Government of Canada
Gouvernement du Canada

Canadian General Standards Board
Office des normes générales du Canada

CAN/CGSB-43.151-2024

Supersedes CGSB-43.151-2019

Packaging, handling, offering for transport and transport of explosives (Class 1)

Canadian General Standards Board CGSB

SCC CCN

Canada

Experience and excellence
Expérience et excellence
CGSB ONGC

Canadian General Standards Board statement

The CANADIAN GENERAL STANDARDS BOARD (CGSB), under whose auspices this standard has been developed, is a government directorate within Public Services and Procurement Canada. CGSB is engaged in the production of voluntary standards in a wide range of subject areas through the media of standards committees and the consensus process. The standards committees are composed of representatives of relevant interests including producers, consumers and other users, retailers, governments, educational institutions, technical, professional and trade societies, and research and testing organizations. Any given standard is developed on the consensus of views expressed by such representatives.

CGSB has been accredited by the Standards Council of Canada as a national Standards Development Organization. The standards that CGSB develops and offers as National Standards of Canada conform to the requirements and guidance established for this purpose by the Standards Council of Canada. In addition to standards it publishes as National Standards of Canada, CGSB may produce other deliverables that meet particular needs, in response to requests from a variety of sources in both the public and private sectors. CGSB standards and CGSB's National Standards are developed in conformance with the policies described in the CGSB Policy and Procedures Manual for the Development and Maintenance of Standards.

CGSB's standards are subject to review and revision to ensure that they keep abreast of technological progress. CGSB will review and publish this standard on a schedule not to exceed five years from the date of publication. Suggestions for their improvement, which are always welcome, should be brought to the notice of the standards committees concerned. Changes to standards may be issued as amendments or as new editions of standards.

An up-to-date listing of CGSB's standards, including details on latest issues and amendments, is found in the CGSB Catalogue at the following Web site, http://www.tpsgc-pwgsc.gc.ca/ongc-cgsb/index-eng.html, along with more information about CGSB products and services.

Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

The testing and evaluation of a product or service against this standard may require the use of materials and/or equipment that could be hazardous. This standard 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 applicable regulatory requirements prior to its use. CGSB neither assumes nor accepts any responsibility for any injury or damage that may occur during or as the result of tests, wherever performed.

Attention is drawn to the possibility that some of the elements of this standard may be the subject of patent rights. CGSB shall not be held responsible for identifying any or all such patent rights. Users of this standard are expressly advised that determination of the validity of any such patent rights is entirely their own responsibility.

For enforcement purposes, standards shall be considered published the final day of the month of their publication date.

Contact the Canadian General Standards Board

To obtain information on CGSB, its services and standards or to obtain CGSB publications, please contact us:

web — http://www.tpsgc-pwgsc.gc.ca/ongc-cgsb/index-eng.html

e-mail — ncr.cgsb-ongc@tpsgc-pwgsc.gc.ca

telephone — 1-800-665-2472

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

Standards Council of Canada statement

A National Standard of Canada is a standard developed by a Standards Council of Canada (SCC) accredited Standards Development Organization, in compliance with requirements and guidance set out by SCC. More information on National Standards of Canada can be found at www.scc.ca.

SCC is a Crown corporation within the portfolio of Innovation, Science and Economic Development (ISED) Canada. With the goal of enhancing Canada's economic competitiveness and social well-being, SCC leads and facilitates the development and use of national and international standards. SCC also coordinates Canadian participation in standards development, and identifies strategies to advance Canadian standardization efforts.

Accreditation services are provided by SCC to various customers, including product certifiers, testing laboratories, and standards development organizations. A list of SCC programs and accredited bodies is publicly available at www.scc.ca.

NATIONAL STANDARD OF CANADA **CAN/CGSB-43.151-2024**

Supersedes CGSB-43.151-2019

Packaging, handling, offering for transport and transport of explosives (Class 1)

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

ICS 55.020

Published April 2024 by the
Canadian General Standards Board
Ottawa, Ontario K1A 0S5

CANADIAN GENERAL STANDARDS BOARD

Committee on Packing of Explosives for Transport

(Voting membership at date of ballot)

Chair

Serge Dionne	Transport Canada (Regulator)

Producer category

Dan Hawman	Hawman Container Services
Jim Pauw	Mitchel-Lincoln Packaging Ltd.
Kimberly Norrie	Magellan Aerospace
Krishnar Konashor	Scepter Canada Inc.
Lisa Nitschke	ORICA USA INC. and ORICA Canada INC
Simon Castonguay	Protexplo

User category

Aaron Galt	Maxam Explosives Inc.
Ben Heath	Enserva
John Yarymowich	General Dynamics Ordnance and Tactical Systems – Canada Inc.
Pierre St-Georges	Dyno Nobel Canada Inc.
Todd Giles	HFI Pyrotechnics

General interest category

Al Loan	Canadian Explosives Industry Association
Ken Kendall	Kendall & Associates
Rod Boulay	V&R Enterprises
Sandra Goldthorp	Natural Resources Canada, Canadian Explosives Research Laboratory
Steven Bradley	Department of National Defence, Ammunition and Explosive Management and Engineering (DAEME)

Regulator category

Michael Lafleur	Natural Resources Canada - Explosives Regulatory Division

Committee Manager (non-voting)

Beata Hart	Canadian General Standards Board

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

Preface

This National Standard of Canada CAN/CGSB-43.151-2024 supersedes the 2019 edition.

Changes since the previous edition

- Updated list of explosives, special provisions and packing instructions to align with the 22nd edition of the UN recommendations.
- Updated references to other dangerous goods packaging standards.
- Updated packing instruction EP101, CEP 01 and CEP 02.
- Added requirements on the reuse of packagings and use of partially filled packagings to transport Class 1 Explosives.
- Updated decontamination requirements.
- Added provision to prohibit the use of lightweight IBC for the transport of Class 1 Explosives.

The following definitions apply in understanding how to implement this National Standard of Canada:

- "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.

Contents Page

Tables

Introduction

This is the sixth edition of CAN/CGSB-43.151, *Packaging, handling, offering for transport and transport of Explosives (Class 1)*. It supersedes the previous edition published in 2019.

The standard was updated in order to maintain consistency with and to incorporate language from other CGSB and Transport Canada publications that pertain to the *Transportation of Dangerous Goods Regulations* (TDG Regulations). This was done in order to facilitate compatibility with the other TDG standards referenced in the TDG Regulations.

This standard is intended for incorporation by reference into the 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 takes into account the UN Recommendations on the Transport of Dangerous Goods — Model Regulations, twenty-second revised edition and it is recommended that it is read in conjunction with standards referenced in section 2 Normative references.

The standard contains requirements for

- packaging used for handling, offering for transport and transport of Class 1, Explosives;
- the selection and use of packaging for the handling, offering for transport and transport of explosives, in Canada;
- explosives packing instructions; and
- the use of highway tanks, portable tanks and intermediate bulk containers (IBCs) for the transport of bulk explosives.

The CGSB Committee on Packing of Explosives for Transport is comprised of members having responsibility and expertise in design, manufacturing, testing, use and regulation of packaging for handling, offering for transport and transport of Class 1, Explosives. The Committee considers this standard, developed by consensus, to be practical, current with respect to technology and industry practices, useful and acceptable to all interested parties.

It is the intent of the CGSB Committee to maintain this standard in a manner that provides the maximum degree of harmonization with the UN Recommendations while meeting the needs of Canada.

This standard was prepared by the CGSB Committee on Packing of Explosives for Transport and has been formally approved by the Committee.

Packaging, handling, offering for transport and transport of explosives (Class 1)

1 Scope

1.1 Organization and content

This standard prescribes packaging for handling, offering for transport and transport of Explosives (Class 1). This standard consists of four parts and three annexes.

Part 1 specifies general requirements for the selection and use of packaging including application, packaging provisions and re-use of packaging.

Part 2 specifies requirements for UN standardized packaging for the transport of explosives.

Part 3 specifies requirements for highway tanks and portable tanks for the transport of explosives.

Part 4 specifies requirements for intermediate bulk containers (IBCs) for the transport of explosives.

Annex A (normative) consists of the table of explosives.

Annex B (normative) consists of the explosives packing instructions and packaging codes.

Annex C (informative) consists of a glossary of terms and a table that associates the glossary entries to UN numbers.

1.2 Explosives regulations

The *Explosives Regulations, 2013,* administered by Natural Resources Canada, may set out additional requirements regarding the design, construction, qualification, selection and use of packaging for explosives.

1.3 Minimum requirements

This standard sets out certain minimum requirements regarding the selection and use of packaging. It is essential to exercise competent technical and engineering judgment in conjunction with this standard.

1.4 Additional requirements

1.4.1 Conflict

The *Transportation of Dangerous Goods Act*, *1992* (TDG Act) and the *Transportation of Dangerous Goods Regulations* (TDG Regulations) may set out additional requirements regarding the design, construction, qualification, selection, and use, or testing of packaging. Where there is an inconsistency between the requirements of this standard and those of the TDG Act or TDG Regulations, the TDG Act or TDG Regulations prevail to the extent of the inconsistency. It is recommended to read the standard in conjunction with the TDG Regulations.

1.4.2 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 standard 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 applicable regulatory requirements prior to its use.

1.4.3 Units

Units of measurement – Quantities and dimensions used in this standard are provided in units from the International System of Units (SI units). Imperial equivalents may be shown in brackets, if applicable.

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 standard. 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-43.126 — *Reconditioning, remanufacturing and repair of drums for the transportation of dangerous goods*

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. Telephone: 1-800-665-2472. E-mail: ncr.cgsb-ongc@tpsgc-pwgsc.gc.ca. Web site: https://www.tpsgc-pwgsc.gc.ca/ongc-cgsb/index-eng.html.

They may also be obtained from the Government of Canada Publications, Publishing and Depository Services, Public Services and Procurement Canada. Telephone: 1-800-622-6232. Web site: https://publications.gc.ca/site/eng/home.html.

2.2 CSA Group

CSA B620 — *Highway tanks and TC portable tanks for the transportation of dangerous goods*

CSA B620-87 — *Highway tanks and portable tanks for the transportation of dangerous goods*

CSA B625 — *Portable tanks for the transport of dangerous goods*

2.2.1 Contact information

The above may be obtained from CSAGroup.Telephone: 416-747-4044 or 1-800-463-6727.E-mail:www.csagroup.org/store/contact-us. Web site: https://csagroup.org.

2.3 Natural Resources Canada (NRCan)

Explosives Act (R.S.C., 1985, c. E-17), including amendments

Explosives Regulations, 2013 (SOR/2013-211), including amendments

2.3.1 Contact information

The above may be obtained from the Department of Justice Canada, Justice Laws Website. Web site: www.laws-lois.justice.gc.ca.

The above may also be obtained from the Government of Canada Publications, Publishing and Depository Services, Public Services and Procurement Canada. Telephone: 1-800-622-6232. Web site: https://publications.gc.ca/site/eng/home.html.

2.4 Transport Canada (TC)

Transportation of Dangerous Goods Act, 1992, including amendments

Transportation of Dangerous Goods Regulations, including amendments

2.4.1 Contact information

The above may be obtained from the Government of Canada Publications, Publishing and Depository Services, Public Services and Procurement Canada. Telephone: 1-800-622-6232. Web site: https://publications.gc.ca/site/eng/home.html.

2.5 Code of Federal Regulations (CFR)

Title 49 CFR (49 CFR)

2.5.1 Contact information

The above may be obtained from U.S Government Publishing Office. Web site: www.ecfr.gov/current/title-49.

2.6 International Maritime Organization (IMO)

International Convention for Safe Containers, 1972 (CSC), including amendments

International Maritime Dangerous Goods (IMDG) Code, including amendments

2.6.1 Contact information

The above may be obtained from International Maritime Organization, IMO Bookshelf. Telephone: +44 0 20 7735 7611. E-mail: sales@imo.org. Web site: www.imo.org.

2.7 United Nations (UN)

UN Recommendations on the Transport of Dangerous Goods — Model Regulations, 22nd revised edition

2.7.1 Contact information

The above may be obtained from distributors of United Nations Publications or from the United Nations Publications Customer Service, c/o National Book Network. Telephone: 1-703-661-1571. E-mail: Order@un.org. Web site: https://unece.org/transport.

3 Terms and definitions

In addition to the definitions, terms and abbreviations given in the *Transportation of Dangerous Goods Act* and *Regulations*, the following definitions and abbreviations apply in this standard. For a glossary of explosive substances, explosive articles and related expressions, refer to Annex C.

body (*corps*)
receptacle of an IBC, other than a composite IBC. The receptacle includes the openings and their closures but not the liner or service equipment.

closure (*fermeture*)
device that closes an opening in a container.

combination packaging (*emballage combiné*)
container consisting of one or more inner packagings contained in an outer packaging for transport.

compatible material (*matériau compatible*)
material that does not react physically or chemically with the dangerous goods in a way that under normal conditions of handling or transport would cause a condition or release of dangerous goods that could endanger public safety, including corrosion, environmental stress cracking, solvation, fusion or chemical or physical reaction with the dangerous goods.

composite IBC (*GRV composite*)
IBC that is an integrated single unit consisting of a rigid outer casing, a plastic or rubber inner receptacle, service equipment and structural equipment. A rigid inner receptacle of a composite IBC retains its general shape when empty without closures in place and without benefit of the outer casing. Any other inner receptacle of a composite IBC is a flexible inner receptacle.

composite packaging (*emballage composite*)
packaging consisting of an outer packaging and an inner receptacle so constructed that the inner receptacle and the outer packaging form an integral packaging. Once assembled, it remains an integrated single unit; it is filled, stored, shipped and emptied as such.

container (*contenant*)
means of containment as defined in the *Transportation of Dangerous Goods Act*.

cushioning material (*matériau de rembourrage*)
material that is compatible with the lading used to help protect the package contents from shocks and stresses encountered during transport.

decontaminate (*décontamination*)
complete removal, cleaning or purging of an explosive substance from a container.

Director (*directeur*)
Executive Director, Regulatory Frameworks and International Engagement, Regulatory Affairs Branch, Transportation of Dangerous Goods Directorate, Transport Canada, Tower C, Place de Ville, 330 Sparks Street, Ottawa, Ontario K1A 0N5.

explosive (*explosif*)
dangerous good that, in accordance with the TDG Regulations, is included in Class 1, Explosives.

explosive article (*objet explosif*)
article that contains one or more explosive substances.

explosive substance (*matière explosive*)
notwithstanding the definition of substance in the TDG Regulations, a liquid or solid substance, or a mixture of solid and liquid substances, that is capable, by chemical reaction, of producing a gas at a temperature, pressure and speed that might cause damage to the surrounding structures and infrastructure. It includes a pyrotechnic substance even if the pyrotechnic substance does not produce a gas.

flexible IBC (*GRV souple*)
IBC consisting of a body made of film, woven fabric or any other flexible material or combination thereof, service equipment, handling devices and, if necessary, an inner coating or liner.

highway tank (*citerne routière*)
tank intended for the transport of dangerous goods by road, consisting of a tank wall fitted with service equipment and structural equipment necessary for the transport or handling of such dangerous goods, and that

a) is permanently attached to or forms a part of a truck or trailer; and

b) is loaded or unloaded without being removed from the vehicle.

IBC (*GRV*)
see intermediate bulk container.

IM 101 and IM 102 portable tanks (*citernes mobiles IM 101 et IM 102*)
portable tanks designed, manufactured, and approved prior to 1 January 2003, and inspected, tested, and marked in accordance with the applicable provisions of 49 CFR.

IMDG code (*code IMDG*)
International Maritime Dangerous Goods Code, including amendments.

IMO-type portable tank (*citerne mobile IMO*)
IMO-type 1 or 2 portable tank (as applicable), designed, manufactured, and approved prior to 1 January 2003 in accordance with the applicable provisions of the IMDG Code in effect on 1 July 1999 (Amendment 29-98) or earlier (as applicable), and inspected, tested and marked in accordance with the applicable provisions of the IMDG Code.

inner packaging (*emballage intérieur*)
packaging in direct contact with its contents, for which an outer packaging is required for transport.

inner receptacle (*récipient intérieur*)
receptacle of a composite packaging or composite IBC that is in direct contact with its contents and that requires an outer casing in order to perform its containment function.

intermediate bulk container (IBC) [*grand récipient pour vrac (GRV)*]
rigid or flexible portable means of containment, other than a bag, box, drum or jerrican, as defined in CAN/CGSB-43.150, and that is designed for mechanical handling and is resistant to the stresses produced in handling and transport, as determined by tests.

intermediate packaging (emballage intermédiaire)
packaging placed between inner packagings, or explosive articles, and an outer packaging.

lightweight IBC (*GRV léger*)
composite IBC with an outer casing made with light-gauge rigid material and plastic inner receptacle generally made by the blow-molding method.

liner (*doublure*)
tube or bag inserted into a container but not forming an integral part of the container, including the closures of its openings.

maximum allowable working pressure (MAWP) [*pression de service maximale admissible (PSMA)*]
MAWP marked on the nameplate of the highway or portable tank in accordance with the applicable safety standard governing its design, manufacture and marking.

maximum permissible gross mass (*masse brute maximale admissible*)
sum of the mass of a container and the maximum permissible load.

maximum permissible load (*charge maximale admissible*)
maximum net mass of the explosives for which a container is designed to be used.

metal IBC (*GRV en métal*)
IBC consisting of a metal body, service equipment and structural equipment.

