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CAN/CGSB-43.125-2021

Supersedes CAN/CGSB-43.125-2016

Packaging of Category A and Category B infectious substances (Class 6, Division 6.2) and clinical, (bio) medical or regulated medical waste

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mail — Canadian General Standards Board
140 O'Connor Street, Tower East
Ottawa, Ontario Canada K1A 0S5

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NATIONAL STANDARD OF CANADA **CAN/CGSB-43.125-2021**

Supersedes CAN/CGSB-43.125-2016

Packaging of Category A and Category B infectious substances (Class 6, Division 6.2) and clinical, (bio) medical or regulated medical waste

CETTE NORME NATIONALE DU CANADA EST DISPONIBLE EN VERSIONS FRANÇAISE ET ANGLAISE.

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Translation of this National Standard of Canada was conducted by the Government of Canada.

Preface

This National Standard of Canada CAN/CGSB-43.125-2021 supersedes the 2016 edition published in April 2016.

Changes since the previous edition

- Alignment with the 21st edition of the United Nations Recommendations on the Transport of Dangerous Goods - Model Regulations (Orange Book) (e.g. updated definitions, packing instruction for UN3549 – see bullet below).
- Modification of packaging information requirements when infectious substance packaging is made available as a kit.
- Periodic retest of Type P620 packaging design every five years.
- Clarification of the requirements for the preparation of a Type P650 packaging design report (Note: this report must be prepared, but submission to Transport Canada is not required).
- Introduction of packing instructions for the transport of the new classification UN3549, MEDICAL WASTE, CATEGORY A, AFFECTING HUMANS, solid or MEDICAL WASTE, CATEGORY A, AFFECTING ANIMALS only, solid.
- Clarify improvements to the selection and use requirements outlined in Part II and Part III (eg. removal of any classification-related requirements from this packaging standard).
- Incorporation of UN large packaging codes permitted for transport in Part III, pursuant to the publication of the CAN/CGSB-43.145 standard (published but not yet in force under the TDG regulations).
- New clause in Part II and Part III outlining the reuse provisions for infectious substance packaging.
- New general use clauses introduced into Part III for consistency with Part II.

The following definitions apply in understanding how to implement this standard:

- "shall" indicates a **requirement**;
- "should" indicates a **recommendation**;
- "may" is used to indicate that something is **permitted**;
- "can" is used to indicate that something is **possible**, for example, that an organization is able to do something.

Notes accompanying clauses do not include requirements or alternative requirements. The purpose of a note accompanying a clause, is to separate explanatory or informative material from the text. Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

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Introduction

This is the fifth edition of CAN/CGSB-43.125, *Packaging of Category A and Category B infectious substances (Class 6, Division 6.2) and clinical, (bio) medical or regulated medical waste*. It supersedes the previous edition published in 2016.

This standard is intended for incorporation by reference into the *Transportation of Dangerous Goods Regulations* (TDG Regulations). Where there are differences between the requirements of the TDG Regulations and this standard, the TDG Regulations prevail, unless specified otherwise, to the extent of the difference.

This standard is based on the *Recommendations on the Transport of Dangerous Goods, Model Regulations*, 21st edition, published by the United Nations (UN).

This standard also provides requirements for a quality management system and Transport Canada registration.

Packaging of Category A and Category B infectious substances (Class 6, Division 6.2) and clinical, (bio) medical or regulated medical waste

1 Scope

1.1 Organization and content

This National Standard of Canada sets out requirements for designing, manufacturing, marking, testing, selecting and using means of containment for the transportation of Category A and Category B infectious substances in Class 6, Division 6.2, solid medical waste of Category A and clinical, (bio) medical or regulated medical waste.

This standard consists of three parts and one annex.

Part I contains the requirements for the design, test, manufacture and marking of type P620 and type P650 packaging.

Part II contains the requirements for the selection and use of means of containment (i.e. packaging) for infectious substances of Category A and Category B.

Part III contains the requirements for the selection and use of standardized and non-standardized means of containment for the transport of clinical, (bio) medical or regulated medical waste.

Annex A contains the minimum requirements for the completion of a packaging design report.

1.2 Application

This standard applies to both standardized and non-standardized means of containment as defined in the *Transportation of Dangerous Goods Regulations*.

1.3 Minimum requirements

This standard sets out certain minimum requirements for designing, manufacturing, selecting, using, and testing of means of containment. It is essential to exercise competent technical and engineering judgment in conjunction with this standard.

It is the responsibility of the packaging manufacturer to ensure that the packaging will safely carry out its intended function within these constraints.

1.4 *Transportation of Dangerous Goods Act* and *Regulations* prevalence

The *Transportation of Dangerous Goods Act,* 1992 (TDG Act), and the *Transportation of Dangerous Goods Regulations* (TDG Regulations) may call for additional requirements regarding the design, manufacture, selection, use, and test of means of containment. Where there is an inconsistency between the requirements of this standard and those of the TDG Act or TDG Regulations, the Act or Regulations prevail to the extent of the inconsistency.

It should be noted that this standard, by itself, does not have the force of law unless it is officially adopted by a regulatory authority. It is recommended to read the standard in conjunction with the TDG regulations.

1.5 Safety

The testing and evaluation of a product against this standard may require the use of materials and/or equipment that could be hazardous. This document does not purport to address all the safety aspects associated with its use.

Anyone using this standard has the responsibility to consult the appropriate authorities and to establish appropriate health and safety practices in conjunction with any requirements prior to its use.

1.6 Units of measurement

Quantities and dimensions used in this standard are provided in SI units.

1.7 Classification

Dangerous goods are classified in accordance with Part 2 of the TDG Regulations and the appropriate UN number, shipping name and description, class, division, packing group/category, as applicable, are assigned.

2 Normative references

The following normative documents contain provisions that, through reference in this text, constitute provisions of this National Standard of Canada. The referenced documents may be obtained from the sources noted below.

Note: The contact information provided below was valid at the date of publication of this standard.

An undated reference is to the latest edition or revision of the reference or document in question, unless otherwise specified by the authority applying this method. A dated reference is to the specified revision or edition of the reference or document in question.

2.1 Canadian General Standards Board (CGSB)

CAN/CGSB-43.145 — *Design, manufacture and use of large packagings for the transportation of dangerous goods, classes 3, 4, 5, 6.1, 8, and 9*

CAN/CGSB-43.146 — *Design, manufacture and use of intermediate bulk containers for the transportation of dangerous goods, classes 3, 4, 5, 6.1, 8 and 9*

CAN/CGSB-43.150 — *Design, manufacture and use of UN Standardized drums, jerricans, boxes, bags, combination packaging, composite packaging and other packagings for the transport of dangerous goods, classes 3, 4, 5, 6.1, 8, and 9*

2.1.1 Contact information

The above may be obtained from the Canadian General Standards Board, Sales Centre. Telephone: 1-800-665-2472. E-mail: ncr.cgsb-ongc@tpsgc-pwgsc.gc.ca. Web site: www.tpsgc-pwgsc.gc.ca/ongc-cgsb/index-eng.html.

2.2 Canadian Standards Association (CSA)

CSA Z316.6-95 — *Evaluation of single use medical sharps containers for biohazardous and cytotoxic waste*

2.2.1 Contact information

The above may be obtained from CSA Group, Standards Sales. Telephone: 416-747-4044 or 1-800-463-6727. Fax: 416-747-2510. E-mail: sales@csagroup.org. Web site: www.shop.csa.ca.

2.3 Transport Canada

Transportation of Dangerous Goods Act, 1992 (including amendments)

Transportation of Dangerous Goods Regulations (including amendments)

2.3.1 Contact information

The above may be obtained from the Publishing and Depository Services, Public Services and Procurement Canada. Telephone: 613-941-5995 or 1-800-635-7943. Fax: 613-954-5779 or 1-800-565-7757. E-mail: publications@tpsgc-pwgsc.gc.ca. Web site: www.publications.gc.ca.

