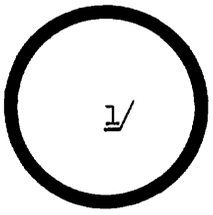
. . . . . .

Testing Officer

1/ Increased by 35% for new equipment.

Annex 1, Appendix 3

FORM OF CERTIFICATE FOR INSULATED, REFRIGERATED, MECHANICALLY REFRIGERATED OR HEATED EQUIPMENT USED FOR THE INTERNATIONAL CARRIAGE OF PERISHABLE FOODSTUFFS BY LAND



EQUIPMENT

INSULATED	REFRIGERATED	MECHANICALLY REFRIGERATED	HEATED

5/

CERTIFICATE 2/

issued pursuant to the Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be used for such Carriage (ATP)

1. Issuing authority . . . . . .
2. Equipment 3/ . . . . . .
3. Identification number . . . . . allotted by . . . . . .
4. Owned or operated by . . . . . .
5. Submitted by . . . . . .
6. Is approved as 4/ . . . . . .

6.1. with one or more thermal appliances which (is) (are):

6.1.1. independent;
6.1.2. not independent;
6.1.3. removable;
6.1.4. not removable.

5/

1/ Distinguishing sign of the country, as used in international road traffic.

2/ The blank certificate shall be printed in the language of the issuing country and in English, French or Russian; the various item shall be numbered as in the above model.

3/ State type (wagon, lorry, trailer, semi-trailer, container, etc.); in the case of tank equipment for the carriage of liquid foodstuffs, add the word "tank".

4/ Enter here one or more of the descriptions listed in appendix 4 of this annex, together with the corresponding distinguishing mark or marks.

5/ Strike out what does not apply.

7. Basis of issue of certificate

7.1. This certificate is issued on the basis of:

7.1.1. tests of the equipment;
7.1.2. conformity with a reference equipment;
7.1.3. a periodic inspection;
7.1.4. transitional provisions.

) 1/

7.2. If the certificate is issued on the basis of a test or by reference to an equipment of the same type which has been tested, specify:

7.2.1. the testing station . . . . . .

7.2.2. the nature of the tests 2/ . . . . . .

. . . . . .

7.2.3. the number(s) of the report(s) . . . . . .

7.2.4. the K coefficient . . . . . .

7.2.5. the effective refrigerating capacity 3/ at an outside temperature of 30°C and an inside temperature of . . .°C . . . W

- do - . . .°C . . . W

- do - . . .°C . . . W

8. This certificate is valid until . . . . . .

8.1. provided that:

8.1.1. the insulated body (and, where applicable, the thermal appliance) is maintained in good condition;

8.1.2. no material alteration is made to the thermal appliances; and

8.1.3. if the thermal appliance is replaced, it is replaced by an appliance of equal or greater refrigerating capacity.

9. Done at . . . . . 10. on . . . . . .

(The competent authority)

1/ Strike out what does not apply.

2/ For example: insulating capacity or efficiency of thermal appliances.

3/ Where measured in conformity with the provisions of appendix 2, paragraph 42, to this annex.

Annex 1, Appendix 4

DISTINGUISHING MARKS TO BE AFFIXED TO SPECIAL EQUIPMENT

The distinguishing marks prescribed in appendix 1, paragraph 5 to this annex shall consist of capital latin letters in dark blue on a white ground; the height of the letters shall be at least 12 cm. The marks shall be as follows:

Equipment	Distinguishing mark
Normally insulated equipment	IN
Heavily insulated equipment	IR
Class A refrigerated equipment with normal insulation	RNA
Class A refrigerated equipment with heavy insulation	RRA
Class B refrigerated equipment with heavy insulation	RRB
Class C refrigerated equipment with heavy insulation	RRC
Class A mechanically refrigerated equipment with normal insulation	FNA
Class A mechanically refrigerated equipment with heavy insulation	FRA
Class B mechanically refrigerated equipment with normal insulation	FNB*/
Class B mechanically refrigerated equipment with heavy insulation	FRB
Class C mechanically refrigerated equipment with normal insulation	FNC*/
Class C mechanically refrigerated equipment with heavy insulation	FRC
Class D mechanically refrigerated equipment with normal insulation	FND
Class D mechanically refrigerated equipment with heavy insulation	FRD

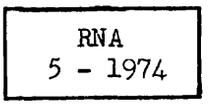
*/ See transitional provisions in paragraph 5 of this annex.

Equipment	Distinguishing mark
Class E mechanically refrigerated equipment with normal insulation	FNE*/
Class E mechanically refrigerated equipment with heavy insulation	FRE
Class F mechanically refrigerated equipment with normal insulation	FNF*/
Class F mechanically refrigerated equipment with heavy insulation	FRF
Class A heated equipment with normal insulation	CNA
Class A heated equipment with heavy insulation	CRA
Class B heated equipment with heavy insulation	CRB

If the equipment is fitted with removable or non-independent thermal appliances, the distinguishing mark or marks shall be supplemented by the letter X.

The date (month, year) entered under item 8 in appendix 3 of this annex as the date of expiry of the certificate issued in respect of the equipment shall be quoted under the distinguishing mark or marks aforesaid.

Model:



5 = month (May)) of expiry of the
1974 = year) certificate

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*/ See transitional provisions in paragraph 5 of this annex.

Annex 2

TEMPERATURE CONDITIONS FOR THE CARRIAGE OF QUICK (DEEP)-FROZEN AND FROZEN FOODSTUFFS

Annex 2

TEMPERATURE CONDITIONS FOR THE CARRIAGE OF QUICK (DEEP)-FROZEN AND FROZEN FOODSTUFFS

The highest temperature at any point in the load on loading, during carriage and on unloading shall not be higher than that indicated below for each foodstuff. However, if certain technical operations, such as defrosting the evaporator of mechanically refrigerated equipment, cause a brief rise of limited extent in the temperature of a part of the load, a temperature rise by not more than 3°C above the temperature indicated below for each foodstuff concerned may be tolerated.

Ice cream and frozen or quick (deep)-frozen concentrated fruit juices	-20°C
Frozen or quick (deep)-frozen fish	-18°C
All other quick (deep)-frozen foodstuffs	-18°C
Butter and other frozen fats	-14°C
Frozen red offal, egg yolks, poultry and game	-12°C
Frozen meat	-10°C
All other frozen foodstuffs	-10°C

Annex 3

TEMPERATURE CONDITIONS FOR THE CARRIAGE OF CERTAIN FOODSTUFFS WHICH ARE NEITHER QUICK (DEEP)-FROZEN NOR FROZEN

Annex 3

TEMPERATURE CONDITIONS FOR THE CARRIAGE OF CERTAIN FOODSTUFFS WHICH ARE NEITHER QUICK (DEEP)-FROZEN NOR FROZEN

During carriage, the temperatures of the foodstuffs in question shall not be higher than those indicated below:

Red offal	+ 3°C 3/
Butter	+ 6°C
Game	+ 4°C
Milk (raw or pasteurized) in tanks, for immediate consumption	+ 4°C 3/
Industrial milk	+ 6°C 3/
Dairy products (yoghurt, kefir, cream, and fresh cheese)	+ 4°C 3/
Fish 1/ (must always be carried "in ice")	+ 2°C
Meat products 2/	+ 6°C
Meat (other than red offal)	+ 7°C
Poultry and rabbits	+ 4°C

1/ Other than smoked, salted, dried or live fish.

2/ Except for products stabilized by salting, smoking, drying or sterilization.

3/ In principle, the duration of carriage should not exceed 48 hours.