MC (*MC*)
Motor Carrier. MC was used as the prefix of the pre-September 1995 cargo tanks in 49 CFR. When the 400 series (406, 407 and 412) replaced the 300 series (306, 307 and 312) cargo tanks in September 1995, the prefix was changed to DOT.

mobile process unit (MPU) [*unité de fabrication mobile (UFM)*]
road vehicle that is used at a factory, satellite site or client site to carry out an explosives manufacturing operation in accordance with the *Explosives Regulations, 2013*.

NRCan competent authority (*autorité compétente de RNCan*)
competent authority for explosives authorization and transport classification of Class 1 in Canada is the Chief Inspector of Explosives of Natural Resources Canada.

outer packaging (*emballage extérieur*)
packaging that is not in direct contact with the dangerous goods, which contains one or more inner packaging or an inner receptacle.

package (*paquet*)
complete product of the packing operation, consisting of the packaging and its contents prepared for transport.

packaging (*emballage*)
container consisting of a receptacle and any other components or materials necessary for the receptacle to perform its containment function.

partially filled packaging (*emballage partiellement rempli*)
a package that contains less than the maximum number of explosive articles or has been filled with explosives to less than the maximum permissible gross mass. A partially filled package can include new packages, reused packages, and packages that are in use and have been partially emptied.

phlegmatized (*flegmatisé*)
means that a substance (or “phlegmatizer”) has been added to an explosive to enhance its safety in handling and transport. The phlegmatizer renders the explosive insensitive, or less sensitive, to the following actions: heat, shock, impact, percussion or friction. Typical phlegmatizing agents include, but are not limited to: wax, paper, water, polymers (such as chlorofluoropolymers), alcohol and oils (such as petroleum jelly and paraffin).

portable tank (*citerne mobile*)
tank intended for the transport of dangerous goods by different modes of transport, consisting of a tank wall fitted with service equipment and structural equipment necessary for the transport or handling of such dangerous goods, and that

a) is designed to be loaded into, onto, or temporarily attached to a transport vehicle or ship;

b) is equipped with skids, mountings or accessories to facilitate mechanical handling;

c) enables the dangerous good to be loaded and unloaded without the removal of structural equipment and without the tank being loaded onto or attached to a transport vehicle;

d) is capable of being lifted when full, unless otherwise specified in this standard; and

e) is not a highway tank, a rail tank car tank, a non-metallic tank, or an intermediate bulk container (IBC).

receptacle (*récipient*)
containment vessel for receiving and holding explosives, including its openings and their closures.

release (*rejet*)
includes discharge, emission, explosion or other escape of dangerous goods, or any component or compound evolving from dangerous goods.

reused packaging (*emballage réutilisé*)
packaging that has been previously used for the transport of class 1 material.

rigid plastic IBC (*GRV en plastique rigide*)
IBC consisting of a rigid plastic body, service equipment and structural equipment.

service equipment (*équipement de service*)
devices attached to and forming part of an IBC or a highway or portable tank that are necessary for loading, unloading, venting, pressure relief, vacuum relief, internal heating, sampling and measuring. Such devices include pressure-relief devices, valves, piping, gaskets and closures.

set piece (*pièce montée*)
lattice intended to be fixed to the ground and arrayed with ground-level fireworks that form an image, word or design.

structural equipment (*équipement de structure*)
reinforcing, fastening, handling, protecting or stabilizing members of the body of a highway tank, a portable tank or a metal, rigid plastic, composite, fibreboard or wooden IBC, including the pallet base for a composite, fibreboard or wooden IBC.

TC competent authority (*autorité compétente de TC*)
competent authority for explosives packaging in Canada is the Director for the purposes of compliance with this standard.

UN standardized packaging (*emballage normalisé UN*)
UN standardized packaging includes UN standardized small packaging in accordance with CAN/CGSB-43.150 and UN standardized large packaging in accordance with CAN/CGSB-43.145.

4 Symbols, acronyms and abbreviated terms

The following abbreviations and acronyms are used in this National Standard of Canada.

CFR – Code of Federal Regulations

DOT - U.S. Department of Transportation

IBC - intermediate bulk container

IMDG - International Maritime Dangerous Goods

IMO - International Maritime Organization

N.O.S. - not otherwise specified

NRCan - Natural Resources Canada, Explosives Regulatory Division of Natural Resources Canada

MAWP - maximum allowable working pressure

MC - Motor Carrier

MPU - mobile process unit

TC - Transport Canada

TDG Act - *Transportation of Dangerous Goods Act, 1992*

TDG Regulations - *Transportation of Dangerous Goods Regulations*

SI – International System of units

UN – United Nations

Part I

Selection and use

5 General requirements

5.1 Application

This section provides general requirements for the handling, offering for transport and transport of dangerous goods included in Class 1, Explosives that are neither prohibited from transport nor exempted by the TDG Regulations.

5.2 General packaging provisions for dangerous goods included in Class 1, Explosives

5.2.1 A person shall not handle, offer for transport or transport explosives in container unless the container is designed, manufactured, loaded, unloaded, secured, closed and maintained so that during transport, including handling, there is no release or anticipated release of explosives from the container that could endanger public safety.

5.2.2 A person shall not handle, offer for transport or transport explosives in container unless:

a) the requirements for selection and use set out in this safety standard specify that the container is permitted to contain the explosives;

b) the container is selected and used as prescribed in the explosives packing instructions and packing provisions (see Annex B) listed in Column VI and VII of the Table of explosives (see Annex A) for the appropriate explosives described in Columns I to IV of the Table of explosives (see Annex A);

c) the container is used as set out in section 6 for UN standardized packaging, section 7 for highway and portable tanks or section 8 for intermediate bulk containers (IBC); and

d) all requirements set out by a special provision listed in Column V of the Table of explosives (see Annex A) for the appropriate explosives described in Columns I to IV of the Table of explosives (see Annex A) are met.

5.2.3 A person shall not handle, offer for transport, transport or import dangerous goods, Class 1, Explosives, unless

a) the explosives are in containers that will protect the explosives, prevent their release and cause no increase in the risk of unintended ignition or initiation when subjected to normal conditions of transport including foreseeable changes in temperature, humidity and pressure;

b) filled containers can withstand any loading imposed on them by foreseeable stacking forces to which they will be subject during transport so that the risk presented by the explosives is not increased, the containment function of the container is not compromised and the container is not distorted in a way or to an extent which would reduce strength or cause instability of the stacks;

c) the closure of a container containing explosives that are liquid ensures a double barrier against leakage;

d) closures incorporating screw-threads are of a design that prevents the ingress of explosive substances into the screw-threads;

e) container used for water soluble explosive substances are water resistant;

f) container used for phlegmatized, wetted or diluted explosives has closures that are closed so as to prevent the percentage of liquid (water, solvent or other phlegmatizer) from falling below the prescribed limits during transport;

g) container that includes a double envelope filled with a fluid that may freeze during transport has a sufficient quantity of an anti-freeze agent added to the fluid to prevent freezing. The anti-freeze shall not create a fire hazard;

h) nails, staples and any closures made of metal without protective covering shall not come in contact with the explosives;

i) inner packagings that are fragile or that could be punctured, such as those made of glass, porcelain, stoneware or brittle plastic materials, are secured within the outer packaging with cushioning material;

j) the fitting of cushioning materials and inner packagings and the placing of explosive substances or explosive articles in the packaging is accomplished in a manner that prevents the explosive substances or explosive articles from becoming loose in the outer packaging under normal conditions of transport;

k) the metallic components of explosive articles and inner packagings are prevented from making contact with metallic packaging where the risk of sparking exists;

l) explosive articles containing explosive substances not enclosed in an outer casing are separated from each other in order to prevent friction and impact. Padding, trays, partitioning in the inner or outer packaging, mouldings or receptacles may be used for this purpose;

m) containers in contact with the explosive are made of compatible materials that are in addition impermeable to the explosives contained in the package so that neither interaction between the explosives and the container materials, nor leakage of the explosive can occur;

n) the ingress of explosive substances into the recesses of a seamed metal container is prevented;

o) plastic containers are prevented from accumulating sufficient static electricity that a discharge could cause the packaged explosive substances or explosive articles to initiate, ignite or function;

p) inner and outer packagings used for the explosive substances can withstand any difference in internal and external pressures arising from changes in temperature and other normal conditions of transport, without rupture, leakage or explosion;

q) metal containers used for explosives that are loose solids, or explosive articles or inner packagings leaving some explosive substance exposed, are fitted with a liner or are internally coated;

r) containers used for powdery or granular explosives are siftproof or are provided with a liner that prevents the explosive to ingress between the liner and the outer packaging;

s) electro-explosive devices are adequately protected against electro-magnetic radiation, stray currents and static electricity;

t) the person fills or empties, assembles and closes the container as instructed in the user instruction provided by the manufacturer or the subsequent distributor so that the container is not modified, and it remains in compliance with the registered design type;

u) the container is free of any residues or foreign materials that could react with the intended lading or otherwise create a hazard;

v) the filled container has a gross mass equal to or less than its marked maximum permissible gross mass or, as the case may be, the liquid, gel or bulk emulsion explosives have a relative density equal to or less than the container's marked maximum relative density;

w) the container is free of any visible defect that could affect its integrity during loading, unloading, or transport; and

x) the outage left in the container is sufficient to allow a degree of filling that, under normal conditions of transport (including handling), shall not cause a condition or release of dangerous goods that could endanger public safety including leakage or permanent distortion of the container as a result of an expansion of the explosives.

5.2.4 Before offering a container containing explosives for transport and before transporting a container containing explosives, a person shall:

a) make a determination that the container is in proper condition and the explosives are safe for transport; and

b) ensure that action is taken to remedy any release or condition that could endanger public safety, including action relating to a condition or release that requires repair or replacement of the container or removal of the explosives.

5.3 Reuse of packaging, and use of partially filled packaging other than IBCs, highway tanks or portable tanks

5.3.1 Packaging, other than an IBC, highway tank or portable tank, shall not be reused unless authorized for reuse by the *Explosives Regulations, 2013*.

5.3.2 Partially filled packages shall not be used unless

a) the package shows no damage, hazardous contamination or signs of reduced strength compared to the design type;

b) the articles are packaged and oriented within the inner, intermediate, and outer packaging in the same manner as originally tested and authorized, to maintain the transport hazard classification;

c) the explosives are arranged in the packaging, and sufficient additional cushioning material is used to take up void space within the packaging, so that there is minimal movement of the items in transport;

d) the package contains the explosives indicated on the labeling, and the marking and labeling are accurate; and

e) the package is closed for transport in the same manner and by the same means as certified.

5.4 Reuse of IBCs, highway tanks and portable tanks

Reuse of IBCs shall be in accordance with the requirements set out in section 8.

Reuse of highway and portable tanks shall be in accordance with the requirements set out in section 7.

5.5 Decontamination

The person responsible for the decontamination shall either hold a valid licence or certificate, as required by the *Explosives Regulation, 2013*; and

a) the person performing the decontamination of the container shall mark each container with a numbered tag to indicate that it has been decontaminated; and

b) the person performing the decontamination must keep a record of a decontamination document. If the person performing the decontamination is not the registered leak test and inspection facility itself, they shall supply the registered leak test and inspection facility with the decontamination document. This document shall include:

    1) the name and address of the container's owner;

    2) the serial or identification number of the container and the numbers of the tags marking the container as decontaminated;

    3) the name, address and licence, certificate or NRCan approval number of the facility that has done the decontamination, and the name and signature of the person performing the decontamination;

    4) the date of the decontamination;

    5) a statement, signed by either a representative of the container's owner or a representative of the person that has decontaminated the container, declaring the container free of residue that could create a hazard during any work on the container, including hot work or impact; and

    6) the name, title and name of the company of the person who has signed the statement referred to in 5) above.

Part II

UN standardized packaging

6 Use of UN standardized packaging

6.1 Specific requirements for UN standardized packaging

A person shall not handle, offer for transport or transport dangerous goods included in Class 1, Explosives in a UN standardized packaging unless:

a) all the requirements pertaining to the inner packagings and arrangements, the intermediate packagings and arrangements, the outer packagings and arrangements and the additional requirements set out in the explosives packing instructions are satisfied;

b) the UN standardized packaging associated to the packaging code is rated for the packing group I or packing group II levels and is marked with a “X” or “Y” in the UN marking;

c) the packaging is filled within its prescribed period of use. The maximum prescribed period of use for plastic drums and plastic jerricans, is 60 months from the date of manufacture marked on the packaging; and

d) the closure of a metal drum or metal jerrican includes a gasket made of compatible material.

6.2 Filling or emptying a packaging with explosives

A person shall not fill or empty a packaging with explosives unless the person has inspected the packaging to ensure that it is free from corrosion, contamination or other damage. Any packaging that shows signs of reduced strength as compared with the design type shall not be used or shall be reconditioned so that it is able to withstand the design type tests. Reconditioning and repair of plastic or metal drums shall be done in accordance with CAN/CGSB-43.126.

Part III

Highway and portable tanks

7 Use of highway and portable tanks

7.1 General requirements for highway and portable tanks

A person shall not handle, offer for transport or transport dangerous goods included in Class 1, Explosives in a highway or portable tank unless:

a) the highway tank complies with the applicable design requirements of CSA B620;

b) the portable tank complies with the applicable design requirements of CSA B625.

7.2 Specific requirements for highway and portable tanks

A person shall not handle, offer for transport or transport dangerous goods included in Class 1, Explosives in a highway or portable tank unless:

a) the Canadian explosives packing instruction 02 (CEP 02) of Annex B is assigned to the explosives in Column VI of the Table of explosives (see Annex A);

b) all the applicable requirements set out in CEP 02 and in this section are met;

c) where a TC specification tank is required by this standard, the tank complies with the applicable requirements of CSA B620, unless otherwise specified in this standard; and

d) where a UN portable tank is required by this standard, the tank complies with the applicable requirements of CSA B625, unless otherwise specified in this standard.

7.3 Specific requirements for rail transport

A person shall not handle, offer for transport or transport dangerous goods included in Class 1, Explosives in a highway or portable tank by railway vehicle unless:

a) the activity is authorized by a TC Competent Authority Approval issued by the Director, the application for which includes the following information:

   1) contact information of the applicant;

   2) specification of the portable or highway tank(s);

   3) details on the loading/unloading and securement of the tank(s) to the railway vehicle(s);

   4) the classification and quantity of the explosives;

   5) train routing and frequency;

   6) details of the train make-up, including the placement of railway vehicle(s) transporting the explosives and their proximity to railway vehicles with dangerous goods other than Class 1, Explosives, locomotive(s), locomotive tender(s), any other railway vehicles that may present a source of ignition and any other occupied railway vehicles; and

b) in the case of a highway tank, there is only a residual quantity of explosive.

7.4 Portable tank protection

A person shall not handle, offer for transport or transport dangerous goods included in Class 1, Explosives in a portable tank unless the tank is completely contained within the length and width of the vehicle into or on which it is loaded or to which it is attached.

7.5 MAWP and pressure-relief valve settings for highway tanks

A person shall not handle, offer for transport or transport dangerous goods included in Class 1, Explosives in a highway tank unless the MAWP and the set-to-discharge pressure of each safety relief device of the highway tank are

a) greater than or equal to the total pressure CEP of the product vapour and any padding at the top of the tank at the loading temperature or 46 °C, whichever is the greater temperature;

b) greater than or equal to the minimum MAWP prescribed by the specification for the tank; and

c) less than or equal to 241.3 kPa (35 psi).

7.6 Pressure-relief devices for portable tanks

A person shall not handle, offer for transport or transport dangerous goods included in Class 1, Explosives in a portable tank unless the tank is fitted with a pressure-relief device that may be of a reclosing spring-loaded type, a frangible disc or a fusible element. The set-to-discharge pressure or burst pressure, as applicable, shall be equal to or less than 330 kPa (47.9 psi).