2.4 ASTM International

D951-17 — *Standard test method for water resistance of shipping containers by spray method*

D1709-16ae1 — *Standard test methods for impact resistance of plastic film by the free-falling dart method*

D1922-15 — *Standard test method for propagation tear resistance of plastic film and thin sheeting by pendulum method*

D4332-14 — *Standard Practice for Conditioning Containers, Packages, or Packaging Components for Testing*

D4991-07(2015) — *Standard test method for leakage testing of empty rigid containers by vacuum method*

D5276-19 — *Standard test method for drop test of loaded containers by free fall*

2.4.1 Contact information

The above may be obtained from ASTM International, telephone: 610-832-9585, fax: 610-832-9555, Web site: www.astm.org, or from IHS Global Canada Ltd., telephone: 613-237-4250 or 1-800-267-8220, fax: 613-237-4251, Web site: www.global.ihs.com.

2.5 Technical Association of the Pulp and Paper Industry (TAPPI)

T 802 OM-17 — *Drop test for fiberboard shipping containers*

T 810 OM-17 — *Bursting strength of corrugated board*

T 811 OM-17 — *Edgewise compressive strength of corrugated fiberboard (short column test)*

T 839 OM-12 — *Edgewise compressive strength of corrugated fiberboard using the clamp method (short column test)*

2.5.1 Contact information

The above may be obtained from Technical Association of the Pulp and Paper Industry, TAPPI Inc., telephone: 1-800-446-9431 (Canada), 1-800-332-8686 (U.S.A.), 770-446-1400 (Worldwide), fax: 770-209-7206, e-mail: memberconnection@tappi.org, Web site: www.tappi.org/, or from IHS Global Canada Ltd., telephone: 613-237-4250 or 1-800-267-8220, fax: 613-237-4251, Web site: www.global.ihs.com.

2.6 United Nations (UN)

Recommendations on the Transport of Dangerous Goods, Model Regulations (21st revised edition)

2.6.1 Source

The above may be obtained from distributors of United Nations Publications or from the United Nations Publications Customer Service. Telephone: 1-703-661-1571. Fax: 1-703-996-1010. E-mail: order@un.org. The publication can be viewed and downloaded at https://unece.org/fileadmin/DAM/trans/danger/publi/unrec/rev21/ST-SG-AC10-1r21e_Vol1_WEB.pdf and https://unece.org/fileadmin/DAM/trans/danger/publi/unrec/rev21/ST-SG-AC10-1r21e_Vol2_WEB.pdf.

3 Terms and definitions

For the purposes of this National Standard of Canada, the following terms and definitions apply. Where there is a conflict between a term or definition in this standard and that of the TDG Regulations, the term or definition in the TDG Regulations shall prevail.

3.1
Category A
infectious substance that is transported in a form such that, when it is released outside of its means of containment and there is physical contact with humans or animals, it is capable of causing permanent disability or life-threatening or fatal disease in otherwise healthy humans or animals.

3.2
Category B
infectious substance that does not meet the criteria for inclusion in Category A.

3.3
clinical, (bio) medical or regulated medical waste
waste that is derived from the veterinary treatment of animals or the medical treatment of humans or from bio-research or that have similar characteristics as those wastes.

3.4
combination packaging
packaging consisting of one or more inner packagings or articles contained in an outer packaging for transport.

3.5
director
Executive director, Regulatory Frameworks and International Engagement, Regulatory Affairs Branch, Transportation of Dangerous Goods Directorate, Transport Canada.

3.6
design registration number
number issued by the Director to a manufacturer certifying that the design of the P620 packaging meets all applicable requirements of this standard.

3.7
infectious substances
substances known or reasonably believed to contain pathogens. Pathogens are micro-organisms such as bacteria, viruses, parasites, fungi and other agents such as prions that are known or reasonably believed to cause disease in humans or animals.

3.8
inner packaging
packaging for which an outer packaging is required for transport.

3.9
large packaging
packaging consisting of an outer packaging which contains articles or inner packagings and which:

a) is designed for mechanical handling; and

b) exceeds 400 kg net mass but has a volume of not more than 3 m^3.

3.10
leakproof
impermeable to liquid contents or to solid contents that may become liquid under normal condition of transport.

3.11
outer packaging
outer protection of a combination packaging (excluding an overpack) together with any absorbent materials, cushioning and any other components necessary to contain and protect primary receptacles or secondary inner packagings.

3.12
packaging
receptacle and any other components or materials necessary for the receptacle to perform its containment function.

3.13
primary receptacle
receptacle in direct contact with its content.

3.14
secondary inner packaging
inner packaging, including absorbent material as required, that provides additional protection for the primary receptacle(s).

3.15
sift-proof
impermeable to dry contents, including any fine solid material produced during transport.

3.16
TC
Transport Canada.

3.17
TDG Act
Transportation of Dangerous Goods Act, 1992, as amended from time to time.

3.18
TDG Regulations
Transportation of Dangerous Goods Regulations, as amended from time to time.

3.19
type P620 packaging
packaging consisting of a primary receptacle(s), secondary inner packaging(s) and outer packaging intended for the transport of infectious substances of Category A.

3.20
type P650 packaging
packaging consisting of a primary receptacle(s), secondary inner packaging(s) and outer packaging intended for the transport of infectious substances of Category B.

3.21
UN packaging symbol

Part I

Design, test and manufacture of type P620 and P650 packagings

4 General requirements

4.1 Design, test and manufacture

Type P620 and P650 packagings shall be designed, tested, and manufactured in accordance with the requirements of Part I of this standard.

4.2 Standardized packaging

4.2.1 To be considered as a type P620 packaging, the following requirements shall be met:

a) the compliance marks conform to the requirements of 5.1;

b) the packaging was designed and constructed in accordance with 4.3.1.1 and 6.1;

c) a representative prototype of the packaging has been successfully tested in accordance with the requirements of section 7 and Table 2A;

d) the packaging was manufactured under a quality management system in accordance with 9.1;

e) a design report is prepared in accordance with annex A; and

f) the packaging design is registered with the Director in accordance with the requirements of section 10.

4.2.2 To be considered as a type P650 packaging, the following requirements shall be met:

a) the compliance marks conform to the requirements of 5.2;

b) the packaging was designed and constructed in accordance with 4.3.1.2 and 6.2;

c) a representative prototype of the packaging has been successfully tested in accordance with the requirements of section 7 and Table 2B;

d) the packaging was manufactured under a quality management system in accordance with 9.2; and

e) a design report is prepared in accordance with annex A.

4.3 Packaging design

4.3.1 Performance

4.3.1.1 Type P620 packaging

The packaging shall conform to a registered design for which a representative prototype has been tested and found to meet the applicable performance requirements set out in section 7 and Table 2A of this standard, except for design variations permitted in section 8 or Part II of this standard.

4.3.1.2 Type P650 packaging

The packaging shall conform to a representative prototype that has been tested and found to meet the applicable performance requirements set out in section 7 and Table 2B of this standard, except for design variations permitted in section 8 or Part II of this standard.

4.3.2 Internal pressure

4.3.2.1 Type P620 packaging

The primary receptacle or the secondary inner packaging shall be capable of withstanding without leakage a pressure differential of not less than 95 kPa in accordance with 7.5.

4.3.2.2 Type P650 packaging

For liquid infectious substances transported by aircraft, the primary receptacle or the secondary inner packaging shall be capable of withstanding without leakage a pressure differential of not less than 95 kPa in accordance with 7.5.

4.3.3 Temperature resistance

The primary receptacle or the secondary inner packaging of a type P620 packaging shall be capable of withstanding temperatures in the range of -40 to 55 °C.

4.3.4 Refrigerants

The primary receptacle and the secondary inner packaging of packagings intended to contain a refrigerant shall maintain their integrity at the temperature of the refrigerant used as well as at the temperatures and the pressures which could result if refrigeration were lost.