7.7 Equivalent and substitute specifications

7.7.1 Highway tank equivalency

Where explosives packing instruction CEP 02 of this standard requires the use of a highway tank of a specification included in CSA B620, a highway tank constructed and certified in accordance with 49 CFR and listed in Table 1, Column 3, may be used instead of the tank in Table 1, Column 2, of the same item number.

7.7.2 Highway tank substitute

A highway tank listed in Table 1, Column 4, that is in compliance with the edition of 49 CFR or CSA B620 in force at the date of its certification may be used instead of the tank listed in Table 1, Column 2, of the same item number if

a) the certification date of the tank is before the applicable date given in Table 1, Column 5; and

b) the tank complies with the requirements of section A.5 in Annex A of CSA B620.

7.7.3 Highway tanks manufactured or assembled in Canada

Despite 7.7.1, a person who offers explosives for transport in a highway tank that was manufactured or assembled in Canada after August 31, 2008, shall use a highway tank constructed and certified in accordance with the edition of CSA B620 in force at the date of its certification.

7.7.4 UN portable tanks approved outside Canada

Where explosives packing instruction CEP 02 requires a UN portable tank, a UN portable tank manufactured and approved by countries other than Canada may be used, despite 7.2 d), if

a) the UN portable tank is designed, manufactured, inspected, tested, certified, marked and repaired in accordance with the UN Recommendations and the applicable national regulations of the country of approval and country of manufacture;

b) the UN portable tank is not approved under any “alternative arrangement”, unless such alternative arrangement is authorized by a Competent Authority Approval issued by the Director; and

c) if the UN portable tank meets the definition of “container” within the terms of the International Convention for Safe Containers, 1972 and is used for rail transport, the tank satisfies the requirements to be marked “TC IMPACT APPROVED/SATISFAIT À L’ESSAI DE CHOC TC” in accordance with CSA B625.

7.7.5 Portable tank equivalency

Where explosives packing instruction CEP 02 requires the use of a UN portable tank, an IM101, IM102, IMO Type 1 or IMO Type 2 tank may be substituted provided that the portable tank satisfies this standard’s requirements for test pressure, shell material and thickness, and pressure-relief design and, if used for rail transport, the portable tank shall be marked “TC IMPACT APPROVED/SATISFAIT À L’ESSAI DE CHOC TC” in accordance with CSA B625.

7.8 Inspection and testing of highway tanks

7.8.1 A person shall not handle, offer for transport or transport dangerous goods included in Class 1, Explosives in a highway tank unless the tank, irrespective of its date of construction or certification, has been inspected and tested

a) if it conforms to a TC specification, in accordance with

   1) section 7 of CSA B620 where the inspection or test is performed in Canada; or

2) either section 7 of CSA B620 or Part 180 of 49 CFR for the corresponding MC or DOT specification listed in Table 1, Column 3, of this standard, where the inspection or test is performed in the US, provided that the types of inspections and tests and the intervals prescribed in section 7 of CSA B620 are satisfied; and

b) if it conforms to an MC or DOT specification, in accordance with:

1) section 7 of CSA B620 for the corresponding TC specification listed in Table 1, Column 2, of this standard, where the inspection or test is performed in Canada; or

2) either Part 180 of 49 CFR or section 7 of CSA B620 for the corresponding TC specification listed in Table 1, Column 2, of this standard, where the inspection or test is performed in the US, provided that the types of inspections and tests and the intervals prescribed in section 7 of CSA B620 are satisfied.

7.8.2 Prior to inspection and test, the highway tanks shall be decontaminated as set out in clause 5.5 of this standard. An inspection or test performed in accordance with the previous edition of CSA B620 prior to the coming into force of the current edition of CSA B620 shall be deemed equivalent to the corresponding test or inspection in the current version of CSA B620 provided that the intervals specified in section 7 of CSA B620 have not been exceeded.

Table 1 — Equivalent and substitute specifications

1	2	3	4	5
Item	**Prescribed specification**	**49 CFR DOT**	**CSA B620-87 or 49 CFR MC substitute specification**	**Date limit for the certification of TC or MC specification**
1	TC 406	DOT 406	TC 306	15 August 2002
			MC 306	01 September 1995
2	TC 407	DOT 407	TC 307	15 August 2002
			MC 307	01 September 1995
3	TC 412	DOT 412	TC 312	15 August 2002
			MC 312	01 September 1995

7.8.3 In lieu of the hose testing requirements in clause 7.2.10 of CSA B620, hoses and their connectors used to temporarily connect to a highway tank to load or unload Class 1, Explosives, including those used in the explosives manufacturing process, shall be visually inspected annually to ensure mechanical fitness, integrity and compatibility with lading. A written record of the periodic visual inspection shall be made in accordance with procedures established by the holder of a licence or certificate issued under the *Explosives Act*.

7.8.4 In lieu of the hose testing requirements in clause 7.2.10 of CSA B620, hoses and their connectors used on a mobile process unit (MPU) in the manufacturing of Class 1, Explosives and connected after the first pump from the emulsion tank shall be visually inspected annually to ensure mechanical fitness, integrity and compatibility with lading. A written record of the periodic visual inspection shall be made in accordance with procedures established by the holder of a licence or certificate issued under the *Explosives Act*.

7.8.5 Hoses and their connectors used on a mobile process unit (MPU) in the manufacturing of Class 1, Explosives and connected before the first pump from the emulsion tank shall be inspected and tested as per clause 7.2.7.7 of CSA B620.

7.9 Repair and modification of highway tanks

7.9.1 A person shall not handle, offer for transport or transport dangerous goods included in Class 1, Explosives in a highway tank unless the tank has been inspected, tested, modified, repaired and marked in accordance with the requirements of section 7 of CSA B620.

7.10 Inspection, testing, modification and repair of portable tanks

7.10.1 A person shall not handle, offer for transport or transport dangerous goods included in Class 1, Explosives in a portable tank unless the tank has been inspected, tested, modified, repaired and marked in accordance with the requirements of section 8 of CSA B625.

7.10.2 The portable tank shall have been decontaminated of explosives in accordance with Clause 5.5 of this standard prior to inspection, testing, modification and repairs.

7.10.3 Hoses and their connectors used to temporarily connect to a portable tank load or unload Class 1, Explosives and those used in the explosives manufacturing process, shall be visually inspected annually to ensure mechanical fitness, integrity and compatibility with lading. A written record of the periodic visual inspection shall be made in accordance with procedures established by the holder of a licence or certificate issued under the *Explosives Act*.

7.11 Loading and unloading highway and portable tanks

A person shall not load or unload dangerous goods included in Class 1, Explosives in a highway or portable tank unless the following requirements are met:

a) Hoses and their connectors used to temporarily connect to load or unload Class 1, Explosives, including those used in the explosives manufacturing process, that process being as defined in the *Explosives Regulations*, 2013, shall be visually inspected prior to each use to ensure mechanical fitness, integrity and compatibility with lading. A hose used on a highway or portable tank shall no longer be used when the reinforcement is exposed.

7.12 Pre-loading requirements

In addition to the requirements in 7.11, a person shall not load a highway or portable tank with dangerous goods included in Class 1, Explosives unless all the following requirements are met:

a) The tank has been inspected, tested, retested and is marked as required for its specification (see 7.8 and 7.10). A person shall not load dangerous goods included in Class 1, Explosives in a highway or portable tank if it is due for periodic inspection and testing as required by 7.8 or 7.10 respectively.

b) If the tank is a highway tank, and a component such as a pipe, a valve or a fitting has been restored or replaced since the last time the tank was loaded or unloaded, that component has been tested for leaks at 80% of MAWP.

7.13 Loading requirements

A person shall not load dangerous goods included in Class 1, Explosives in a highway or portable tank unless

a) the loading limits for the tank are respected, including the rate of filling, the gross vehicle weight, the maximum product load, and the MAWP and vacuum limits;

b) the quantity of explosives to be transferred is controlled; and

c) in case the packaging is a highway tank, the outage left in the tank is

    1) equal to or greater than 2% of its volumetric capacity; and

2) sufficient to prevent the tank from becoming liquid-full should the temperature of the contents rise to 55 °C;

d) in case the packaging is a portable tank, the outage left in the tank is

1) sufficient to prevent the tank from becoming more than 97% liquid-full should the temperature of the contents rise to 50 °C;

2) such that the maximum degree of filling determined by the following equation is not exceeded:

Degree of filling = $97/(1 + \alpha(t_r - t_f))$

where:

t_r = the maximum mean bulk temperature during transport, °C

t_f = the temperature of the liquid during loading, °C

α = the mean coefficient of cubical expansion of the liquid between t_f and t_r

For liquids transported under ambient conditions, α shall be calculated using the following equation:

$\alpha = (d_{15} - d_{50})/35d_{50}$

where:

d_{15} and d_{50} are the densities of the liquid at 15 °C and 50 °C respectively, unit mass per unit volume.

7.14 Post-loading requirements

After loading a highway or portable tank, a person shall ensure that

a) immediately after the tank has been loaded

1) all hatches, valves up to and including the outermost valve, and other openings in the tank are closed, secured and, as applicable, locked; and

2) the exterior surfaces are clean and free of residue or spills of explosives;

b) the closing and securement of valves and openings in item a) does not interfere with the normal functioning of any safety relief devices; and

c) prior to transport, a portable tank is secured to the transport vehicle in the manner the tank was designed for and that will keep the tank secure under normal conditions of transport.

7.15 Pre-unloading requirements

Prior to unloading a highway or portable tank, a person shall

a) inspect the unloading connections to ensure that the lading will be discharged into the proper receiving line and tank;

b) take precautions to isolate from each other substances that can react violently together, if such substances are to be unloaded simultaneously at the same location; and

c) verify that the space available in the receiving packaging is sufficient to accommodate the quantity of explosives to be unloaded.

7.16 Unloading requirements

A person shall not unload dangerous goods included in Class 1, Explosives from a highway or portable tank unless

a) the unloading operation is attended by a person responsible for monitoring the unloading and interrupting the unloading in case of an anomaly;

b) the loading and unloading limits for the delivering and receiving packaging, including the rate of filling, the gross vehicle weight, the maximum product load, and the MAWP and vacuum limits are not exceeded; and

c) the flow and total quantity of explosives that is unloaded can be controlled.

7.17 Post-unloading requirements

After unloading a highway or portable tank, a person shall ensure that

a) immediately after the tank has been unloaded

   1) all hatches, valves up to and including the outermost valve, and other openings in the tank are closed, secured and, as applicable, locked; and

   2) the exterior surfaces are clean and free of residue or spills of explosives; and

b) the closing and securement of valves and openings in item a) does not interfere with the normal functioning of any safety relief devices.

The requirements in item a) do not apply if the tank is cleaned and decontaminated immediately after unloading.

7.18 Highway and portable tanks that are due for a periodic test or inspection

A person may transport a highway or portable tank that has become due for a periodic test or inspection required by 7.8 or 7.10 as applicable since it was last loaded, but a person shall not re-load the highway or portable tank until the required test and/or inspection have been successfully completed.

Part IV

Intermediate bulk containers (IBCs)

8 Selection and use of IBCs

8.1 Use

8.1.1 IBCs for use with liquid, gel or emulsion explosives (Code 31 IBCs) and with solid explosives (Code 11, 21, 13 IBCs)

a) IBCs of the following codes shall be used for the transport of liquid, gel or emulsion explosives unless otherwise limited by the TDG Regulations or this standard:

   1) Metallic IBCs: 31A, 31B, 31N;

   2) Rigid plastic IBCs: 31H1, 31H2;

3) Composite IBCs with a rigid plastic inner receptacle and a metal or plastic outer casing: 31HZ1, where 'Z' is replaced with the capital letter representing the material of construction of the outer casing. H stands for plastic, A is for steel, B for aluminum and N for other metals.

b) When permitted by the packing instructions, UN standardized IBCs of any code may be used for the transport of solid explosives unless otherwise limited by the TDG Regulations or this standard.

c) **Periodic leak test and inspection of IBCs** — A person shall not load liquid, gel or emulsion explosives in a Code 31 IBC or load solid explosives in a Code 21 IBC unless the IBC has been leak tested, inspected and marked in accordance with clause 12.6 of the CAN/CGSB-43.146 standard.

d) **IBC decontamination** — The leak test and inspection shall be conducted on an IBC that has been decontaminated in accordance with Clause 5.5 of this standard.

8.1.2 Filling/emptying

a) Before being filled, emptied or offered for transport, every IBC shall be visually inspected. IBCs showing signs of reduced strength as compared with the tested design type shall be taken out of service or shall be repaired or refurbished in accordance with CAN/CGSB-43.146 when IBCs display conditions including, but not limited to:

1) Corrosion, contamination or other damage;

2) Service equipment that is not functioning properly;

3) Exposed iron or steel (e.g. as a result of corrosion or a damaged coating).

b) Hoses, and their connectors, used to temporarily connect to load or unload Class 1, Explosives, including those used in the explosives manufacturing process, shall be visually inspected prior to each use to ensure mechanical fitness, integrity and compatibility with lading. A hose used on an IBC shall no longer be used when the reinforcement is exposed.

c) Hoses and their connectors used to temporarily connect to load or unload Class 1, Explosives, including those used in the explosives manufacturing process, that process being as defined in the *Explosives Regulations, 2013*, shall be visually inspected annually to ensure mechanical fitness, integrity and compatibility with lading. A written record of the annual visual inspection shall be made in accordance with procedures established by the holder of a licence or certificate issued under the *Explosives Act*.

d) The IBC shall be filled within its prescribed period of use. The maximum prescribed period of use for plastic inner receptacles of composite IBCs and rigid plastic IBCs is 60 months from the date of manufacture marked on the packaging.

8.1.3 Conditions of transport

a) No residue from explosives shall adhere to the outside of the IBC during transport.

b) IBCs shall be loaded or secured to prevent damage to the IBCs or to the transport unit itself under normal conditions of transport.

c) IBCs designed and tested for stacking shall not be stacked more than two high.

8.2 Design

a) Both transport and mine handling conditions shall be considered in the design of IBCs that are to be used for the transport of explosives. The manufacturer shall notify the purchaser (i.e. the user of the packaging) of the preparation required to ensure that the IBC is filled and closed as tested.

b) Any service equipment of the IBC shall be designed and manufactured to prevent

   1) the migration of explosive material into its mechanism (e.g. threaded fittings); and

   2) the release of components, such as bolts, into the lading.

c) The construction material of IBC components in contact with the lading, including gaskets, shall be compatible with the lading and shall not be made of brass or bronze.

d) Any component of a metal manhole cover in contact with the lading shall be constructed of stainless steel or aluminum. The manhole cover shall be lockable.

e) The IBC shall have a pressure-relief device with a start-to-discharge pressure range between 34.5 kPa (5 psi) and 62 kPa (9 psi).

f) The discharge lines shall have a non-threaded type secondary closure such as a quick-disconnect dust cap. The dust cap shall be lockable and shall not be made of brass or bronze.

g) The discharge valves and discharge pipe shall be designed to withstand the mine handling environment.

h) The plastic inner receptacle of a composite IBC shall be protected from damage on the sides of the inner receptacle with rigid outer side plates mounted on the outer frame. Lightweight IBCs shall not be used to handle, offer for transport and transport Class 1, Explosives.

Annex A
(normative)

Table of explosives

Column 1 – This column gives the UN number for the shipping name of the dangerous good.

Column 2 – This column gives the shipping name and description for the dangerous good in accordance with the TDG Regulations.

Column 3 – This column gives the primary class for the dangerous good.

Column 4 – This column gives the subsidiary class(es) for the dangerous good.

Column 5 – This column gives the numbers of the special provisions that apply to the dangerous good. A listing of the special provisions can be found at the end of the Table of explosives.

Column 6 – This column gives the permitted packing instruction for the dangerous good. A listing of the packing instructions can be found in Annex B.

Column 7 – This column gives the applicable packing provision for the dangerous good. The packing provision can be found within the permitted packing instruction for the dangerous good in Annex B.