4.4 Packaging information

4.4.1 When made available as a kit, the packaging manufacturer or distributor shall document the following information in relation to each packaging design:

a) instructions for assembling and closing the packaging with all required components and materials (e.g. closures, gaskets, binding) so the packaging can be prepared for transport in a manner that, under normal conditions of transport, including handling, there will be no release of infectious substances that could endanger public safety;

b) the maximum capacity of the tested primary receptacles; and

c) the maximum net capacity or mass of the packaging (e.g. this may be represented by the total number and capacity of the primary receptacles, or the combined net mass of the inner packagings).

4.4.2 The packaging manufacturer or distributor shall transmit the packaging information to a packaging purchaser upon the purchaser's initial purchase of the corresponding packaging. Packaging information may be provided in written or electronic form.

4.4.3 The packaging manufacturer or distributor shall make available the packaging information to a packaging user upon request.

5 Compliance marks

5.1 Marks on a type P620 packaging

5.1.1 General

5.1.1.1 Required marks

The marks shall be durable, legible, placed in a location and of such a size as to be readily visible.

5.1.1.2 Location of marks

5.1.1.2.1 For packagings with a gross mass of more than 30 kg, the marks (or a duplicate thereof) shall appear on the top or side of the packaging. For drums and jerricans with a removable head, the marks shall appear on the side.

5.1.1.2.2 For packagings with a gross mass of 30 kg or less, the marks (or a duplicate thereof) shall appear on the top, side or bottom. For drums and jerricans with a removable head, the marks shall appear on the side or bottom.

5.1.1.3 Size of marks

Letters, numerals and symbols comprising the marks shall be at least 12 mm high, except that:

a) marks on packagings of 30 L maximum capacity or 30 kg gross mass or less shall be at least 6 mm high; and

b) marks on packagings of 5 L maximum capacity or 5 kg gross mass or less shall be at least 3 mm high.

5.1.2 Content and sequence of marks

The following marks are required and shall be displayed in the following sequence with each of the elements clearly separated from one another:

a) the UN packaging symbol as defined in section 3;

b) the packaging code of the outer packaging listed in Table 1 and, when applicable, the letter "**U**" or "**W**" assigned to the packaging code in accordance with 5.1.4;

c) the text: "CLASS 6.2";

d) the last two digits of the year of manufacture of the packaging;

e) the three-letter country code "CAN", which denotes Canada as the country authorizing the use of the UN mark;

f) the name or symbol of the manufacturer, as submitted to and registered by the Director; and

g) the Design Registration Number issued in accordance with 10.4.

5.1.3 Examples of marks

5.1.3.1 Solid plastic box:

4H2/CLASS 6.2/19 as in 5.1.2 a), b), c), d)
CAN/ABC 8-9999 as in 5.1.2 e), f) and g)

For a packaging with solid plastic box outer packaging, for infectious substances of Category A and manufactured in 2019. The design was registered in Canada, by the manufacturer identified as ABC under the registration number 8-9999.

5.1.3.2 **Special packaging** ("U" mark):

4GU/CLASS 6.2/19 as in 5.1.2 a), b), c), d)
CAN/ABC 8-9999 as in 5.1.2 e), f) and g)

For a special packaging with a fibreboard box outer packaging, for infectious substances of Category A and manufactured in 2019. The design was registered in Canada, by the manufacturer identified as ABC under the registration number 8-9999.

5.1.4 Letter assigned to the packaging code (“U” or “W” mark)

5.1.4.1 Special packaging

The letter “U” shall not be assigned to the packaging code unless:

a) The secondary inner packaging and rigid outer packaging combination has been successfully drop tested in accordance with 7.3 with fragile (e.g. glass) primary receptacles;

b) The total combined gross mass of primary receptacles shall not exceed one half the gross mass of primary receptacles used for the drop test in 7.3; and

c) The rigid outer packaging has successfully passed the stacking test in accordance with par. 7.5 of CAN/CGSB-43.150 while empty. The stacking test load shall be based on the combined mass of the filled inner packaging(s) used for the drop test.

5.1.4.2 Packaging of an equivalent specification

The letter “W” shall not be assigned to the packaging code unless it was assigned in accordance with 10.10.

5.2 Marks on a type P650 packaging

5.2.1 General

5.2.1.1 Required marks

The marks shall be durable, legible, placed in a location and of such a size as to be readily visible.

5.2.1.2 Location of marks

The marks shall be displayed on the external surface of the outer packaging on a background of a contrasting colour and on one side, other than a side on which it is intended to rest or to be stacked during transport.

5.2.1.3 Content and size of marks

The marks shall be in the form of a square on point with each side having a length of at least 50 mm; the width of the line shall be at least 2 mm and the letters and numbers shall be at least 6 mm high.

6 Construction

6.1 Type P620 packaging

6.1.1 Components

The packaging shall consist of the following components:

a) Inner packagings comprising:

   1) leakproof primary receptacle(s);

   2) leakproof secondary inner packaging(s);

b) a rigid outer packaging of adequate strength for its capacity, mass and intended use of which the smallest external dimension is at least 100 mm. The outer packaging shall be selected from Table 1.

Table 1 — Packaging codes[1]

Type	Material	Category	Code
1. Drums	A. Steel	non-removable head	1A1
		removable head	1A2
	B. Aluminum	non-removable head	1B1
		removable head	1B2
	D. Plywood		1D
	G. Fibre		1G
	H. Plastic	non-removable head	1H1
		removable head	1H2
	N. Metal, other than steel or aluminum	non-removable head	1N1
		removable head	1N2

[1] The packagings associated to the UN packaging code listed in Table 1 are UN standardized containers that meet the requirements applicable to this type of packagings as set out in CAN/CGSB-43.150 or the UN Recommendations and the Regulations of the country of origin, as the case may be, and are marked accordingly.

Type	Material	Category	Code
3. Jerricans	A. Steel	non-removable head	3A1
		removable head	3A2
	B. Aluminum	non-removable head	3B1
		removable head	3B2
	H. Plastic	non-removable head	3H1
		removable head	3H2
4. Boxes	A. Steel		4A
	B. Aluminum		4B
	C. Natural wood	ordinary	4C1
		with sift-proof walls	4C2
	D. Plywood		4D
	F. Reconstituted wood		4F
	G. Fibreboard		4G
	H. Plastic	expanded	4H1
		solid	4H2
	N. Metal, other than steel or aluminum		4N

6.1.2 Absorbent

For liquid infectious substances, an absorbent material shall be placed between the primary receptacle(s) and the secondary inner packaging and in sufficient quantity to absorb the entire content of the primary receptacle(s).

6.1.3 Primary receptacle

Primary receptacles intended for the transportation of:

a) substances consigned at ambient temperature or at a higher temperature shall be made of glass, metal or plastic;

b) substances consigned in liquid nitrogen shall be made of plastic and capable of withstanding very low temperature; or

c) lyophilized substances may be consigned in flame-sealed glass ampoules or rubber-stoppered glass vials fitted with metal seals.

6.1.4 Closures

For substances consigned at ambient temperature or at a higher temperature, positive means of ensuring a leakproof seal shall be provided, e.g. heat seal, a skirted stopper or a metal crimp seal. If screw caps are used, they shall be secured by positive means, e.g, tape, paraffin sealing tape or manufactured locking closure.

6.1.5 Multiple primary receptacles

If multiple fragile (e.g. glass) primary receptacles are placed in a secondary inner packaging, the primary receptacles shall be individually wrapped or otherwise separated to prevent contact between them.

6.1.6 Refrigerants

Packaging intended to contain a refrigerant such as ice, dry ice or liquid nitrogen shall conform to the following requirements:

a) In the case of ice or dry ice, the refrigerant shall be placed

   1) around the secondary inner packaging(s); or

   2) in an overpack.

b) Interior supports shall be provided to secure secondary inner packaging(s) or outer packaging(s) in the original position after the refrigerant has dissipated.

c) In the case of ice, the outer packaging or overpack shall be leakproof or made leakproof by another equally effective means such that any leakage of condensate or water is prevented.

d) In the case of dry ice or liquid nitrogen, the outer packaging or overpack shall permit the release of gas.

e) The primary receptacle(s) and the secondary inner packaging shall maintain their integrity at the temperature of the refrigerant used.

6.2 Type P650 packaging

6.2.1 Components

The packaging shall consist of the following components:

a) Inner packagings comprising:

   1) primary receptacle(s);

   2) secondary inner packaging(s);

b) An outer packaging of adequate strength for its capacity, mass and intended use of which the smallest external dimension is at least 100 mm;

of which either the secondary inner packaging(s) or the outer packaging shall be rigid.

6.2.2 For liquid infectious substances

a) The primary receptacle(s) shall be leakproof.

b) The secondary inner packaging(s) shall be leakproof.

Absorbent material shall be placed between the primary receptacle(s) and the secondary inner packaging and in sufficient quantity to absorb the entire contents of the primary receptacle(s).

Secondary inner packagings shall be secured in outer packagings with suitable cushioning material.

6.2.3 For solid infectious substances

a) The primary receptacle(s) shall be sift-proof.

b) The secondary inner packaging(s) shall be sift-proof.

6.2.3.1 If residual liquid may be present in the primary receptacle during transport then a packaging meeting the requirements of 6.2.2 shall be used.

6.2.4 Multiple primary receptacles

If multiple fragile (e.g. glass) primary receptacles are placed in a secondary inner packaging, the primary receptacles shall be individually wrapped or otherwise separated to prevent contact between them.

6.2.5 Refrigerants

Packaging intended to contain a refrigerant such as ice, dry ice or liquid nitrogen shall conform to the following requirements:

a) In the case of ice or dry ice, the refrigerant shall be placed

   1) around the secondary inner packaging(s); or

   2) in an overpack.

b) Interior supports shall be provided to secure secondary inner packaging(s) or outer packaging(s) in the original position after the refrigerant has dissipated.

c) In the case of ice, the outer packaging or overpack shall be leakproof or made leakproof by another equally effective means such that any leakage of condensate or water is prevented.

d) In the case of dry ice or liquid nitrogen, the outer packaging or overpack shall permit the release of gas.

e) The primary receptacle(s) and the secondary inner packaging shall maintain their integrity at the temperature of the refrigerant used.

7 Testing

7.1 General requirements

Each representative prototype of a P620 or P650 packaging shall pass the required tests prescribed in Section 7.

7.1.1 Test schedule

Packagings selected for testing shall be representative of the design intended for production. The tests required for type P620 packagings are set out in 7.3 to 7.5 and Table 2A of this standard, and the tests required for type P650 packagings are set out in 7.3 and 7.5 (if applicable) and Table 2B of this standard.

7.1.2 Design variations

Tests shall be repeated after each variation of the design, material or manner of construction of a packaging unless the variations are permitted in Section 8. Design variations shall be documented in the design report. The Director may permit some or all of the tests prescribed by Section 7 to be waived for a P620 packaging design that differs only in minor respects from a registered packaging design. Design variations for P620 packaging shall be submitted to the Director.

7.1.3 Periodic retest of P620 packaging design

Subject to 10.13, a manufacturer shall retest a representative set of samples of a registered P620 packaging design at an interval of no more than five years. The representative set of samples of a packaging shall pass the required tests prescribed by Section 7. The required number of packagings specified by the applicable tests shall be used. The results of the tests shall be captured in a report that includes the information required by A.2. The Director may permit some or all of the tests prescribed by Section 7 to be waived for registered packaging designs that differ only in minor respects from registered P620 packaging designs that have been retested in accordance with this clause.

7.2 Preparation for testing

7.2.1 Fill and close the packagings for testing in the same manner as for transport. All closures shall be installed as specified by the closure manufacturer or packaging manufacturer.

7.2.2 Each primary receptacle shall be filled to not less than 98% of its capacity. Liquid or solid infectious substances shall be replaced by water or, where conditioning at –18 °C is specified, by water/antifreeze with a minimum specific gravity of 0.95.

7.2.3 Despite 7.2.2, P650 packagings intended for solids may be tested with another test medium with similar physical properties (mass, particle size, etc.) instead of water.

Table 2A —Test requirements — Testing required on a type P620 packaging

Type of packaging[a]			Conditioning				Tests required				
			Ambient temperature	Special preparation							
Rigid outer packaging	Primary receptacle[b]			Water spray	Cold conditioning	Dry ice[c]	Drop	Additional drop[c]	Stacking[d]	Puncture	Internal pressure[e]
	Plastic	Other	Number of samples				Number of samples				
Fibreboard box	X		0	5	5	1	10	1	3	2	3
		X	0	5	0	1	5	1	3	2	3
Fibreboard drum	X		0	3	3	1	6	1	3	2	3
		X	0	3	0	1	3	1	3	2	3
Plastic box	X		0	0	5	1	5	1	3	2	3
		X	0	0	5	1	5	1	3	2	3
Plastic drum / Jerrican	X		0	0	3	1	3	1	3	2	3
		X	0	0	3	1	3	1	3	2	3
Box of other material	X		0	0	5	1	5	1	3	2	3
		X	5	0	0	1	5	1	3	2	3
Drum / Jerrican of other material	X		0	0	3	1	3	1	3	2	3
		X	3	0	0	1	3	1	3	2	3

[a] The material of the secondary inner packagings is not taken into consideration when selecting the test or conditioning for the test.

[b] Where a primary receptacle is made of two or more materials, the material most liable to damage determines the appropriate test.

[c] Additional drop test on a single sample is required when the packaging is intended to contain dry ice (see 7.3.5.3).

[d] Required when testing a special packaging “U” (see 5.1.4.1 and 11.6).

[e] Required for the primary receptacle or secondary inner packaging when testing a packaging for solid or liquid infectious substances (see 4.3.2.1).

Table 2B — Test requirements — Testing required on a type P650 packaging

Type of packaging[a]			Conditioning				Tests required		
			Ambient temperature	Special preparation					
Outer packaging	Primary receptacle[b]			Water spray	Cold conditioning	Dry ice[c]	Drop	Additional drop[c]	Internal pressure[d]
	Plastic	Other	Number of samples				Number of samples		
Fibreboard box	X		0	5	5	1	10	1	3
		X	0	5	0	1	5	1	3
Fibreboard drum	X		0	3	3	1	6	1	3
		X	0	3	0	1	3	1	3
Plastic box	X		0	0	5	1	5	1	3
		X	0	0	5	1	5	1	3
Plastic drum / Jerrican	X		0	0	3	1	3	1	3
		X	0	0	3	1	3	1	3
Box of other material	X		0	0	5	1	5	1	3
		X	5	0	0	1	5	1	3
Drum / Jerrican of other material	X		0	0	3	1	3	1	3
		X	3	0	0	1	3	1	3

[a] The material of the secondary inner packagings is not taken into consideration when selecting the test or conditioning for the test.

[b] Where a primary receptacle is made of two or more materials, the material most liable to damage determines the appropriate test.

[c] Additional drop test on a single sample is required when the packaging is intended to contain dry ice (see 7.3.5.3).

[d] Required for the primary receptacle or secondary inner packaging when testing a packaging for liquid infectious substances transported by aircraft (see 4.3.1.2).

7.3 Drop test

Types P620 and P650 packagings shall be subjected to the drop test in accordance with this clause.

7.3.1 Test method

7.3.1.1 Perform the drop test in accordance with ASTM D5276 using the appropriate drop orientation as specified in 7.3.5 and the appropriate number of packagings in accordance with Tables 2A and 2B. Where more than one orientation is possible for a given drop test, the orientation most likely to result in failure of the packaging shall be used.

7.3.1.2 Where the packaging is intended to contain dry ice, the packaging shall be conditioned as required by 7.3.2 and one additional drop test (refer to Tables 2A and 2B) shall be carried out in accordance with 7.3.5.3.

7.3.1.3 For fibreboard boxes (4G), the drop test may be conducted in accordance with TAPPI T 802.

7.3.1.4 Except for flat drops, the centre of gravity shall be vertically over the point of impact.

7.3.1.5 The test packagings shall be dropped on a rigid, non-resilient, flat, smooth, massive and horizontal surface.

7.3.1.6 The drop test shall be performed with the packagings in the conditioning atmosphere, specified in 7.3.2, or within 15 min of removal from the conditioning atmosphere.