Table A.1 — Table of explosives

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0004	AMMONIUM PICRATE, dry or wetted with less than 10% water, by mass	1.1D	—	—	P 112	PP26
0005	CARTRIDGES FOR WEAPONS with bursting charge	1.1F	—	—	P 130 LP101	—
0006	CARTRIDGES FOR WEAPONS with bursting charge	1.1E	—	—	P 130 LP101	PP67 L1
0007	CARTRIDGES FOR WEAPONS with bursting charge	1.2F	—	—	P 130 LP101	—
0009	AMMUNITION, INCENDIARY with or without burster, expelling charge or propelling charge	1.2G	—	—	P 130 LP101	PP67 L1
0010	AMMUNITION, INCENDIARY with or without burster, expelling charge or propelling charge	1.3G	—	—	P 130 LP101	PP67 L1

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0012	CARTRIDGES FOR WEAPONS, INERT PROJECTILE or CARTRIDGES, SMALL ARMS	1.4S	—	364	P 130 LP101	—
0014	CARTRIDGES FOR WEAPONS, BLANK or CARTRIDGES, SMALL ARMS, BLANK or CARTRIDGES FOR TOOLS, BLANK	1.4S	—	364	P 130 LP101	—
0015	AMMUNITION, SMOKE with or without burster, expelling charge or propelling charge	1.2G	—	204	P 130 LP101	PP67 L1
0016	AMMUNITION, SMOKE with or without burster, expelling charge or propelling charge	1.3G	—	204	P 130 LP101	PP67 L1
0018	AMMUNITION, TEAR-PRODUCING with burster, expelling charge or propelling charge	1.2G	6.1, 8	—	P 130 LP101	PP67 L1
0019	AMMUNITION, TEAR-PRODUCING with burster, expelling charge or propelling charge	1.3G	6.1, 8	—	P 130 LP101	PP67 L1
0020	AMMUNITION, TOXIC with burster, expelling charge or propelling charge	1.2K	6.1	274	CEP 03	—
0021	AMMUNITION, TOXIC with burster, expelling charge or propelling charge	1.3K	6.1	274	CEP 03	—
0027	BLACK POWDER (GUNPOWDER), granular or as a meal	1.1D	—	—	P 113	PP50
0028	BLACK POWDER (GUNPOWDER), COMPRESSED or BLACK POWDER (GUNPOWDER), IN PELLETS	1.1D	—	—	P 113	PP51
0029	DETONATORS, NON-ELECTRIC for blasting	1.1B	—	—	P 131	PP68
0030	DETONATORS, ELECTRIC for blasting	1.1B	—	—	P 131	—
0033	BOMBS with bursting charge	1.1F	—	—	P 130 LP101	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0034	BOMBS with bursting charge	1.1D	—	—	P 130 LP101	PP67 L1
0035	BOMBS with bursting charge	1.2D	—	—	P 130 LP101	PP67 L1
0037	BOMBS, PHOTO-FLASH	1.1F	—	—	P 130 LP101	—
0038	BOMBS, PHOTO-FLASH	1.1D	—	—	P 130 LP101	PP67 L1
0039	BOMBS, PHOTO-FLASH	1.2G	—	—	P 130 LP101	PP67 L1
0042	BOOSTERS without detonator	1.1D	—	—	P 132(a) or (b)	—
0043	BURSTERS, explosive	1.1D	—	—	P 133	PP69
0044	PRIMERS, CAP TYPE	1.4S	—	—	P 133	—
0048	CHARGES, DEMOLITION	1.1D	—	—	P 130 LP101	PP67 L1
0049	CARTRIDGES, FLASH	1.1G	—	—	P 135	—
0050	CARTRIDGES, FLASH	1.3G	—	—	P 135	—
0054	CARTRIDGES, SIGNAL	1.3G	—	—	P 135	—
0055	CASES, CARTRIDGE, EMPTY, WITH PRIMER	1.4S	—	364	P 136	—
0056	CHARGES, DEPTH	1.1D	—	—	P 130 LP101	PP67 L1
0059	CHARGES, SHAPED, without detonator	1.1D	—	—	P 137	PP70
0060	CHARGES, SUPPLEMENTARY, EXPLOSIVE	1.1D	—	—	P 132(a) or (b)	—
0065	CORD, DETONATING, flexible	1.1D	—	—	P 139	PP71 PP72

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0066	CORD, IGNITER	1.4G	—	—	P 140	—
0070	CUTTERS, CABLE, EXPLOSIVE	1.4S	—	—	P 134 LP102	—
0072	CYCLOTRIMETHYLENETRINITRAMINE (CYCLONITE; HEXOGEN; RDX), WETTED with not less than 15% water, by mass	1.1D	—	266	P 112(a)	PP45
0073	DETONATORS FOR AMMUNITION	1.1B	—	—	P 133	—
0074	DIAZODINITROPHENOL, WETTED with not less than 40% water, or a mixture of alcohol and water, by mass	1.1A	—	266	P 110(a) or (b)	PP42
0075	DIETHYLENEGLYCOL DINITRATE, DESENSITIZED with not less than 25% non-volatile, water-insoluble phlegmatizer, by mass	1.1D	—	266	P 115	PP53 PP54 PP57 PP58
0076	DINITROPHENOL, dry or wetted with less than 15% water, by mass	1.1D	6.1	—	P 112(a), (b) or (c)	PP26
0077	DINITROPHENOLATES, alkali metals, dry or wetted with less than 15% water, by mass	1.3C	6.1	—	P 114(a) or (b)	PP26
0078	DINITRORESORCINOL, dry or wetted with less than 15% water, by mass	1.1D	—	—	P 112(a), (b) or (c)	PP26
0079	HEXANITRODIPHENYLAMINE (DIPICRYLAMINE; HEXYL)	1.1D	—	—	P 112(b) or (c)	—
0081	EXPLOSIVE, BLASTING, TYPE A	1.1D	—	—	P 116	PP63 PP66
0082	EXPLOSIVE, BLASTING, TYPE B	1.1D	—	—	P 116	PP61 PP62
0083	EXPLOSIVE, BLASTING, TYPE C	1.1D	—	267	P 116	—
0084	EXPLOSIVE, BLASTING, TYPE D	1.1D	—	—	P 116	—
0092	FLARES, SURFACE	1.3G	—	—	P 135	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0093	FLARES, AERIAL	1.3G	—	—	P 135	—
0094	FLASH POWDER	1.1G	—	—	P 113	PP49
0099	FRACTURING DEVICES, EXPLOSIVE without detonator, for oil wells	1.1D	—	—	P 134 LP102	—
0101	FUSE, NON-DETONATING	1.3G	—	—	P 140	PP74 PP75
0102	CORD (FUSE), DETONATING, metal clad	1.2D	—	—	P 139	PP71
0103	FUSE, IGNITER, tubular, metal clad	1.4G	—	—	P 140	—
0104	CORD (FUSE), DETONATING, MILD EFFECT, metal clad	1.4D	—	—	P 139	PP71
0105	FUSE, SAFETY	1.4S	—	—	P 140	PP73
0106	FUZES, DETONATING	1.1B	—	—	P 141	—
0107	FUZES, DETONATING	1.2B	—	—	P 141	—
0110	GRENADES, PRACTICE, hand or rifle	1.4S	—	—	P 141	—
0113	GUANYL NITROSAMINOGUANYLIDENE HYDRAZINE, WETTED with not less than 30% water, by mass	1.1A	—	266	P 110(a) or (b)	PP42
0114	GUANYL NITROSAMINOGUANYLTETRAZENE (TETRAZENE), WETTED with not less than 30% water, or mixture of alcohol and water, by mass	1.1A	—	266	P 110(a) or (b)	PP42
0118	HEXOLITE (HEXOTOL), dry or wetted with less than 15% water, by mass	1.1D	—	—	P 112	—
0121	IGNITERS	1.1G	—	—	P 142	—
0124	JET PERFORATING GUNS, CHARGED, oil well, without detonator	1.1D	—	—	CEP 01	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0129	LEAD AZIDE, WETTED with not less than 20% water, or mixture of alcohol and water, by mass	1.1A	—	266	P 110(a) or (b)	PP42
0130	LEAD STYPHNATE (LEAD TRINITRO-RESORCINATE), WETTED with not less than 20% water, or mixture of alcohol and water, by mass	1.1A	—	266	P 110(a) or (b)	PP42
0131	LIGHTERS, FUSE	1.4S	—	—	P 142	—
0132	DEFLAGRATING METAL SALTS OF AROMATIC NITRODERIVATIVES, N.O.S.	1.3C	—	—	P 114(a) or (b)	PP26
0133	MANNITOL HEXANITRATE (NITROMANNITE), WETTED with not less than 40% water, or mixture of alcohol and water, by mass	1.1D	—	266	P 112(a)	—
0135	MERCURY FULMINATE, WETTED with not less than 20% water, or mixture of alcohol and water, by mass	1.1A	—	266	P 110(a) or (b)	PP42
0136	MINES with bursting charge	1.1F	—	—	P 130 LP101	—
0137	MINES with bursting charge	1.1D	—	—	P 130 LP101	PP67 L1
0138	MINES with bursting charge	1.2D	—	—	P 130 LP101	PP67 L1
0143	NITROGLYCERIN, DESENSITIZED with not less than 40% non volatile water insoluble phlegmatizer, by mass	1.1D	6.1	266 271	P 115	PP53 PP54 PP57 PP58
0144	NITROGLYCERIN SOLUTION IN ALCOHOL with more than 1% but not more than 10% nitroglycerin	1.1D	—	358	P 115	PP45 PP55 PP56 PP59 PP60
0146	NITROSTARCH, dry or wetted with less than 20% water, by mass	1.1D	—	—	P 112	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0147	NITRO UREA	1.1D	—	—	P 112(b)	—
0150	PENTAERYTHRITE TETRANITRATE (PENTAERYTHRITOL TETRANITRATE; PETN), WETTED with not less than 25% water, by mass, or PENTAERYTHRITE TETRANITRATE (PENTAERYTHRITOL TETRANITRATE; PETN), DESENSITIZED with not less than 15% phlegmatizer, by mass	1.1D	—	266	P 112(a) or (b)	—
0151	PENTOLITE, dry or wetted with less than 15% water, by mass	1.1D	—	—	P 112	—
0153	TRINITROANILINE (PICRAMIDE)	1.1D	—	—	P 112(b) or (c)	—
0154	TRINITROPHENOL (PICRIC ACID), dry or wetted with less than 30% water, by mass	1.1D	—	—	P 112(a), (b) or (c)	PP26
0155	TRINITROCHLOROBENZENE (PICRYL CHLORIDE)	1.1D	—	—	P 112(b) or (c)	—
0159	POWDER CAKE (POWDER PASTE), WETTED with not less than 25% water, by mass	1.3C	—	266	P 111	PP43
0160	POWDER, SMOKELESS	1.1C	—	—	P 114(b)	PP50 PP52
0161	POWDER, SMOKELESS	1.3C	—	—	P 114(b)	PP50 PP52
0167	PROJECTILES with bursting charge	1.1F	—	—	P 130 LP101	—
0168	PROJECTILES with bursting charge	1.1D	—	—	P 130 LP101	PP67 L1
0169	PROJECTILES with bursting charge	1.2D	—	—	P 130 LP101	PP67 L1

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0171	AMMUNITION, ILLUMINATING with or without burster, expelling charge or propelling charge	1.2G	—	—	P 130 LP101	PP67 L1
0173	RELEASE DEVICES, EXPLOSIVE	1.4S	—	—	P 134 LP102	—
0174	RIVETS, EXPLOSIVE	1.4S	—	—	P 134 LP102	—
0180	ROCKETS with bursting charge	1.1F	—	—	P 130 LP101	—
0181	ROCKETS with bursting charge	1.1E	—	—	P 130 LP101	PP67 L1
0182	ROCKETS with bursting charge	1.2E	—	—	P 130 LP101	PP67 L1
0183	ROCKETS with inert head	1.3C	—	—	P 130 LP101	PP67 L1
0186	ROCKET MOTORS	1.3C	—	—	P 130 LP101	PP67 L1
0190	SAMPLES, EXPLOSIVE, other than initiating explosive	—	—	16 274	CEP 03	—
0191	SIGNAL DEVICES, HAND	1.4G	—	—	P 135	—
0192	SIGNALS, RAILWAY TRACK, EXPLOSIVE	1.1G	—	—	P 135	—
0193	SIGNALS, RAILWAY TRACK, EXPLOSIVE	1.4S	—	—	P 135	—
0194	SIGNALS, DISTRESS, ship	1.1G	—	—	P 135	—
0195	SIGNALS, DISTRESS, ship	1.3G	—	—	P 135	—
0196	SIGNALS, SMOKE	1.1G	—	—	P 135	—
0197	SIGNALS, SMOKE	1.4G	—	—	P 135	—
0204	SOUNDING DEVICES, EXPLOSIVE	1.2F	—	—	P 134	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0207	TETRANITROANILINE	1.1D	—	—	P 112(b) or (c)	—
0208	TRINITROPHENYLMETHYLNITRAMINE (TETRYL)	1.1D	—	—	P 112(b) or (c)	—
0209	TRINITROTOLUENE (TNT), dry or wetted with less than 30% water, by mass	1.1D	—	—	P 112(b) or (c)	PP46
0212	TRACERS FOR AMMUNITION	1.3G	—	—	P 133	PP69
0213	TRINITROANISOLE	1.1D	—	—	P 112(b) or (c)	—
0214	TRINITROBENZENE, dry or wetted with less than 30% water, by mass	1.1D	—	—	P 112	—
0215	TRINITROBENZOIC ACID, dry or wetted with less than 30% water, by mass	1.1D	—	—	P 112	—
0216	TRINITRO-m-CRESOL	1.1D	—	—	P 112(b) or (c)	PP26
0217	TRINITRONAPHTHALENE	1.1D	—	—	P 112(b) or (c)	—
0218	TRINITROPHENETOLE	1.1D	—	—	P 112(b) or (c)	—
0219	TRINITRORESORCINOL (STYPHNIC ACID), dry or wetted with less than 20% water, or mixture of alcohol and water, by mass	1.1D	—	—	P 112(a), (b) or (c)	PP26
0220	UREA NITRATE, dry or wetted with less than 20% water, by mass	1.1D	—	—	P 112	—
0221	WARHEADS, TORPEDO with bursting charge	1.1D	—	—	P 130 LP101	PP67 L1
0222	AMMONIUM NITRATE	1.1D	—	370	P 112(b) or (c)	PP47

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0224	BARIUM AZIDE, dry or wetted with less than 50% water, by mass	1.1A	6.1	—	P 110(a) or (b)	PP42
0225	BOOSTERS WITH DETONATOR	1.1B	—	—	P 133	PP69
0226	CYCLOTETRAMETHYLENETETRANITRAMINE (HMX; OCTOGEN), WETTED with not less than 15% water, by mass	1.1D	—	266	P 112(a)	PP45
0234	SODIUM DINITRO-o-CRESOLATE, dry or wetted with less than 15% water, by mass	1.3C	—	—	P 114(a) or (b)	PP26
0235	SODIUM PICRAMATE, dry or wetted with less than 20% water, by mass	1.3C	—	—	P 114(a) or (b)	PP26
0236	ZIRCONIUM PICRAMATE, dry or wetted with less than 20% water, by mass	1.3C	—	—	P 114(a) or (b)	PP26
0237	CHARGES, SHAPED, FLEXIBLE, LINEAR	1.4D	—	—	P 138	—
0238	ROCKETS, LINE-THROWING	1.2G	—	—	P 130 LP101	—
0240	ROCKETS, LINE-THROWING	1.3G	—	—	P 130 LP101	—
0241	EXPLOSIVE, BLASTING, TYPE E	1.1D	—	—	P 116	PP61 PP62
0242	CHARGES, PROPELLING, FOR CANNON	1.3C	—	—	P 130 LP101	—
0243	AMMUNITION, INCENDIARY, WHITE PHOSPHORUS with burster, expelling charge or propelling charge	1.2H	—	—	P 130 LP101	PP67 L1
0244	AMMUNITION, INCENDIARY, WHITE PHOSPHORUS with burster, expelling charge or propelling charge	1.3H	—	—	P 130 LP101	PP67 L1
0245	AMMUNITION, SMOKE, WHITE PHOSPHORUS with burster, expelling charge or propelling charge	1.2H	—	—	P 130 LP101	PP67 L1

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0246	AMMUNITION, SMOKE, WHITE PHOSPHORUS with burster, expelling charge or propelling charge	1.3H	—	—	P 130 LP101	PP67 L1
0247	AMMUNITION, INCENDIARY, liquid or gel, with burster, expelling charge or propelling charge	1.3J	—	—	CEP 03	—
0248	CONTRIVANCES, WATER-ACTIVATED with burster, expelling charge or propelling charge	1.2L	—	274	P 144	PP77
0249	CONTRIVANCES, WATER-ACTIVATED with burster, expelling charge or propelling charge	1.3L	—	274	P 144	PP77
0250	ROCKET MOTORS WITH HYPERGOLIC LIQUIDS with or without expelling charge	1.3L	—	—	CEP 03	—
0254	AMMUNITION, ILLUMINATING with or without burster, expelling charge or propelling charge	1.3G	—	—	P 130 LP101	PP67 L1
0255	DETONATORS, ELECTRIC for blasting	1.4B	—	—	P 131	—
0257	FUZES, DETONATING	1.4B	—	—	P 141	—
0266	OCTOLITE (OCTOL), dry or wetted with less than 15% water, by mass	1.1D	—	—	P 112	—
0267	DETONATORS, NON-ELECTRIC for blasting	1.4B	—	—	P 131	PP68
0268	BOOSTERS WITH DETONATOR	1.2B	—	—	P 133	PP69
0271	CHARGES, PROPELLING	1.1C	—	—	P 143	PP76
0272	CHARGES, PROPELLING	1.3C	—	—	P 143	PP76
0275	CARTRIDGES, POWER DEVICE	1.3C	—	—	P 134 LP102	—
0276	CARTRIDGES, POWER DEVICE	1.4C	—	—	P 134 LP102	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0277	CARTRIDGES, OIL WELL	1.3C	—	—	P 134 LP102	—
0278	CARTRIDGES, OIL WELL	1.4C	—	—	P 134 LP102	—
0279	CHARGES, PROPELLING, FOR CANNON	1.1C	—	—	P 130 LP101	—
0280	ROCKET MOTORS	1.1C	—	—	P 130 LP101	PP67 L1
0281	ROCKET MOTORS	1.2C	—	—	P 130 LP101	PP67 L1
0282	NITROGUANIDINE (PICRITE), dry or wetted with less than 20% water, by mass	1.1D	—	—	P 112	—
0283	BOOSTERS without detonator	1.2D	—	—	P 132(a) or (b)	—
0284	GRENADES, hand or rifle, with bursting charge	1.1D	—	—	P 141	—
0285	GRENADES, hand or rifle, with bursting charge	1.2D	—	—	P 141	—
0286	WARHEADS, ROCKET with bursting charge	1.1D	—	—	P 130 LP101	PP67 L1
0287	WARHEADS, ROCKET with bursting charge	1.2D	—	—	P 130 LP101	PP67 L1
0288	CHARGES, SHAPED, FLEXIBLE, LINEAR	1.1D	—	—	P 138	—
0289	CORD, DETONATING, flexible	1.4D	—	—	P 139	PP71 PP72
0290	CORD (FUSE), DETONATING, metal clad	1.1D	—	—	P 139	PP71
0291	BOMBS with bursting charge	1.2F	—	—	P 130 LP101	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0292	GRENADES, hand or rifle, with bursting charge	1.1F	—	—	P 141	—
0293	GRENADES, hand or rifle, with bursting charge	1.2F	—	—	P 141	—
0294	MINES with bursting charge	1.2F	—	—	P 130 LP101	—
0295	ROCKETS with bursting charge	1.2F	—	—	P 130 LP101	—
0296	SOUNDING DEVICES, EXPLOSIVE	1.1F	—	—	P 134 LP102	—
0297	AMMUNITION, ILLUMINATING with or without burster, expelling charge or propelling charge	1.4G	—	—	P 130 LP101	PP67 L1
0299	BOMBS, PHOTO-FLASH	1.3G	—	—	P 130 LP101	PP67 L1
0300	AMMUNITION, INCENDIARY with or without burster, expelling charge or propelling charge	1.4G	—	—	P 130 LP101	PP67 L1
0301	AMMUNITION, TEAR-PRODUCING with burster, expelling charge or propelling charge	1.4G	6.1, 8	—	P 130 LP101	PP67 L1
0303	AMMUNITION, SMOKE with or without burster, expelling charge or propelling charge	1.4G	—	204	P 130 LP101	PP67 L1
0305	FLASH POWDER	1.3G	—	—	P 113	PP49
0306	TRACERS FOR AMMUNITION	1.4G	—	—	P 133	PP69
0312	CARTRIDGES, SIGNAL	1.4G	—	—	P 135	—
0313	SIGNALS, SMOKE	1.2G	—	—	P 135	—
0314	IGNITERS	1.2G	—	—	P 142	—
0315	IGNITERS	1.3G	—	—	P 142	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0316	FUZES, IGNITING	1.3G	—	—	P 141	—
0317	FUZES, IGNITING	1.4G	—	—	P 141	—
0318	GRENADES, PRACTICE, hand or rifle	1.3G	—	—	P 141	—
0319	PRIMERS, TUBULAR	1.3G	—	—	P 133	—
0320	PRIMERS, TUBULAR	1.4G	—	—	P 133	—
0321	CARTRIDGES FOR WEAPONS with bursting charge	1.2E	—	—	P 130 LP101	PP67 L1
0322	ROCKET MOTORS WITH HYPERGOLIC LIQUIDS with or without expelling charge	1.2L	—	—	CEP 03	—
0323	CARTRIDGES, POWER DEVICE	1.4S	—	347	P 134 LP102	—
0324	PROJECTILES with bursting charge	1.2F	—	—	P 130 LP101	—
0325	IGNITERS	1.4G	—	—	P 142	—
0326	CARTRIDGES FOR WEAPONS, BLANK	1.1C	—	—	P 130 LP101	—
0327	CARTRIDGES FOR WEAPONS, BLANK or CARTRIDGES, SMALL ARMS, BLANK	1.3C	—	—	P 130 LP101	—
0328	CARTRIDGES FOR WEAPONS, INERT PROJECTILE	1.2C	—	—	P 130 LP101	PP67 L1
0329	TORPEDOES with bursting charge	1.1E	—	—	P 130 LP101	PP67 L1
0330	TORPEDOES with bursting charge	1.1F	—	—	P 130 LP101	—
0331	EXPLOSIVE, BLASTING, TYPE B (AGENT, BLASTING, TYPE B)	1.5D	—	—	P 116 CEP 02	PP61 PP62 PP64 CPP01

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0332	EXPLOSIVE, BLASTING, TYPE E (AGENT, BLASTING, TYPE E)	1.5D	—	—	P 116 CEP 02	PP61 PP62
0333	FIREWORKS	1.1G	—	—	P 135	—
0334	FIREWORKS	1.2G	—	—	P 135	—
0335	FIREWORKS	1.3G	—	—	P 135	—
0336	FIREWORKS	1.4G	—	—	P 135	—
0337	FIREWORKS	1.4S	—	—	P 135	—
0338	CARTRIDGES FOR WEAPONS, BLANK or CARTRIDGES, SMALL ARMS, BLANK	1.4C	—	—	P 130 LP101	—
0339	CARTRIDGES FOR WEAPONS, INERT PROJECTILE or CARTRIDGES, SMALL ARMS	1.4C	—	—	P 130 LP101	—
0340	NITROCELLULOSE, dry or wetted with less than 25% water (or alcohol), by mass	1.1D	—	393	P 112(a) or (b)	—
0341	NITROCELLULOSE, unmodified or plasticized with less than 18% plasticizing substance, by mass	1.1D	—	393	P 112(b)	—
0342	NITROCELLULOSE, WETTED with not less than 25% alcohol, by mass	1.3C	—	105 393	P 114(a)	PP43
0343	NITROCELLULOSE, PLASTICIZED with not less than 18% plasticizing substance, by mass	1.3C	—	105 393	P 111	—
0344	PROJECTILES with bursting charge	1.4D	—	—	P 130 LP101	PP67 L1
0345	PROJECTILES, inert with tracer	1.4S	—	—	P 130 LP101	PP67 L1
0346	PROJECTILES with burster or expelling charge	1.2D	—	—	P 130 LP101	PP67 L1

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0347	PROJECTILES with burster or expelling charge	1.4D	—	—	P 130 LP101	PP67 L1
0348	CARTRIDGES FOR WEAPONS with bursting charge	1.4F	—	—	P 130 LP101	—
0349	ARTICLES, EXPLOSIVE, N.O.S.	1.4S	—	178 274 347	CEP 03	—
0350	ARTICLES, EXPLOSIVE, N.O.S.	1.4B	—	178 274	CEP 03	—
0351	ARTICLES, EXPLOSIVE, N.O.S.	1.4C	—	178 274	CEP 03	—
0352	ARTICLES, EXPLOSIVE, N.O.S.	1.4D	—	178 274	CEP 03	—
0353	ARTICLES, EXPLOSIVE, N.O.S.	1.4G	—	178 274	CEP 03	—
0354	ARTICLES, EXPLOSIVE, N.O.S.	1.1L	—	178 274	CEP 03	—
0355	ARTICLES, EXPLOSIVE, N.O.S.	1.2L	—	178 274	CEP 03	—
0356	ARTICLES, EXPLOSIVE, N.O.S.	1.3L	—	178 274	CEP 03	—
0357	SUBSTANCES, EXPLOSIVE, N.O.S.	1.1L	—	178 274	CEP 03	—
0358	SUBSTANCES, EXPLOSIVE, N.O.S	1.2L	—	178 274	CEP 03	—
0359	SUBSTANCES, EXPLOSIVE, N.O.S.	1.3L	—	178 274	CEP 03	—
0360	DETONATOR ASSEMBLIES, NON-ELECTRIC for blasting	1.1B	—	—	P 131	—
0361	DETONATOR ASSEMBLIES, NON-ELECTRIC for blasting	1.4B	—	—	P 131	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0362	AMMUNITION, PRACTICE	1.4G	—	—	P 130 LP101	PP67 L1
0363	AMMUNITION, PROOF	1.4G	—	—	P 130 LP101	PP67 L1
0364	DETONATORS FOR AMMUNITION	1.2B	—	—	P 133	—
0365	DETONATORS FOR AMMUNITION	1.4B	—	—	P 133	—
0366	DETONATORS FOR AMMUNITION	1.4S	—	347	P 133	—
0367	FUZES, DETONATING	1.4S	—	347	P 141	—
0368	FUZES, IGNITING	1.4S	—	—	P 141	—
0369	WARHEADS, ROCKET with bursting charge	1.1F	—	—	P 130 LP101	—
0370	WARHEADS, ROCKET with burster or expelling charge	1.4D	—	—	P 130 LP101	PP67 L1
0371	WARHEADS, ROCKET with burster or expelling charge	1.4F	—	—	P 130 LP101	—
0372	GRENADES, PRACTICE, hand or rifle	1.2G	—	—	P 141	—
0373	SIGNAL DEVICES, HAND	1.4S	—	—	P 135	—
0374	SOUNDING DEVICES, EXPLOSIVE	1.1D	—	—	P 134 LP102	—
0375	SOUNDING DEVICES, EXPLOSIVE	1.2D	—	—	P 134 LP102	—
0376	PRIMERS, TUBULAR	1.4S	—	—	P 133	—
0377	PRIMERS, CAP TYPE	1.1B	—	—	P 133	—
0378	PRIMERS, CAP TYPE	1.4B	—	—	P 133	—
0379	CASES, CARTRIDGE, EMPTY, WITH PRIMER	1.4C	—	—	P 136	—
0380	ARTICLES, PYROPHORIC	1.2L	—	—	CEP 03	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0381	CARTRIDGES, POWER DEVICE	1.2C	—	—	P 134 LP102	—
0382	COMPONENTS, EXPLOSIVE TRAIN, N.O.S.	1.2B	—	178 274	CEP 03	—
0383	COMPONENTS, EXPLOSIVE TRAIN, N.O.S.	1.4B	—	178 274	CEP 03	—
0384	COMPONENTS, EXPLOSIVE TRAIN, N.O.S.	1.4S	—	178 274 347	CEP 03	—
0385	5-NITROBENZOTRIAZOL	1.1D	—	—	P 112(b) or (c)	—
0386	TRINITROBENZENESULPHONIC ACID	1.1D	—	—	P 112(b) or (c)	PP26
0387	TRINITROFLUORENONE	1.1D	—	—	P 112(b) or (c)	—
0388	TRINITROTOLUENE (TNT) AND TRINITROBENZENE MIXTURE or TRINITROTOLUENE (TNT) AND HEXANITROSTILBENE MIXTURE	1.1D	—	—	P 112(b) or (c)	—
0389	TRINITROTOLUENE (TNT) MIXTURE CONTAINING TRINITROBENZENE AND HEXANITROSTILBENE	1.1D	—	—	P 112(b) or (c)	—
0390	TRITONAL	1.1D	—	—	P 112(b) or (c)	—
0391	CYCLOTRIMETHYLENETRINITRAMINE (CYCLONITE; HEXOGEN; RDX) AND CYCLOTETRAMETHYLENETETRANITRAMINE (HMX; OCTOGEN) MIXTURE, WETTED with not less than 15% water, by mass or CYCLOTRIMETHYLENETRINITRAMINE (CYCLONITE; HEXOGEN; RDX) AND CYCLOTETRAMETHYLENETETRANITRAMINE (HMX; OCTOGEN) MIXTURE, DESENSITIZED with not less than 10% phlegmatizer, by mass	1.1D	—	266	P 112(a) or (b)	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0392	HEXANITROSTILBENE	1.1D	—	—	P 112(b) or (c)	—
0393	HEXOTONAL	1.1D	—	—	P 112(b)	—
0394	TRINITRORESORCINOL (STYPHNIC ACID), WETTED with not less than 20% water, or a mixture of alcohol and water, by mass	1.1D	—	—	P 112(a)	PP26
0395	ROCKET MOTORS, LIQUID FUELLED	1.2J	—	—	CEP 03	—
0396	ROCKET MOTORS, LIQUID FUELLED	1.3J	—	—	CEP 03	—
0397	ROCKETS, LIQUID FUELLED with bursting charge	1.1J	—	—	CEP 03	—
0398	ROCKETS, LIQUID FUELLED with bursting charge	1.2J	—	—	CEP 03	—
0399	BOMBS WITH FLAMMABLE LIQUID with bursting charge	1.1J	—	—	CEP 03	—
0400	BOMBS WITH FLAMMABLE LIQUID with bursting charge	1.2J	—	—	CEP 03	—
0401	DIPICRYL SULPHIDE, dry or wetted with less than 10% water, by mass	1.1D	—	—	P 112	—
0402	AMMONIUM PERCHLORATE	1.1D	—	152	P 112(b) or (c)	—
0403	FLARES, AERIAL	1.4G	—	—	P 135	—
0404	FLARES, AERIAL	1.4S	—	—	P 135	—
0405	CARTRIDGES, SIGNAL	1.4S	—	—	P 135	—
0406	DINITROSOBENZENE	1.3C	—	—	P 114(b)	—
0407	TETRAZOL-1-ACETIC ACID	1.4C	—	—	P 114(b)	—
0408	FUZES, DETONATING with protective features	1.1D	—	—	P 141	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0409	FUZES, DETONATING with protective features	1.2D	—	—	P 141	—
0410	FUZES, DETONATING with protective features	1.4D	—	—	P 141	—
0411	PENTAERYTHRITE TETRANITRATE (PENTAERYTHRITOL TETRANITRATE; PETN) with not less than 7% wax, by mass	1.1D	—	131	P 112(b) or (c)	—
0412	CARTRIDGES FOR WEAPONS with bursting charge	1.4E	—	—	P 130 LP101	PP67 L1
0413	CARTRIDGES FOR WEAPONS, BLANK	1.2C	—	—	P 130 LP101	—
0414	CHARGES, PROPELLING, FOR CANNON	1.2C	—	—	P 130 LP101	—
0415	CHARGES, PROPELLING	1.2C	—	—	P 143	PP76
0417	CARTRIDGES FOR WEAPONS, INERT PROJECTILE or CARTRIDGES, SMALL ARMS	1.3C	—	—	P 130 LP101	—
0418	FLARES, SURFACE	1.1G	—	—	P 135	—
0419	FLARES, SURFACE	1.2G	—	—	P 135	—
0420	FLARES, AERIAL	1.1G	—	—	P 135	—
0421	FLARES, AERIAL	1.2G	—	—	P 135	—
0424	PROJECTILES, inert with tracer	1.3G	—	—	P 130 LP101	PP67 L1
0425	PROJECTILES, inert with tracer	1.4G	—	—	P 130 LP101	PP67 L1
0426	PROJECTILES with burster or expelling charge	1.2F	—	—	P 130 LP101	—
0427	PROJECTILES with burster or expelling charge	1.4F	—	—	P 130 LP101	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0428	ARTICLES, PYROTECHNIC, for technical purposes	1.1G	—	—	P 135	—
0429	ARTICLES, PYROTECHNIC, for technical purposes	1.2G	—	—	P 135	—
0430	ARTICLES, PYROTECHNIC, for technical purposes	1.3G	—	—	P 135	—
0431	ARTICLES, PYROTECHNIC, for technical purposes	1.4G	—	—	P 135	—
0432	ARTICLES, PYROTECHNIC, for technical purposes	1.4S	—	—	P 135	—
0433	POWDER CAKE (POWDER PASTE), WETTED with not less than 17% alcohol, by mass	1.1C	—	266	P 111	—
0434	PROJECTILES with burster or expelling charge	1.2G	—	—	P 130 LP101	PP67 L1
0435	PROJECTILES with burster or expelling charge	1.4G	—	—	P 130 LP101	PP67 L1
0436	ROCKETS with expelling charge	1.2C	—	—	P 130 LP101	PP67 L1
0437	ROCKETS with expelling charge	1.3C	—	—	P 130 LP101	PP67 L1
0438	ROCKETS with expelling charge	1.4C	—	—	P 130 LP101	PP67 L1
0439	CHARGES, SHAPED, without detonator	1.2D	—	—	P 137	PP70
0440	CHARGES, SHAPED, without detonator	1.4D	—	—	P 137	PP70
0441	CHARGES, SHAPED, without detonator	1.4S	—	347	P 137	PP70
0442	CHARGES, EXPLOSIVE, COMMERCIAL, without detonator	1.1D	—	—	P 137	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0443	CHARGES, EXPLOSIVE, COMMERCIAL, without detonator	1.2D	—	—	P 137	—
0444	CHARGES, EXPLOSIVE, COMMERCIAL, without detonator	1.4D	—	—	P 137	—
0445	CHARGES, EXPLOSIVE, COMMERCIAL, without detonator	1.4S	—	347	P 137	—
0446	CASES, COMBUSTIBLE, EMPTY, WITHOUT PRIMER	1.4C	—	—	P 136	—
0447	CASES, COMBUSTIBLE, EMPTY, WITHOUT PRIMER	1.3C	—	—	P 136	—
0448	5-MERCAPTOTETRAZOL-1-ACETIC ACID	1.4C	—	—	P 114(b)	—
0449	TORPEDOES, LIQUID FUELLED with or without bursting charge	1.1J	—	—	CEP 03	—
0450	TORPEDOES, LIQUID FUELLED with inert head	1.3J	—	—	CEP 03	—
0451	TORPEDOES with bursting charge	1.1D	—	—	P 130 LP101	PP67 L1
0452	GRENADES, PRACTICE, hand or rifle	1.4G	—	—	P 141	—
0453	ROCKETS, LINE-THROWING	1.4G	—	—	P 130 LP101	—
0454	IGNITERS	1.4S	—	—	P 142	—
0455	DETONATORS, NON-ELECTRIC for blasting	1.4S	—	347	P 131	PP68
0456	DETONATORS, ELECTRIC for blasting	1.4S	—	347	P 131	—
0457	CHARGES, BURSTING, PLASTICS BONDED	1.1D	—	—	P 130 LP101	—
0458	CHARGES, BURSTING, PLASTICS BONDED	1.2D	—	—	P 130 LP101	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0459	CHARGES, BURSTING, PLASTICS BONDED	1.4D	—	—	P 130 LP101	—
0460	CHARGES, BURSTING, PLASTICS BONDED	1.4S	—	347	P 130 LP101	—
0461	COMPONENTS, EXPLOSIVE TRAIN, N.O.S.	1.1B	—	178 274	CEP 03	—
0462	ARTICLES, EXPLOSIVE, N.O.S.	1.1C	—	178 274	CEP 03	—
0463	ARTICLES, EXPLOSIVE, N.O.S.	1.1D	—	178 274	CEP 03	—
0464	ARTICLES, EXPLOSIVE, N.O.S.	1.1E	—	178 274	CEP 03	—
0465	ARTICLES, EXPLOSIVE, N.O.S.	1.1F	—	178 274	CEP 03	—
0466	ARTICLES, EXPLOSIVE, N.O.S.	1.2C	—	178 274	CEP 03	—
0467	ARTICLES, EXPLOSIVE, N.O.S.	1.2D	—	178 274	CEP 03	—
0468	ARTICLES, EXPLOSIVE, N.O.S.	1.2E	—	178 274	CEP 03	—
0469	ARTICLES, EXPLOSIVE, N.O.S.	1.2F	—	178 274	CEP 03	—
0470	ARTICLES, EXPLOSIVE, N.O.S.	1.3C	—	178 274	CEP 03	—
0471	ARTICLES, EXPLOSIVE, N.O.S.	1.4E	—	178 274	CEP 03	—
0472	ARTICLES, EXPLOSIVE, N.O.S.	1.4F	—	178 274	CEP 03	—
0473	SUBSTANCES, EXPLOSIVE, N.O.S.	1.1A	—	178 274	CEP 03	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0474	SUBSTANCES, EXPLOSIVE, N.O.S.	1.1C	—	178 274	CEP 03	—
0475	SUBSTANCES, EXPLOSIVE, N.O.S.	1.1D	—	178 274	CEP 03	—
0476	SUBSTANCES, EXPLOSIVE, N.O.S.	1.1G	—	178 274	CEP 03	—
0477	SUBSTANCES, EXPLOSIVE, N.O.S.	1.3C	—	178 274	CEP 03	—
0478	SUBSTANCES, EXPLOSIVE, N.O.S.	1.3G	—	178 274	CEP 03	—
0479	SUBSTANCES, EXPLOSIVE, N.O.S.	1.4C	—	178 274	CEP 03	—
0480	SUBSTANCES, EXPLOSIVE, N.O.S.	1.4D	—	178 274	CEP 03	—
0481	SUBSTANCES, EXPLOSIVE, N.O.S.	1.4S	—	178 274 347	CEP 03	—
0482	SUBSTANCES, EXPLOSIVE, VERY INSENSITIVE (SUBSTANCES, EVI), N.O.S.	1.5D	—	178 274	CEP 03	—
0483	CYCLOTRIMETHYLENETRINITRAMINE (CYCLONITE; HEXOGEN; RDX), DESENSITIZED	1.1D	—	—	P 112(b) or (c)	—
0484	CYCLOTETRAMETHYLENETETRA-NITRAMINE (OCTOGEN; HMX), DESENSITIZED	1.1D	—	—	P 112(b) or (c)	—
0485	SUBSTANCES, EXPLOSIVE, N.O.S.	1.4G	—	178 274	CEP 03	—
0486	ARTICLES, EXPLOSIVE, EXTREMELY INSENSITIVE (ARTICLES, EEI)	1.6N	—	—	CEP 03	—
0487	SIGNALS, SMOKE	1.3G	—	—	P 135	—