7.3.2 Conditioning

7.3.2.1 Ambient temperature conditioning

Packagings requiring ambient temperature conditioning shall be conditioned in accordance with ASTM D4332.

7.3.2.2 Special preparation of test sample for the drop test

7.3.2.2.1 Fibreboard outer packagings — Water spray test

Subject the packagings to a water spray that simulates exposure to a rainfall of approximately 5 cm per hour for at least one hour in accordance with ASTM D951.

7.3.2.2.2 Primary receptacles or outer packagings made of plastic — Cold conditioning

Subject the packagings to a temperature of -18 °C or lower for a period of not less than 24 h in accordance with ASTM D4332. If the sample contains dry ice, then the conditioning period may be reduced to 4 h.

7.3.2.2.3 Packaging intended to contain dry ice – Additional drop test

One packaging intended for the additional drop required by 7.3.1.2 shall be stored until all the dry ice has dissipated.

7.3.3 Procedure

7.3.3.1 After the drop test, examine each primary receptacle for evidence of leakage.

7.3.3.2 Examine if the primary receptacle(s) remained protected by cushioning/absorbent material in the secondary inner packaging.

7.3.4 Drop height

7.3.4.1 Type P620 packagings shall be dropped from a minimum height of 9.0 m.

7.3.4.2 Type P650 packagings shall be dropped from a minimum height of 1.2 m.

7.3.5 Orientation

7.3.5.1 Where the samples are in the shape of a box, five shall be dropped, one in each of the following orientations:

Box 1 — flat on the bottom;

Box 2 — flat on the top;

Box 3 — flat on one long side;

Box 4 — flat on one short side;

Box 5 — diagonally on bottom corner. Fibreboard boxes shall be dropped on the manufacturer’s joint bottom corner.

7.3.5.2 Where the samples are in the shape of a drum or a jerrican, three shall be dropped one in each of the following orientations:

Sample 1 — diagonally on the top edge, with the centre of gravity directly above the point of impact;

Sample 2 — diagonally on the base edge;

Sample 3 — flat on the body or side.

7.3.5.3 Sample of a packaging intended to contain dry ice

Drop one packaging in one of the orientations described in 7.3.5.1 or 7.3.5.2, as appropriate, which shall most likely result in failure of the packaging.

7.3.6 Criteria of a successful test

There shall be no release of the contents from the primary receptacle(s) which shall remain protected by cushioning/absorbent material in the secondary inner packaging. The secondary inner packaging shall be retained within the outer packaging. A minor exposure of the secondary inner packaging is acceptable if it is not possible to withdraw the secondary inner packaging from the outer packaging.

7.4 Puncture test

Type P620 packagings shall be subjected to the puncture test in accordance with this clause.

7.4.1 Puncture device

The puncture device shall be a cylindrical steel rod having a diameter of 38 mm, a mass of 8.0 ± 1.0 kg, and an impact end edge radius equal to or less than 6 mm.

All dimensions are in millimetres.

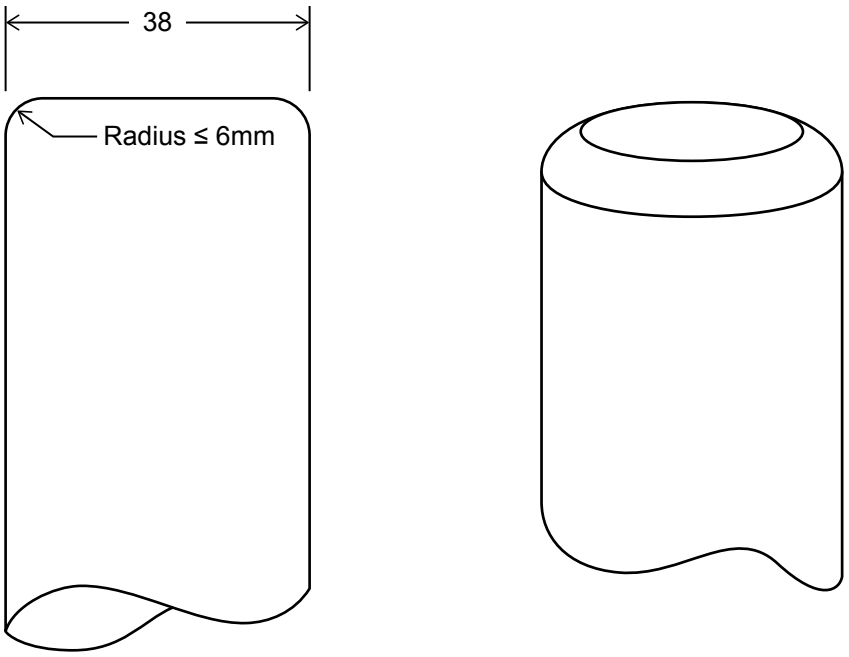

Figure 1 — Puncture device

7.4.2 Test method

7.4.2.1 Packagings with a gross mass of 7 kg or less

The packaging shall be placed on a level hard surface and the puncture device shall be dropped in a vertical free fall position.

7.4.2.2 Packagings with a gross mass exceeding 7 kg

The puncture device shall be set vertically on a level hard surface and shall protrude from the surface a distance at least equal to that between the centre of the primary receptacle(s) and the outer surface of the outer packaging with a minimum of 200 mm. The packaging shall be dropped in a vertical free fall position.

7.4.3 Procedure

Examine the primary receptacle(s) for evidence of leakage.

7.4.4 Drop height

7.4.4.1 Packaging with a gross mass of 7 kg or less

The puncture device shall be dropped from a height of 1 m, measured from the impact end of the device to the impact surface of the packaging.

7.4.4.2 Packaging with a gross mass exceeding 7 kg

Packaging shall be dropped from a height of 1 m, measured from the impact surface of the packaging to the top of the puncture device.

7.4.5 Orientation

7.4.5.1 Packaging with a gross mass of 7 kg or less

The impact end of the puncture device shall be aimed to impact the primary receptacle(s) and shall strike the packaging sample at a location

a) on the top of the first packaging; and

b) on the side of the second packaging.

7.4.5.2 Packaging with a gross mass exceeding 7 kg

The packaging shall be dropped on top of the puncture device so that

a) the top face of the first packaging strikes the impact end of the puncture device; and

b) the side of the second packaging strikes the impact end of the puncture device.

7.4.5.2.1 The packaging must be oriented so that the puncture device would be capable of penetrating the primary receptacle.

7.4.6 Criteria of a successful test

There shall be no release of the contents from the primary receptacle(s). Penetration of the secondary inner packaging is acceptable provided that there is no leakage from the primary receptacle(s).

7.5 Internal pressure test

The primary receptacle or the secondary inner packaging of a type P620 packaging for liquids and solids shall be subjected to the pressure test in accordance with this clause. The primary receptacle or the secondary inner packaging of a type P650 packaging for liquids transported by aircraft shall be subjected to the pressure test in accordance with this clause.

7.5.1 Pressure gauge

The pressure shall be measured by use of a gauge that

a) has a range of no less than 1.5 times the test pressure;

b) has a range of no more than 5 times the test pressure; and

c) is calibrated at least annually or in accordance with the gauge manufacturer recommendations.

Various means of pressure measurement calibration may be used as long as a procedure is established for ensuring that instruments are maintained and calibrated, and they operate within suitable parameters.

7.5.2 Test method

7.5.2.1 Install an appropriate fitting into three packagings in such a manner that the performance of the packaging is not affected.

7.5.2.2 For rigid packagings, the pressure test shall be conducted in accordance with ASTM D4991.

7.5.3 Procedure

7.5.3.1 Restrain the packagings, including their closures, under the surface of water for a period of 10 min while an internal air pressure of not less than 95 kPa is applied. The restraints shall not affect the results of the test.

7.5.3.2 Examine all surfaces and seams of the packagings for leakage as evidenced by the formation of bubbles while the packaging is under water and under constant air pressure.

7.5.3.3 Other methods, at least equally effective, may be used if written procedures properly describe the test method and there is suitable data to validate the test method. Such methods include gas leak detection (e.g. helium testers), pressure differential test or soap solution applied on the surface of the entire packaging. The appropriate test method shall be selected based on the packaging type.

7.5.4 Criteria for a successful test

Tested packagings shall not leak.

8 Permitted design variations

8.1 Design variation requiring no testing

Provided that an equivalent level of performance is maintained, the following variations of primary receptacles within a secondary inner packaging are allowed without further testing.

8.1.1 Primary receptacles of equivalent or smaller size

Primary receptacles of equivalent or smaller size as compared to the tested primary receptacles may be used provided:

a) the primary receptacles are of similar design to the tested primary receptacle (e.g. shape: round, rectangular, etc.);

b) the material of construction of the primary receptacle (glass, plastic, metal, etc.) offers resistance to impact and stacking forces equal to, or greater than, that of the originally tested primary receptacle;

c) the primary receptacles have the same or smaller openings and the closure is of similar design (e.g. screw cap, friction lid, etc.);

d) sufficient additional cushioning material is used to take up void spaces and to prevent significant movement of the primary receptacles; and

e) primary receptacles are oriented within the secondary inner packaging in the same manner as in the tested package.

8.1.2 Quantity of primary receptacles

A lesser number of the tested primary receptacles, or other types of primary receptacles meeting 8.1.1 a), may be used provided sufficient cushioning is added to fill the void space(s) and to prevent significant movement of the primary receptacles.

9 Quality management system

9.1 Type P620 packaging

Packagings shall be manufactured under a quality management system capable of ensuring that the packagings are in accordance with the tested and registered design specified in the design report, the requirements of this standard and the TDG Regulations.

9.2 Type P650 packaging

Packagings shall be manufactured under a quality management system capable of ensuring that the packagings are in accordance with the tested design specified in the design report, the requirements of this standard and the TDG Regulations.

10 Transport Canada registration

10.1 General

This section applies to type P620 packagings only. Type P650 packagings are not required to be registered with the Director.

10.2 Registration by the Director

Type P620 packaging shall not be manufactured under this standard unless the manufacturing facility and the packaging design have been registered by the Director.

10.3 Certificate of registration

A manufacturing facility is registered upon issuance, by the Director, of a Certificate of registration. The Certificate of registration remains valid until its indicated expiry date or its revocation for cause.

10.4 Design registration number

A type P620 packaging design is registered upon issuance, by the Director, of a Design registration number. The Design registration number remains valid until its revocation for cause.

10.5 Application for registration

An application for registration of a manufacturer shall be submitted to the Director and, at a minimum, shall include the following information:

a) name, street address and mailing address of the company or individual applying for registration;

b) name, title, address, email and telephone number of the corporate officer or other person responsible for compliance with this standard;

c) name, title, address, email and telephone number of the local contact person responsible for compliance with this standard, if different from item b);

d) if the applicant is not an individual, letters patent, certificates of incorporation, or other documents evidencing the legal existence of the applicant;

e) the manufacturing facility locations where the packaging will be manufactured;

f) the packaging information as required in 4.4;

g) proposed marks as required in 5.1;

h) the design report in accordance with annex A for all packaging designs to be registered;

i) a statement declaring that all requirements of this standard have been met, including the date and signature of the officer responsible for compliance to this standard on behalf of the packaging manufacturer. If the manufacturer did not perform the testing, the statement shall also be signed and dated by the responsible officer of the company that has performed the testing; and

j) description of the quality management system required in Section 9. The description of the quality management system shall include the scope of the quality management system and a summary of operations and controls documented under the quality management system that are relevant to this standard.

10.5.1 Record retention

The manufacturer shall keep a copy of:

a) every application for registration, including design reports for as long as P620 packagings are manufactured and at least two years thereafter;

b) test report of the periodic retest of packaging design required by 7.1.3 for at least five years or until the packaging is retested.

10.6 Registration and compliance

A Certificate of registration and Design registration number shall be issued by the Director, for a manufacturing facility if the Director is satisfied that:

a) the packagings manufactured and marked are representative of the registered design;

b) the packaging manufacturer conforms to the applicable requirements of this standard; and

c) the manufacturer is capable of consistently complying with the requirements of this standard.

10.7 Revocation for cause

10.7.1 Certificate of registration

The Director may revoke a Certificate of registration if the Director is satisfied that:

a) the packagings, as manufactured, are not representative of the registered designs or do not comply to the applicable requirements of this standard;

b) the manufacturer is not capable of complying with the requirements of this standard; or

c) the manufacturer is not complying with the requirements of this standard.

10.7.2 Design registration number

The Director may revoke a Design registration number if the Director is satisfied that:

a) the packagings, as manufactured, are not representative of the registered design as described in the Design report;

b) the packaging has not been retested in accordance with 7.1.3; or

c) the packagings do not comply with the requirements of this standard.

10.8 Expiry of Certificate of registration

The manufacture of packagings may continue past the expiry date of the Certificate of registration, if:

a) application for renewal in accordance with 10.9 is received by the Director at least 90 calendar days prior to the expiry date;

b) new Certificate of Registration has not been issued;

c) application for renewal has not been rejected by the Director; and

d) Certificate of Registration due to expire has not been revoked by the Director.

10.9 Application for amendment or renewal of Certificate of Registration

An application for amendment or renewal of a Certificate of registration is subject to the same process and conditions as the initial application for Certificate of registration relating to the manufacturer. The application for renewal shall also include the test report for the periodic retest of packaging design required by 7.1.3, when applicable.

10.10 Equivalent specification (“W” mark)

The Director may issue a Design Registration number for a packaging design that, although of a type described in Table 1, is manufactured to a different specification, if the Director is satisfied that the packaging is equivalent to a packaging that conforms to the requirements of this standard. The Director shall assign the capital letter “W” to the packaging code.

10.11 Design modifications

Any change in packaging design that results in the information of the previously submitted design report to no longer be accurate shall be submitted to the Director as an application to manufacture a new packaging design. If the new design is within the permitted design variations such that no new testing is required, the application shall identify the previously tested design. If limited testing of the modified design is required, the design report shall include the relevant results.

10.12 Transition period

A Certificate of registration issued in accordance with the CAN/CGSB-43.125-2016 standard for a packaging design shall be deemed to be registered as a manufacturing facility pursuant to Section 10 of this standard unless the certificate has expired or been revoked.

10.13 Transition period for the periodic retest of P620 packaging design

Starting 24 months after this standard comes into force, 7.1.3 applies.

Part II

Selection and use of packagings for infectious substances of Category A and Category B

11 General requirements

11.1 Selection and use

11.1.1 Infectious substances that meet the Category A classification criteria and are assigned to UN2814 or UN2900 shall be handled, offered for transport or transported in a type P620 packaging.

11.1.2 Infectious substances that meet the Category B classification criteria and are assigned to UN3373 shall be handled, offered for transport or transported in a type P650 packaging or in a type P620 packaging.

11.2 Filling and closing

11.2.1 Liquids shall only be filled into packagings that have an appropriate resistance to the internal pressure that may develop under normal conditions of transport and meets the requirements set out in 4.3.2.

11.2.2 A person assembling or closing a packaging shall assemble and close the packaging as instructed in the information provided by the packaging manufacturer or distributor in accordance with 4.4.

11.3 Reuse of packaging

The primary receptacle(s) of a type P620 or type P650 packaging shall not be reused. The secondary inner packaging or outer packaging of a type P620 or P650 shall not be reused unless each are inspected and are found to be free from contamination, damage or defects that may render the packaging unsafe for transport.

11.4 Air transport

Infectious substances handled, offered for transport or transported by aircraft shall also comply with Part 12 of the TDG Regulations.

11.5 Marine transport

Infectious substances handled, offered for transport or transported by vessel shall also comply with Part 11 of the TDG Regulations.