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0488	AMMUNITION, PRACTICE	1.3G	—	—	P 130 LP101	PP67 L1
0489	DINITROGLYCOLURIL (DINGU)	1.1D	—	—	P 112(b) or (c)	—
0490	NITROTRIAZOLONE (NTO)	1.1D	—	—	P 112(b) or (c)	—
0491	CHARGES, PROPELLING	1.4C	—	—	P 143	PP76
0492	SIGNALS, RAILWAY TRACK, EXPLOSIVE	1.3G	—	—	P 135	—
0493	SIGNALS, RAILWAY TRACK, EXPLOSIVE	1.4G	—	—	P 135	—
0494	JET PERFORATING GUNS, CHARGED, oil well, without detonator	1.4D	—	—	CEP 01	—
0495	PROPELLANT, LIQUID	1.3C	—	224	P 115	PP53 PP54 PP57 PP58
0496	OCTONAL	1.1D	—	—	P 112(b) or (c)	—
0497	PROPELLANT, LIQUID	1.1C	—	224	P 115	PP53 PP54 PP57 PP58
0498	PROPELLANT, SOLID	1.1C	—	—	P 114(b)	—
0499	PROPELLANT, SOLID	1.3C	—	—	P 114(b)	—
0500	DETONATOR ASSEMBLIES, NON-ELECTRIC for blasting	1.4S	—	347	P 131	—
0501	PROPELLANT, SOLID	1.4C	—	—	P 114(b)	—
0502	ROCKETS with inert head	1.2C	—	—	P 130 LP101	PP67 L1

Explosive substance or explosive article		Class		Special provision	Packaging	
UN number	Shipping name and description				Packing instruction	Packing provision
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
0503	SAFETY DEVICES, PYROTECHNIC	1.4G	—	235 289	P 135	—
0504	1H-TETRAZOLE	1.1D	—	—	P 112(c)	PP48
0505	SIGNALS, DISTRESS, ship	1.4G	—	—	P 135	—
0506	SIGNALS, DISTRESS, ship	1.4S	—	—	P 135	—
0507	SIGNALS, SMOKE	1.4S	—	—	P 135	—
0508	1-HYDROXYBENZOTRIAZOLE, ANHYDROUS, dry or wetted with less than 20% water, by mass	1.3C	—	—	P 114(b)	PP48 PP50
0509	POWDER, SMOKELESS	1.4C	—	—	P 114(b)	PP48
0510	ROCKET MOTORS	1.4C	—	—	P 130 LP101	PP67 L1
0511	DETONATORS, ELECTRONIC programmable for blasting	1.1B	—	—	P 131	—
0512	DETONATORS, ELECTRONIC programmable for blasting	1.4B	—	—	P 131	—
0513	DETONATORS, ELECTRONIC programmable for blasting	1.4S	—	347	P 131	—

Notes to the table of explosives

The abbreviation “N.O.S.” denotes “not otherwise specified.”

One or more alternative shipping names may be shown in brackets following a proper shipping name, for example, CYCLOTRIMETHYLENETRINITRAMINE (CYCLONITE; HEXOGEN; RDX).

Special provisions to the table of explosives

Note: Special provisions below are copied from the UN Model Regulations at the time this standard was updated. Where there are differences between the requirements of the TDG Regulations and this standard, the TDG Regulations prevail.

16 Samples of new or existing explosive substances or explosive articles may be transported as directed by the NRCan competent authority for purposes such as testing, classification, research and development, quality control, or as a commercial sample. Explosive samples which are not wetted or desensitized shall be limited to a total of 10 kg as specified by the NRCan competent authority. Explosive samples which are wetted or desensitized shall be limited to a total of 25 kg.

105 Nitrocellulose meeting the descriptions of UN 2556 or UN 2557 may be classified in Division 4.1.

131 The phlegmatized substance shall be significantly less sensitive than dry PETN.

152 The classification of this substance will vary with particle size and packaging, but borderlines have not been experimentally determined. Appropriate classifications shall be made as required by 2.1.3 of the UN Model Regulations.

178 This designation shall be used only when no other appropriate designation exists in the Dangerous Goods List of Chapter 3.2 of the UN Model Regulations, and only with the approval of the competent authority of the country of origin.

204 Articles containing smoke-producing substance(s) corrosive according to the criteria for Class 8 shall be labelled with a “CORROSIVE” subsidiary hazard label (Model No. 8, see 5.2.2.2.2 of the UN Model Regulations).

Articles containing smoke-producing substance(s) toxic by inhalation according to the criteria for Division 6.1 shall be labelled with a “TOXIC” subsidiary hazard label (Model No. 6.1, see 5.2.2.2.2 of the UN Model Regulations), except that those manufactured before December 31, 2016 may be transported until January 1, 2019 without a “TOXIC” subsidiary hazard label.

224 The explosive substances shall be transported in the liquid state unless it can be demonstrated by testing that the sensitivity of the explosive substance in its solid state is no greater than in its liquid state. The explosive substances shall be prepared so that they remain in the liquid state at temperatures above -15 ºC.

235 This entry applies to explosive articles which contain Class 1 explosive substances and which may also contain dangerous goods of other classes. These explosive articles are used to enhance safety in vehicles, vessels or aircraft – for example, air bag inflators, air bag modules, seat belt pretensioners, and pyromechanical devices.

266 This explosive substance shall not be transported unless specifically authorized by the NRCan competent authority if it contains less alcohol, water, water-alcohol mixture or phlegmatizer than specified in Column 2.

267 EXPLOSIVES, BLASTING, TYPE C containing chlorates shall be segregated from explosives containing ammonium nitrate or other ammonium salts.

271 Lactose or glucose or similar materials, may be used as a phlegmatizer provided that the explosive substance contains not less than 90%, by mass, of phlegmatizer.

274 For the purposes of documentation and package marking, the proper shipping name shall be supplemented with the technical name (see 3.1.2.8 of the UN Model Regulations).

For UN 3077 and UN 3082 only, the technical name may be a name shown in capital letters in column 2 of the Dangerous Goods List, provided that this name does not include “N.O.S.” and that special provision 274 is not assigned. The name which most appropriately describes the substance or mixture shall be used, for example:

UN 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PAINT)

UN 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PERFUMERY PRODUCTS)

289 Safety devices, electrically initiated and safety devices, pyrotechnic installed in vehicles, vessels or aircraft or in completed components such as steering columns, door panels, seats, etc. are not subject to these Regulations.

347 This entry shall only be used if the results of Test Series 6(d) of Part I of the Manual of Tests and Criteria have demonstrated that any hazardous effects arising from functioning are confined within the package.

358 Nitroglycerin solution in alcohol with more than 1% but not more than 5% nitroglycerin may be classified in Class 3 and assigned to UN 3064 provided all the requirements of packing instruction P300 of the UN Model Regulations are complied with.

364 This article may only be transported under the provisions of Chapter 3.4 of the UN Model Regulations if, as presented for transport, the package is capable of passing the test in accordance with test series 6 (d) of Part I of the Manual of Tests and Criteria as determined by the competent authority.

370 This entry only applies to ammonium nitrate that meets one of the following criteria:

- ammonium nitrate with more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any added substance; or

- ammonium nitrate with not more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any added substance, that gives a positive result when tested in accordance with Test Series 2 (see Manual of Tests and Criteria, Part I). See also UN 1942.

This entry shall not be used for ammonium nitrate for which a proper shipping name already exists in the Dangerous Goods List of Chapter 3.2 including ammonium nitrate mixed with fuel oil (ANFO) or any of the commercial grades of ammonium nitrate.

393 The nitrocellulose shall meet the criteria of the Bergmann-Junk test or methyl violet paper test in the Manual of Tests and Criteria Appendix 10. Tests of type 3 (c) need not be applied.

Annex B
(normative)

Explosives packing instructions and packaging codes

B.1 Explosives packaging subject to CEP 03 shall pass the performance testing required in Section 7 of the CAN/CGSB-43.150 standard or in Section 7 of the CAN/CGSB-43.145 standard as applicable for UN standardized packaging at the packing group II performance level. The explosives specific packaging requirements specified in the Notice of Authorization issued by NRCan and the packaging configuration used for the classification of the explosives shall also be met.

Explosives packing instructions P 110 to P 129 shall only be used for explosive substances and explosives packing instructions P 130 to P 144 shall only be used for explosive articles. LP101 and LP102 shall be used for large explosive articles.

B.2 The term “receptacles” used in the inner and intermediate packaging columns of this section shall include boxes, bottles, cans, drums, jars and tubes, including any means of closure.

B.3 “Reels” mean devices made of plastic, wood, fibreboard, metal or other suitable material having a central spindle. Explosive articles and explosive substances can be wound onto the spindle. Each end of the spindle may have sidewalls to retain the explosive articles or explosive substances.

B.4 “Trays” mean sheets of metal, plastic, wood, fibreboard or other suitable material that are placed into the inner, intermediate or outer packaging and achieve a close fit. The surface of the tray may be shaped so that packagings or explosive articles can be inserted, held securely and remain separated from each other.

B.5 Some UN numbers cover explosive substances that may be transported dry or wetted. Where appropriate, the heading of the packaging method indicates whether it is suitable for dry, powder or wetted explosive substance.

B.6 The numbers under “special provisions” are the special provisions listed following the Table of explosives (see Annex A).

B.7 The packagings associated to the UN packaging code listed in the explosives packing instructions (P) shall be UN standardized packagings that meet the requirements applicable to this type of packaging 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 as such. The following Table B.1 — Selected packaging codes for UN standardized small packagings, provides a short description for each packaging code listed in the P.

B.8 The packagings associated to the UN packaging code listed in the explosives large packing instructions (LP) shall be UN standardized packagings that meet the requirements applicable to this type of 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 as such. The following Table B.3 — Selected packaging codes for UN standardized large packagings, provides a short description for each packaging code listed in the LP.

B.9 The packagings associated to the UN packaging code listed in the CEP 02 shall be UN standardized IBCs that meet the requirements applicable to this type of packaging 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. The following Table B.2 — Selected packaging codes for UN standardized IBCs, provides a short description for each IBC code listed in the P.

Explosives packing instructions (P)

EXPLOSIVES PACKING INSTRUCTION CEP 03		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Only packagings configuration(s) that pass the performance testing required in Section 7 of the CAN/CGSB-43.150 standard or in Section 7 of the CAN/CGSB-43.145 standard as applicable for UN standardized packaging at the packing group II performance level shall be used. Explosives specific packaging requirements specified in the Notice of Authorization issued by Natural Resources Canada and used to classify the explosives shall be met. The shipping document for explosives packaged in accordance with this method shall include the following words, as appropriate: “Packaging approved by the competent authority of Canada.” In addition to the above: - NRCan Notice of Authorization must follow the shipment; - Performance test reports, of section 7 of the standards above, must be made available upon request by an inspector. Only packaging configurations meeting all requirements in this Explosives Packing Instruction CEP 03 are considered approved by the TC competent authority.		