11.6 Special packaging (“U” mark)

Primary receptacles of any type, for solids or liquids, may be assembled and marked in accordance with 5.1.2 b) and 5.1.4.1 with the letter “U”, in a type P620 packaging, if:

a) the cushioning thickness between primary receptacles and between primary receptacle and the outside of the secondary inner packaging has not been reduced compared to the corresponding thickness used in the successfully tested design. If a single primary receptacle was used in the original test, the thickness of cushioning between primary receptacles shall not be less than the thickness of cushioning between the outside of the secondary inner packaging and the primary receptacle in the original test. When either a fewer number or smaller primary receptacles are used (as compared to the primary receptacles used in the drop test), sufficient additional cushioning material shall be used to take up void spaces;

b) primary receptacles containing liquid are completely surrounded with a sufficient quantity of absorbent material to absorb the entire contents of the primary receptacles; and

c) for an outer packaging that is not sift-proof or leakproof, a leakproof liner, plastic bag, or other equally effective means is inserted in the outer packaging to contain any release of solids or liquids, as applicable, from the inner packaging.

11.7 Dangerous goods that are solids, which may become liquid

A container intended for liquids shall be used for solids that may become liquid at temperatures likely to be encountered during transport.

Part III

Selection and use of packagings for the transport of clinical, (bio) medical or regulated medical waste

12 General requirements

12.1 Clinical, (bio) medical or regulated medical waste assigned to UN2814 or UN2900

Clinical, (bio) medical or regulated medical waste containing Category A infectious substances and assigned to UN2814 or UN2900 shall be handled, offered for transport or transported in a type P620 packaging.

12.2 Solid medical waste assigned to UN3549

Solid medical waste containing Category A infectious substances and assigned to UN3549, shall be handled, offered for transport or transported in a triple packaging consisting of the following components:

a) metal or plastic inner packaging;

b) metal or plastic intermediate packaging; and

c) a code 1A2, 1B2, 1D, 1G, 1H2, 1N2, 3A2, 3B2, 3H2, 4A, 4B, 4D, 4G, 4H2 or 4N or a code 50A, 50B, 50N, 50D, 50G, 50H outer packaging that meets the packaging group II performance level for solids, at minimum.

12.2.1 The packaging shall meet the following additional requirements:

a) Sharp objects (e.g. broken glass and needles) shall be placed in rigid puncture-resistant inner packagings.

b) For fragile articles, the inner packaging or intermediate packaging shall be rigid.

c) Flexible packagings, such as plastic bags, used as an inner or intermediate packaging shall:

   1) meet the requirements of Table 6;

   2) not exceed 30 kg when used as an inner packaging;

   3) contain only one inner packaging when used as an intermediate packaging.

d) The inner packaging, the intermediate packaging, and the outer packaging shall be capable of retaining liquids. Outer packagings that are not capable of retaining liquids shall be fitted with a leakproof liner or other equally effective means.

e) Intermediate packagings shall be secured in outer packagings with suitable cushioning and/or absorbent material.

f) Sufficient absorbent or solidifying material shall be placed in the inner packaging or intermediate packaging to eliminate the presence of any free liquid.

g) A fibreboard box that meets the requirements of columns 1, 2 and 3 or columns 1, 2 and 4 of Table 7 may be used as an outer packaging instead of a packaging listed in 12.2 c).

h) The exterior surface of the inner packaging or intermediate packaging shall be disinfected before being placed into the outer packaging.

i) The small containers and large packagings associated to the UN packaging code listed in 12.2 c) shall be UN standardized containers that meet the requirements applicable to this type of container as set out in CAN/CGSB-43.150 or CAN/CGSB-43.145, as applicable or the UN Recommendations and the Regulations of the country of origin, as the case may be, and are marked accordingly.

12.3 Clinical, (bio) medical or regulated medical waste assigned to UN3291

Clinical, (bio) medical or regulated medical waste that is assigned to UN3291 shall be transported in any of the following means of containment:

a) UN standardized small container for packing group I or II, for liquids or solids listed in Table 3. If the container is not leakproof, a plastic bag meeting the requirements of Table 6 shall be inserted in the container to contain any possible release of liquids.

The small containers associated to the UN packaging code listed in Table 3 shall be UN standardized containers that meet the requirements applicable to this type of container as set out in CAN/CGSB-43.150 or the UN Recommendations and the Regulations of the country of origin, as the case may be, and are marked accordingly.

Table 3 — Selected packaging codes for UN standardized small containers

Type	Material	Category	Packaging code
1. Drums	A. Steel	non-removable head	1A1
		removable head	1A2
	B. Aluminum	non-removable head	1B1
		removable head	1B2
	D. Plywood	-	1D
	G. Fibre	-	1G
	H. Plastic	non-removable head	1H1
		removable head	1H2
	N. Metal, other than steel or aluminum	non-removable head	1N1
		removable head	1N2
3. Jerricans	A. Steel	non-removable head	3A1
		removable head	3A2
	B. Aluminum	non-removable head	3B1
		removable head	3B2
	H. Plastic	non-removable head	3H1
		removable head	3H2
4. Boxes	A. Steel	-	4A
	B. Aluminum	-	4B
	C. Natural wood	ordinary	4C1
		with sift-proof walls	4C2
	D. Plywood	-	4D
	F. Reconstituted wood	-	4F
	G. Fibreboard	-	4G
	H. Plastic	expanded	4H1
		solid	4H2
	N. Metal, other than steel or aluminum	-	4N

Type	Material	Category	Packaging code
6. Composite packagings	H. Plastic inner receptacle	in steel drum	6HA1
		in steel crate or box	6HA2
		in aluminum drum	6HB1
		in aluminum crate or box	6HB2
		in wooden box	6HC
		in plywood drum	6HD1
		in plywood box	6HD2
		in fibre drum	6HG1
		in fibreboard box	6HG2
		in plastic drum	6HH1
		in solid plastic box	6HH2
	P. Glass, porcelain or stoneware inner receptacle	in steel drum	6PA1
		in steel crate or box	6PA2
		in aluminum drum	6PB1
		in aluminum crate or box	6PB2
		in wooden box	6PC
		in plywood box	6PD1
		in wickerwork hamper	6PD2
		in fibre drum	6PG1
		in fibreboard box	6PG2
		in expanded plastics outer packaging	6PH1
		in solid plastic outer packaging	6PH2

b) UN standardized IBC for packing group I or II, for liquids or solids listed in Table 4.

The type of IBCs associated to the UN IBC code listed in Table 4 shall be UN standardized IBCs that meet the requirements applicable to this type of IBC as set out in CAN/CGSB-43.146 or the UN Recommendations and the Regulations of the country of origin, as the case may be, and are marked accordingly.

Table 4 — Selected packaging codes for UN standardized IBCs

Type	Type of IBC	Design characteristics	IBC Code
Flexible[a] (13)	Plastic (H)	Woven plastic with liner	13H3
		Woven plastic, coated and with liner	13H4
	Textile (L)	Coated with liner	13L4
Rigid[a] (11 and 31)	For solids, loaded or discharged by gravity (11)	Steel	11A
		Aluminum	11B
		Plastic, fitted with structural equipment	11H1
		Plastic, free-standing	11H2
		Natural wood with inner liner	11C
		Plywood with inner liner	11D
		Reconstituted wood with inner liner	11F
		Fibreboard with inner liner	11G
		Metal other than steel or aluminum	11N
	For liquids (31)	Steel	31A
		Aluminum	31B
		Plastic, fitted with structural equipment	31H1
		Plastic, free-standing	31H2
		Metal other than steel or aluminum	31N
Composite[a] with plastic inner receptacle (11 and 31)	For solids, loaded or discharged by gravity (11HZ[a])	with rigid plastic inner receptacle	11HZ1
		with flexible plastic inner receptacle	11HZ2
	For liquids (31HZ[a])	with rigid plastic inner receptacle	Such as: 31HA1 and 31HH1
		with flexible plastic inner receptacle	Such as: 31HA2 and 31HH2

[a] The single capital letter following the rigid IBC numerical codes or the letter “Z” following the letter “H” in composite IBC with plastic inner receptacle codes stands for the capital letter as specified in the following list that represents the material of either the body of the rigid IBC or the outer frame body of a composite IBC:

A — Steel

B — Aluminum

C — Natural wood

D — Plywood

F — Reconstituted wood

G — Fibreboard

H — Plastic or rubber

L — Textile

M — Paper

N — Metal other than steel or aluminum

c) UN standardized large packagings (LP) for packing group II, for liquids or solids listed in Table 5.