EXPLOSIVES PACKING INSTRUCTION P 110(a)		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – plastics – textile, plastic-coated or plastic-lined – rubber – textile, rubberized – textile	Bags: – plastics – textile, plastic-coated or plastic-lined – rubber – textile, rubberized Receptacles: – plastics – metal – wood	Drums: 1A1, 1H1, 1N1, 1A2, 1H2 and 1N2
Additional requirements: 1. *Intermediate packagings shall be filled with water-saturated material such as an antifreeze solution or wetted cushioning.* 2. *Outer packagings shall be filled with water-saturated material such as an antifreeze solution or wetted cushioning. Outer packagings shall be constructed and sealed to prevent evaporation of the wetting solution, except when UN 0224 is being carried dry.*		

EXPLOSIVES PACKING INSTRUCTION P 110(b)		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Receptacles: – metal – wood – rubber, conductive – plastics, conductive Bags: – rubber, conductive – plastics, conductive	Dividing partitions: – metal – wood – plastics – fibreboard	Boxes: 4C2, 4D and 4F
Special packing provision: PP42: The following conditions shall be met: a) each inner packaging shall not contain more than 50 g of explosive substance (quantity corresponding to dry substance); b) compartments between dividing partitions shall not contain more than one inner packaging, firmly fitted; and c) the outer packaging shall not contain more than 25 compartments.		

EXPLOSIVES PACKING INSTRUCTION P 111		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – paper, waterproofed – plastics – textile, rubberized Sheets: – plastics – textile, rubberized Receptacles – wood	Not necessary	Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2 Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1 and 4H2
Special packing provision: PP43: For UN 0159, inner packagings are not required when metal (1A1, 1B1, 1N1, 1A2, 1B2 or 1N2) or plastic (1H1 or 1H2) drums are used as outer packagings.		

EXPLOSIVES PACKING INSTRUCTION P 112(a) (Solid wetted 1.1D)		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – paper, multiwall, water-resistant – plastics – textile – textile, rubberized – woven plastics Receptacles: – metal – plastics – wood	Bags: – plastics – textile, plastic-coated or plastic-lined Receptacles: – metal – plastics – wood	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1 and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2
Additional requirement: *Intermediate packagings are not required if leakproof removable head drums are used as the outer packaging.* Special packing provisions: PP26: For UN 0004, 0076, 0078, 0154, 0219 and 394, packagings shall be lead-free. PP45: For UN 0072 and UN 0226, intermediate packagings are not required.		

EXPLOSIVES PACKING INSTRUCTION P 112(b) (Solid dry, other than powder 1.1D)		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – paper, kraft – paper, multiwall, water-resistant – plastics – textile – textile, rubberized – woven plastics	Bags (for UN 0150 only): – plastics – textile, plastic-coated or plastic-lined	Bags: 5H2, 5H3, 5H4, 5L2, 5L3 and 5M2 Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1 and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2
Special packing provisions: PP26: For UN 0004, 0076, 0078, 0154, 0216, 0219, 0386, packagings shall be lead-free. PP46: For UN 0209, siftproof bags (5H2) are recommended for flake or prilled TNT in the dry state and the maximum net mass is 30 kg per bag. PP47: For UN 0222, inner packagings are not required when the outer packaging is a bag.		

EXPLOSIVES PACKING INSTRUCTION P 112(c) (For solid dry powder 1.1D)		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – paper, multiwall, water-resistant – plastics – woven plastics Receptacles: – fibreboard – metal – plastics – wood	Bags: – paper, multiwall, water-resistant with inner lining plastics Receptacles: – metal – plastics	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2
Additional requirements: *1. Intermediate packagings are not required if drums are used as the outer packaging.* *2. These packages shall be siftproof.* Special packing provisions: PP26: For UN 0004, 0076, 0078, 0154, 0216, 0219 and 0386, packagings shall be lead-free. PP46: For UN 0209, siftproof bags (5H2) are recommended for flake or prilled TNT in the dry state and the maximum net mass is 30 kg per bag. PP48: For UN 0504, metal packagings shall not be used.		

EXPLOSIVES PACKING INSTRUCTION P 113		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – paper – plastics – textile, rubberized Receptacles: – fibreboard – metal – plastics – wood	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2
Additional requirement: *Packagings shall be siftproof.* Special packing provisions: PP49: For UN 0094 and 0305, each inner packaging shall not contain more than 50 g of explosive substance. PP50: For UN 0027, inner packagings are not necessary when drums are used as the outer packaging. PP51: For UN 0028, paper kraft or waxed paper sheets may be used as inner packagings.		

EXPLOSIVES PACKING INSTRUCTION P 114(a) (Solid wetted)		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – plastics – textile – woven plastics Receptacles: – metal – plastics – wood	Bags: – plastics – textile, plastic-coated or plastic-lined Receptacles: – metal – plastics Dividing partitions: – wood	Boxes: 4A, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2
Additional requirement: *Intermediate packagings are not required if leakproof drums are used as the outer packaging.* Special packing provisions: PP26: For UN 0077, 0132, 0234, 0235 and 0236, packagings shall be lead-free. PP43: For UN 0342, inner packagings are not required when metal (1A1, 1B1, 1N1, 1A2, 1B2 or 1N2) or plastic (1H1 or 1H2) drums are used as outer packagings.		

EXPLOSIVES PACKING INSTRUCTION P 114(b) (Solid dry)		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – paper, kraft – plastics – textile, siftproof – woven plastics, siftproof Receptacles: – fibreboard – metal – paper – plastics – woven plastics, siftproof – wood	Not necessary	Boxes: 4C1, 4C2, 4D, 4F and 4G Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2
Special packing provisions: PP26: For UN 0077, 0132, 0234, 0235 and 0236, packagings shall be lead-free. PP48: For UN 0508 and 0509, metal packagings shall not be used. Packagings of other material with a small amount of metal, for example metal closures or other metal fittings, are not considered metal packagings. PP50: For UN 0160, 0161 and 0508, inner packagings are not necessary if drums are used as the outer packaging. PP52: For UN 0160 and UN 0161, when metal drums (1A1, 1B1, 1N1, 1A2, 1B2 or 1N2) are used as the outer packaging, metal packagings shall be so constructed that the risk of explosion, by reason of increase internal pressure from internal or external causes is prevented.		

EXPLOSIVES PACKING INSTRUCTION P 115		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Receptacles: – plastics – wood	Bags: – plastics in metal receptacles Drums: – metal Receptacles: – wood	Boxes: 4C1, 4C2, 4D and 4F Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2
Special packing provisions: PP45: For UN 0144, absorbent cushioning material shall be inserted and intermediate packagings are not required. PP53: For UN 0075, 0143, 0495 and 0497, when boxes are used as the outer packaging, inner packagings shall have taped screw cap closures and be not more than 5 L capacity each. Inner packagings shall be surrounded with non-combustible absorbent cushioning materials. The amount of absorbent cushioning material shall be sufficient to absorb the liquid contents. Metal receptacles shall be cushioned from each other. Net mass of propellant is limited to 30 kg for each package when outer packagings are boxes. PP54: For UN 0075, 0143, 0495 and 0497, when drums are used as the outer packaging and when intermediate packagings are drums, they shall be surrounded with non-combustible cushioning material in a quantity sufficient to absorb the liquid contents. A composite packaging consisting of a plastic inner receptacle in a metal drum (6HA1 or 6HB1) may be used instead of the inner and intermediate packagings. The net volume of propellant in each package shall not exceed 120 L. PP55: For UN 0144, absorbent cushioning material shall be inserted. PP56: For UN 0144, metal receptacles may be used as inner packagings. PP57: For UN 0075, 0143, 0495 and 0497, bags shall be used as intermediate packagings when boxes are used as outer packagings. PP58: For UN 0075, 0143, 0495 and 0497, drums shall be used as intermediate packagings when drums are used as outer packagings. PP59: For UN 0144, fibreboard boxes (4G) may be used as outer packagings. PP60: For UN 0144, aluminum drums, removable head (1B1 or 1B2) and metal, other than steel or aluminum, removable head (1N1 or 1N2) shall not be used.		

EXPLOSIVES PACKING INSTRUCTION P 116		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – paper, water- and oil-resistant – plastics – textile, plastic-coated or lined – woven plastics, siftproof Receptacles: – fibreboard, water-resistant – metal – plastics – wood, siftproof Sheets: – paper, water-resistant – paper, waxed – plastics	Not necessary	Bags: 5H1, 5H2, 5H3, 5H4, 5L2, 5L3 and 5M2 Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2 Jerricans: 3A1, 3A2, 3H1 and 3H2
Special packing provisions: PP61: For UN 0082, 0241, 0331 and 0332, inner packagings are not required if leakproof removable head drums are used as the outer packaging. PP62: For UN 0082, 0241, 0331 and 0332, inner packagings are not required when the explosive is contained in a material impervious to liquid. PP63: For UN 0081, inner packagings are not required when contained in rigid plastic which is impervious to nitric esters. PP64: For UN 0331, inner packagings are not required when bags (5H2, 5H3 or 5H4) are used as outer packagings. PP66: For UN 0081, bags shall not be used as outer packagings.		

EXPLOSIVES PACKING INSTRUCTION P 130		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Not necessary	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1 and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2
Special packing provision: PP67: The following applies to UN 0006, 0009, 0010, 0015, 0016, 0018, 0019, 0034, 0035, 0038, 0039, 0048, 0056, 0137, 0138, 0168, 0169, 0171, 0181, 0182, 0183, 0186, 0221, 0243, 0244, 0245, 0246, 0254, 0280, 0281, 0286, 0287, 0297, 0299, 0300, 0301, 0303, 0321, 0328, 0329, 0344, 0345, 0346, 0347, 0362, 0363, 0370, 0412, 0424, 0425, 0434, 0435, 0436, 0437, 0438, 0451, 0488, 0502 and 0510. Large and robust explosives articles, normally intended for military use, without their means of initiation or with their means of initiation containing at least two effective protective features, may be carried unpackaged. When such explosive articles have propelling charges or are self-propelled, their ignition systems shall be protected against stimuli encountered during normal conditions of transport. A negative result in Test Series 4 of the Test Manual of the UN Recommendations on an unpackaged explosive article indicates that the explosive article can be considered for transport unpackaged. Such unpackaged explosive articles may be fixed to cradles or contained in crates or other suitable handling devices.		

EXPLOSIVES PACKING INSTRUCTION P 131		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – paper – plastics Receptacles: – fibreboard – metal – plastics – wood Reels	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2
Special packing provision: PP68: For UN 0029, 0267 and 0455, bags and reels shall not be used as inner packagings.		

EXPLOSIVES PACKING INSTRUCTION P 132(a) Explosive articles consisting of closed metal, plastics or fibreboard casings that contain a detonating explosive, or consisting of plastics-bonded detonating explosives.		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Not necessary	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2

EXPLOSIVES PACKING INSTRUCTION P 132(b) Explosive articles without closed casings.		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Receptacles: – fibreboard – metal – plastics – wood Sheets: – paper – plastics	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2

EXPLOSIVES PACKING INSTRUCTION P 133		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Receptacles: – fibreboard – metal – plastics – wood Trays, fitted with dividing partitions: – fibreboard – plastics – wood	Receptacles: – fibreboard – metal – plastics – wood	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2
Additional requirement: *Receptacles are only required as intermediate packagings when the inner packagings are trays.* Special packing provision: PP69: For UN 0043, 0212, 0225, 0268 and 0306, trays shall not be used as inner packagings.		

EXPLOSIVES PACKING INSTRUCTION P 134		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – water-resistant Receptacles: – fibreboard – metal – plastics – wood Sheets: – fibreboard, corrugated Tubes: – fibreboard	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1 and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2

EXPLOSIVES PACKING INSTRUCTION P 135		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – paper – plastics Receptacles: – fibreboard – metal – plastics – wood Sheets: – paper – plastics	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1 and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2

EXPLOSIVES PACKING INSTRUCTION P 136		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – plastics – textile Boxes: – fibreboard – plastics – wood Dividing partitions in the outer packagings.	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2

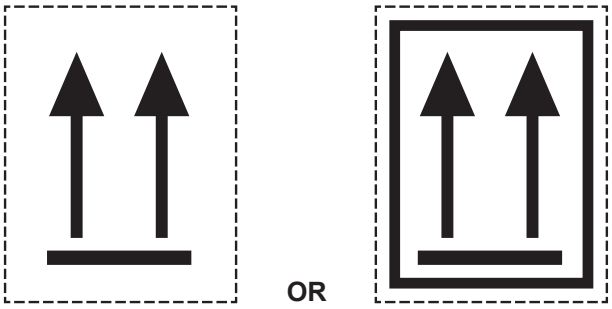
EXPLOSIVES PACKING INSTRUCTION P 137		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – plastics Boxes: – fibreboard – wood Tubes: – fibreboard – metal – plastics Dividing partitions in the outer packagings.	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2

Special packing provision:

PP70: For UN 0059, 0439, 0440 and 0441, when the shaped charges are packed singly, the conical cavity shall face downwards and the package marked with orientation arrows. When the shaped charges are packed in pairs, the conical cavities shall face inwards to minimize the jetting effect in the event of accidental initiation.

Orientation arrows

The orientation arrows, which are similar to the illustrations below, shall appear on two opposite vertical sides of the package with the arrows pointing in the correct upright direction. They shall be rectangular and of a size that is clearly visible commensurate with the size of the package. All features shall be in approximate proportion to those shown. The rectangular border is optional and two black or red arrows on a white or suitable contrasting background are allowed.



OR

EXPLOSIVES PACKING INSTRUCTION P 138		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – plastics	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2
Additional requirement: If the ends of the explosive articles are sealed, inner packagings are not necessary.		

EXPLOSIVES PACKING INSTRUCTION P 139		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – plastics Receptacles: – fibreboard – metal – plastics – wood Reels Sheets: – paper – plastics	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2 Drums: 1A1, 1B1, 1H1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2
Special packing provisions: PP71: For UN 0065, 0102, 0104, 0289 and 0290, the ends of the detonating cord shall be sealed, for example, by a plug firmly fixed so that the explosive cannot escape. The ends of flexible detonating cord shall be fastened securely. PP72: For UN 0065 and 0289, inner packagings are not required when they are in coils.		

EXPLOSIVES PACKING INSTRUCTION P 140		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – plastics Receptacles: – wood Reels Sheets: – paper, kraft – plastics	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2
Special packing provisions: PP73: For UN 0105, no inner packagings are required if the ends are sealed. PP74: For UN 0101, the packaging shall be siftproof except when the fuse is covered by a paper tube and both ends of the tube are covered with removable caps. PP75: For UN 0101, steel, aluminum and metal, other than steel or aluminum, boxes or drums shall not be used.		

EXPLOSIVES PACKING INSTRUCTION P 141		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Receptacles: – fibreboard – metal – plastics – wood Trays, fitted with dividing partitions: – plastics – wood Dividing partitions in the outer packagings.	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2

EXPLOSIVES PACKING INSTRUCTION P 142		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – paper – plastics Receptacles: – fibreboard – metal – plastics – wood Sheets: – paper Trays, fitted with dividing partitions: – plastics	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2

EXPLOSIVES PACKING INSTRUCTION P 143		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – paper, kraft – plastics – textile – textile, rubberized Receptacles: – fibreboard – metal – plastics – wood Trays, fitted with dividing partitions: – plastics – wood	Not necessary	Boxes: 4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1D, 1G, 1H1 and 1H2
Additional requirement: *Instead of the above inner and outer packagings, a composite packaging consisting of plastic inner receptacle in a solid plastic box (6HH2) may be used.* Special packing provision: PP76: For UN 0271, 0272, 0415 and 0491, when metal packagings are used, metal packagings shall be so constructed that the risk of explosion by reason of increase in internal pressure from internal or external causes is prevented.		

EXPLOSIVES PACKING INSTRUCTION P 144		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Receptacles: – fibreboard – metal – plastics – wood Dividing partitions in the outer packagings	Not necessary	Boxes: 4A, 4B, 4N, 4C1 with a metal liner, 4D with a metal liner, 4F with a metal liner, 4H1 and 4H2 Drums: 1A1, 1B1, 1N1, 1A2, 1B2, 1N2, 1H1 and 1H2
Special packing provision: PP77: For UN 0248 and 0249, packagings shall be protected against the ingress of water. When water-activated contrivances are transported unpackaged, they shall be provided with at least two independent protective features that prevent the ingress of water.		