The type of large packagings associated to the LP code listed in Table 5 shall be UN standardized large packagings that meet the requirements applicable to this type of large packaging as set out in CAN/CGSB-43.145 or the UN Recommendations and the Regulations of the country of origin, as the case may be, and are marked accordingly.

Table 5 — Selected packaging codes for UN standardized large packagings

Column 1	Column 2	Column 3
Large packaging (LP)	**Design characteristics**	**LP Code**
Rigid[a]	Steel	50A
	Aluminum	50B
	Natural wood	50C
	Plywood	50D
	Reconstituted wood	50F
	Fibreboard	50G
	Plastic	50H
	Metal (other than steel or aluminum)	50N
Flexible	Plastic	51H
	Paper	51M

[a] A rigid LP shall retain its general shape when empty.

d) A non-standardized combination packaging consisting of a securely-closed plastic bag that meets the requirements of Table 6 and is contained in a securely closed outer packaging that is

   1) rigid, leakproof and designed for repeated use; or

   2) a fibreboard box that meets the requirements of columns 1, 2 and 3 or columns 1, 2 and 4 of Table 7;

e) a type P620 packaging;

f) a type P650 packaging.

12.3.1 Sharp objects

Packaging intended to contain sharp objects such as broken glass and needles shall:

a) meet the requirements of CSA Z316.6, or

b) be rigid, leakproof, puncture resistant and designed for repeated use.

Table 6 — Plastic bag strength requirements

Test	Test standard	Nominal value
Elmendorf tear strength	ASTM D1922	480 g MD[a] 480 g TD[b]
Dart impact strength	ASTM D1709	165 g

[a] MD = Machine direction

[b] TD = Transverse direction

Table 7 — Fibreboard box

Type of fibreboard	Column 1 Maximum weight of box and contents kg (lb)	Column 2 Maximum outside dimensions L+W+H cm (in)	Column 3 Minimum bursting strength[a] kPa (lb/in^2)	Column 4 Minimum edge crush[b] test (ECT) kN/m (lb/in)
Singlewall	16 (35)	190 (75)	1380 (200)	5.6 (32)
	23 (50)	216 (85)	1720 (250)	7.0 (40)
	30 (65)	241 (95)	1900 (275)	7.7 (44)
	30 (65)	267 (105)	2410 (350)	9.6 (55)
Doublewall	30 (65)	216 (85)	1380 (200)	7.4 (42)
	30 (65)	241 (95)	1900 (275)	8.4 (48)
	30 (65)	267 (105)	2410 (350)	8.9 (51)

[a] The minimum bursting strength test shall be conducted in accordance with TAPPI T 810.

[b] The edge crush test (ECT) shall be conducted in accordance with TAPPI T 811 or TAPPI T 839.

12.4 Filling and closing

12.4.1 Liquids shall only be filled into packagings that have an appropriate resistance to the internal pressure that may develop under normal conditions of transport and meets the requirements set out in 4.3.2.

12.4.2 A person assembling or closing a packaging shall assemble and close the packaging as instructed in the information provided by the packaging manufacturer or distributor.

12.5 Reuse of packaging

For reuse of P620 and P650 packagings, refer to 11.3. Other packaging used under this clause shall not be reused unless each are inspected and are found to be free from contamination or infectious substances hazard, damage or defects that may render the packaging unsafe for transport.

12.6 Air transport

Infectious substances handled, offered for transport or transported by aircraft shall also comply with Part 12 of the TDG Regulations.

12.7 Marine transport

Infectious substances handled, offered for transport or transported by vessel shall also comply with Part 11 of the TDG Regulations.

12.8 Dangerous goods that are solids, which may become liquid

A container intended for liquids shall be used for solids that may become liquid at temperatures likely to be encountered during transport.

Annex A
(normative)

Design report for type P620 and P650 packagings

A.1 The following are the minimum requirements for the completion of test reports in accordance with the requirements of this standard. Type P620 packaging design reports shall be submitted to the Director. Information provided in the reports will be confidential. Type P650 packaging design reports shall not be submitted to the Director but shall be retained by the manufacturing facility for as long as the packaging is manufactured and at least two years thereafter.

A.2 The report shall be dated, display a unique identification number and include the following headings and information.

A.2.1 Introduction

a) The manufacturer's name, address and telephone number;

b) A general description of the package types;

c) The manufacturing facility locations where the package will be manufactured.

A.2.2 Design (Prototypes)

A.2.2.1 Drawings

At least one drawing of the completed package (e.g. assembly drawing) showing assembly method and sequence, overall dimensions, materials and general construction, inner and outer packagings, liners, etc., if applicable. (Photographs for clarification should be included.)

A.2.2.2 Materials and construction

The materials and construction for the outer and inner packagings and any other components (e.g. absorbent material, cushioning, dividers, coatings, closures, liners, pads, gaskets).

A.2.2.2.1 Materials

a) Fibreboard – The composition (nominal basis weight of solid or linerboard and corrugating medium, corrugating flute type, adhesive [i.e. regular or water resistant]), minimum burst strength, puncture strength or edge crush strength of the solid or corrugated board.

b) Metal – The material type and specification (e.g. ASTM or ISO); the nominal thickness.

c) Plastic – The resin type, density, strength properties for film.

A.2.2.2.2 Construction

a) Fabrication and closure methods, fasteners, fastener spacing, closure torque, coatings, etc. as applicable.

b) Fibreboard:

1) the box style;

2) the drawings of liners and dividers, the boxmaker's drawing or sketch showing board inside dimensions (flat) and direction of corrugations;

3) the type of manufacturer's joint (glued, stitched or taped);

4) the closure types: glued, stitched or taped

i) Glued: type and coverage of glue,

ii) Stapled: type, size, number and pattern of staples,

iii) Taped: type, dimensions and location of tape,

c) Metal – The type of seam, seaming compound and weld.

A.2.2.2.3 The detailed material data may be provided on part lists and/or detailed drawings. These drawings may be included with the report or referenced on a list indicating the drawing revision that applies to the prototype design. If drawings are referred to but not included, copies shall be retained by the manufacturer and made available to the Director upon request. Copies of referenced specifications shall also be retained by the manufacturer.

A.2.3 Performance testing

A.2.3.1 Tests required

A reference to the applicable sections of the standard.

A.2.3.2 Test methods and equipment

a) A description of the type, capacity, etc. of the equipment used. For pressure gauges, the serial number or unique identifier of the gauge and a statement indicating the gauge was in calibration when used.

b) The test methods used.

c) Any variations, with justification, from the test methods prescribed by this standard.

d) A description of the test samples including contents, net and gross mass as tested. Include a statement that the samples tested were randomly selected (if selected from production) and represent the package intended for manufacture.

A.2.3.3 Test results

a) The test results in terms of the pass/fail criteria of the specific test and samples tested. (Results may be displayed in tabular form.)

b) A description of the damage in detail.

c) The results listed in a sequence corresponding to "Tests Required".

d) Photographs and/or videos of the samples taken during/after testing.

A.2.4 Certification

a) A statement declaring that all requirements of CAN/CGSB-43.125 have been met.

b) Name, address, telephone number and signature of the person who conducted the tests and his employer, if different from the package manufacturer.

c) Signature of the responsible officer for the manufacturer.

A.2.5 Documentation

A copy of the packaging information in accordance with 4.4.

A.2.6 Marking

An indication of the proposed marking in accordance with 5.1 or 5.2, as appropriate.