EXPLOSIVES LARGE PACKING INSTRUCTION LP 101		
Inner packagings and arrangements	Intermediate packagings and arrangements	Large packagings
Not necessary	Not necessary	50A, 50B, 50N, 50H, 50C, 50D, 50F and 50G
Special packing provision L1: For UN Nos. 0006, 0009, 0010, 0015, 0016, 0018, 0019, 0034, 0035, 0038, 0039, 0048, 0056, 0137, 0138, 0168, 0169, 0171, 0181, 0182, 0183, 0186, 0221, 0243, 0244, 0245, 0246, 0254, 0280, 0281, 0286, 0287, 0297, 0299, 0300, 0301, 0303, 0321, 0328, 0329, 0344, 0345, 0346, 0347, 0362, 0363, 0370, 0412, 0424, 0425, 0434, 0435, 0436, 0437, 0438, 0451, 0488, 0502 and 0510: Large and robust explosive articles, normally intended for military use, without their means of initiation or with their means of initiation containing at least two effective protective features, may be carried unpackaged. When such explosive articles have propelling charges or are self-propelled, their ignition systems shall be protected against stimuli encountered during normal conditions of transport. A negative result in Test Series 4 on an unpackaged explosive article indicates that the explosive article can be considered for transport unpackaged. Such unpackaged explosive articles may be fixed to cradles or contained in crates or other suitable handling devices.		

EXPLOSIVES LARGE PACKING INSTRUCTION LP 102		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Bags: – water resistant Receptacles: – fibreboard – metal – plastics – wood Sheets: – fibreboard, corrugated Tubes: – fibreboard	Not necessary	50A, 50B, 50N, 50H, 50C, 50D, 50F and 50G

CANADIAN EXPLOSIVES PACKING INSTRUCTION CEP 01		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Jet perforating guns a) The jet perforating gun is completely enclosed in a metal casing or each shaped charge is fully protected by a metal cover once affixed to the jet perforating gun; b) Only jet perforating guns that pass the performance testing required in Section 7 of the CAN/CGSB-43.150 standard or in Section 7 of the CAN/CGSB-43.145 standard as applicable for UN standardized packaging at the packing group II performance level shall be used. Performance test reports shall be made available upon request by an inspector. *Note: If the perforating guns already have been subjected to more severe drop test while being authorized as explosives and they can prove to pass the drop test criteria in CAN/CGSB-43.150 or CAN/CGSB-43.145, section 7. Then, the guns do not have to pass the drop test again.*		
Initiation systems may only be transported using this packing instruction when used solely for jet perforating guns.		

CANADIAN EXPLOSIVES PACKING INSTRUCTION CEP 02 Bulk explosives		
Inner packagings and arrangements	Intermediate packagings and arrangements	Outer packagings and arrangements
Not necessary	Not necessary	IBCs: – metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B, 31N) – flexible (13H2, 13H3, 13H4, 13L2, 13L3, 13L4, 13M2) – rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1, 31H2) – composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1, 31HZ2) Highway Tanks UN Portable Tanks

Special packing provision:
CPP01: UN 0331 may not be transported in a highway or portable tank.

Additional requirements:
Pumping an explosive substance subjects it to physical processes with the input of energy, which falls within the scope of manufacturing in the Explosives Act*. An explosives pumping system may be installed on a MPU, in conformance with an explosives licence or certificate issued for the MPU under the* Explosives Act*. Explosives pumping systems are not permitted on transport tanks that are not licenced as MPUs under the* Explosives Act.

Intermediate Bulk Containers (IBC)
IBCs for solids with UN code 11, 13 and 21 shall only be used for solid explosives.

Highway Tank
Highway tanks shall conform to the requirements for specification TC 423 in accordance with CSA B620. Highway tanks that conform to the requirements for specification TC 407 or TC 412 having a marked MAWP equal to or less than 241 kPa (35 psi), manufactured before January 1, 2017, are permitted.

Portable Tanks
UN portable tanks shall have a stainless steel shell and heads and shall conform to the requirements for T code portable tank instructions T1 to T10 in accordance with CSA B625. Higher equivalent T code portable tank instructions may not be used.

Note: Composite IBCs generally have a metal outer casing made of steel (A), aluminum (B) or a metal other than steel or aluminum (N).

Table B.1 — Selected packaging codes for UN standardized small packaging

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. Fibreboard	—	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	Removable head	3A2
	B. Aluminum	Removable head	3B2
	H. Plastic	Removable head	3H2
4. Boxes	A. Steel	—	4A
	B. Aluminum	—	4B
	C. Natural wood	Ordinary	4C1
	—	With siftproof 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
5. Bags	H. Woven plastic	Without inner liner or coating	5H1
	—	Siftproof	5H2
	—	Water resistant	5H3
	H. Plastics film	—	5H4
	L. Textile	Siftproof	5L2
	—	Water resistant	5L3
	M. Paper	Multiwall, water resistant	5M2
6. Composite packagings	H. Plastic inner receptacle	In solid plastic box	6HH2

Table B.2 — Selected packaging codes for UN standardized IBCs

1	2	3	4
—	**Type of IBC**	**Design characteristics**	**Code**
Flexible (13)	Plastic (H)	Woven plastic without coating or liner	13H1
		Woven plastic, coated	13H2
		Woven plastic with liner	13H3
		Woven plastic, coated and with liner	13H4
		Plastic film	13H5
	Textile (L)	Without coating or liner	13L1
		Coated	13L2
		With liner	13L3
		Coated with liner	13L4
	Paper (M)	Multiwall	13M1
		Multiwall, water-resistant	13M2
Rigid[a] (11, 21 and 31)	For solids, loaded by gravity (11[a])	Fitted with structural equipment	11H1
		Free-standing	11A, 11B, 11N, 11H2 With liners: 11C, 11D, 11F, 11G
	For solids, loaded or discharged under pressure (21[a])	Fitted with structural equipment	21H1
		Free-standing	21A, 21B, 21N, 21H2
	For liquids (31[a])	Fitted with structural equipment	31H1
		Free-standing	31A, 31B, 31N, 31H2
Composite with plastic inner receptacle (11HZ and 31HZ where Z is the placeholder for the material code of the outer frame)	11HZ[a]	For solids, loaded or discharged by gravity, with rigid plastic inner receptacle	Such as: 11HA1 and 11HH1
		For solids, loaded or discharged by gravity, with flexible plastic inner receptacle	Such as: 11HA2 and 11HH2
	31HZ[a]	For liquids, with rigid plastic inner receptacle	Such as: 31HA1 and 31HH1
		For liquids, 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 construction 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

Table B.3 — Selected packaging codes for UN standardized LPs

1	2	3
LP	**Design characteristics**	**LP Code**
Rigid	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

Annex C
(informative)

Glossary of explosive substances, explosive articles and related expressions

Note: The descriptions in this glossary are for information only and are not to be used for hazard classification.

Air bag inflators, pyrotechnic or **Air bag modules, pyrotechnic** or **Seat-belt pretensioners, pyrotechnic**
Explosive articles that contain pyrotechnic substances and that are used as life-saving vehicle airbags or seat belts.

Ammunition
A generic term related mainly to explosive articles of military application consisting of all kind of bombs, grenades, rockets, mines, projectiles and other similar devices or contrivances.

Ammunition, illuminating, with or without burster, expelling charge or propelling charge
Ammunition designed to produce a single source of intense light for lighting up an area. The term includes illuminating cartridges, grenades and projectiles; and illuminating and target identification bombs. The term excludes the following explosive articles, which are listed separately: **Cartridges, signal**; **Signal devices, hand**; **Signals, distress**; **Flares, aerial**; and **Flares, surface**.

Ammunition, incendiary
Ammunition containing an incendiary substance that may be a solid, liquid or gel including white phosphorus. Except when the composition is an explosive per se, it also contains one or more of the following: a propelling charge with a primer and an igniter charge; a fuse with a burster or an expelling charge. The term includes

— **Ammunition, incendiary**, liquid or gel, with burster, expelling charge or propelling charge;

— **Ammunition, incendiary**, with or without burster, expelling charge or propelling charge;

— **Ammunition, incendiary, white phosphorus**, with burster, expelling charge or propelling charge.

Ammunition, practice
Ammunition without a main bursting charge, containing a burster or an expelling charge. Normally it also contains a fuse and a propelling charge. The term excludes the following explosive articles that are listed separately: **Grenades, practice**.

Ammunition, proof
Ammunition containing pyrotechnic substances, used to test the performance or strength of new ammunition, weapon components or assemblies.

Ammunition, smoke
Ammunition containing a smoke producing substance such as chlorosulphonic acid mixture, titanium tetrachloride or white phosphorus; or smoke producing pyrotechnic composition based on hexachloroethane or red phosphorus. Except when the substance is an explosive *per se*, the ammunition also contains one or more of the following: a propelling charge with primer and igniter charge; a fuse with a burster or an expelling charge. The term includes **Grenades, smoke** but excludes **Signals, smoke**, which are listed separately. The term includes

— **Ammunition, smoke**, with or without burster, expelling charge or propelling charge;

— **Ammunition, smoke, white phosphorus**, with burster, expelling charge or propelling charge.

Ammunition, tear-producing, with burster, expelling charge or propelling charge
Ammunition containing a tear producing substance. It also contains one or more of the following: an explosive (pyrotechnic) substance; a propelling charge with a primer and an igniter charge; a fuse with a burster; or an expelling charge.

Ammunition, toxic, with burster, expelling charge or propelling charge
Ammunition containing a toxic agent. It also contains one or more of the following: an explosive (pyrotechnic) substance; a propelling charge with primer and igniter charge; a fuse with burster; or expelling charge.

Articles, explosive, extremely insensitive (Articles, EEI)
Explosive articles that contain only extremely insensitive detonating substances and that demonstrate a negligible probability of accidental initiation or propagation (under normal conditions of transport) and which have passed Test Series 7 of the UN Recommendations on the Transportation of Dangerous Goods.

Articles, pyrophoric
Explosive articles that contain a pyrophoric substance (capable of spontaneous ignition when exposed to air) and an explosive substance or component. The term excludes articles containing white phosphorus.

Articles, pyrotechnic, for technical purposes
Explosive articles that contain explosive (pyrotechnic) substances and that are used for technical purposes such as heat generation, gas generation, theatrical effects, etc. The term excludes the following explosive articles that are listed separately: all ammunition; **Cartridges, signal**; **Cutters, cable, explosive**; **Fireworks**; **Flares, aerial**; **Flares, surface**; **Release devices, explosive**; **Rivets, explosive**; **Signal devices, hand**; **Signals, distress**; **Signals, railway track, explosive**; **Signals, smoke**.

Black powder (Gunpowder)
An explosive substance consisting of an intimate mixture of charcoal or other carbon and either potassium nitrate or sodium nitrate, with or without sulphur. It may be meal, granular, compressed or pelletized.

Board
Wooden unit unto it a number of firing tubes are fastened. The tubes are connected to base fuses and contain pyrotechnic pieces such as stars or small shells placed over the black powder that is used as propellant for the pyrotechnic devices.

Bombs
Explosive articles that are dropped from aircraft. They may contain a flammable liquid with a bursting charge, a photo flash composition or a bursting charge. The term excludes torpedoes (aerial) and includes

— **Bombs, photo flash**;

— **Bombs**, with bursting charge;

— **Bombs with flammable liquid**, with bursting charge.

Boosters
Explosive articles consisting of a charge of detonating explosive with or without a means of initiation. They are used to increase the initiating power of detonators or detonating cord.

Bursters, explosive
Explosive articles consisting of a small charge of explosive used to open projectiles or other ammunition in order to disperse their contents.

Cartridges, blank
Explosive articles that consist of a cartridge case with a centre or rim fire primer and a confined charge of smokeless or black powder but no projectile. They are used for training, saluting or in starter pistols, tools, etc.

Cartridges, flash
Explosive articles consisting of a casing, a primer and flash powder, all assembled in one piece ready for firing.

Cartridges for weapons
1. Fixed (assembled) or semi fixed (partially assembled) ammunition designed to be fired from weapons. Each cartridge includes all the components necessary to function the weapon once. The name and description should be used for small arms cartridges that cannot be described as “cartridges, small arms.” Separate loading ammunition is included under this name and description when the propelling charge and projectile are packed together (see also “Cartridges, blank”).

2. Incendiary, smoke, toxic and tear producing cartridges are described in this Glossary under **Ammunition, incendiary**, etc.

Cartridges for weapons, inert projectile
Ammunition consisting of a projectile without a bursting charge but with a propelling charge. The presence of a tracer can be disregarded for classification purposes provided the predominant hazard is that of the propelling charge.

Cartridges, oil well
Explosive articles consisting of a casing of thin fibreboard, metal or other material containing only a propellant that projects a hardened projectile. The term excludes the following explosive articles that are listed separately: **Charges, shaped**.

Cartridges, power device
Explosive articles designed to accomplish mechanical actions. They consist of a casing with a charge of deflagrating explosive and a means of ignition. The gaseous products of the deflagration produce inflation, or linear or rotary motion, or activate diaphragms, valves or switches or project fastening devices or extinguishing agents.

Cartridges, signal
Explosive articles designed to fire coloured flares or other signals from signal pistols, etc.

Cartridges, small arms
Ammunition consisting of a cartridge case fitted with a centre or rim fire primer and containing both a propelling charge and a solid projectile. They are designed to be fired in weapons of calibre not larger than 19.1 mm. Shotgun cartridges of any calibre are included in this description. The term excludes: **Cartridges, small arms, blank** listed separately in the table of explosives (Annex A); and some small arms cartridges that are listed under **Cartridges for weapons, inert projectile**.

Cases, cartridge, empty, with primer
Explosive articles consisting of a cartridge case made from metal, plastics or other nonflammable material, in which the only explosive component is the primer.

Cases, combustible, empty, without primer
Explosive articles consisting of cartridge cases made partly or entirely from nitrocellulose.

Charges, bursting
Explosive articles consisting of a charge of detonating explosive such as hexolite, octolite or plastics bonded explosive designed to produce an effect by blast or fragmentation.

Charges, demolition
Explosive articles containing a charge of a detonating explosive in a casing of fibreboard, plastics, metal or other material. The term excludes the following explosive articles that are listed separately: **Bombs**, **Mines**, etc.

Charges, depth
Explosive articles consisting of a charge of detonating explosive contained in a drum or projectile. They are designed to detonate under water.

Charges, expelling
A charge of deflagrating explosive designed to eject the payload from the parent articles without damage.

Charges, explosive, commercial, without detonator
Explosive articles consisting of a charge of detonating explosive without a means of initiation, used for explosive welding, jointing, forming and other metallurgical processes.

Charges, propelling
Explosive articles consisting of a propellant charge in any physical form, with or without a casing, for use as a component of rocket motors or for reducing the drag of projectiles.

Charges, propelling, for cannon
Explosive articles consisting of a propellant charge in any physical form, with or without a casing, for use in a cannon.

Charges, shaped, without detonator
Explosive articles consisting of a casing containing a charge of detonating explosive with a cavity lined with a rigid material, without a means of initiation. They are designed to produce a powerful, penetrating jet effect.

Charges, shaped, flexible, linear
Explosive articles consisting of a V-shaped core of a detonating explosive clad by a flexible metal sheath.

Charges, supplementary, explosive
Explosive articles consisting of a small removable booster used in the cavity of a projectile between the fuse and the bursting charge.

Components, explosive train, n.o.s.
Explosive articles containing an explosive designed to transmit the detonation or deflagration within an explosive train.

Contrivances, water-activated, with burster, expelling charge or propelling charge
Explosive articles whose functioning depends upon physicochemical reaction of their contents with water.

Cord, detonating, flexible
An explosive article consisting of a core of detonating explosive enclosed in spun fabric, with plastics or other covering unless the spun fabric is siftproof.

Cord (fuse), detonating, metal clad
An explosive article consisting of a core of detonating explosive clad by a soft metal tube with or without a protective covering. When the core contains a sufficiently small quantity of explosive, the words “MILD EFFECT” are added.

Cord, igniter
An explosive article consisting of textile yarns covered with black powder or another fast-burning pyrotechnic composition and of a flexible protective covering; or it consists of a core of black powder surrounded by a flexible woven fabric. It burns progressively along its length with an external flame and is used to transmit ignition from a device to a charge or primer.

Cutters, cable, explosive
Explosive articles consisting of a knife edged device that is driven by a small charge of deflagrating explosive into an anvil.

Detonator assemblies, non-electric for blasting
Non-electric detonators assembled with and activated by a safety fuse, shock tube, flash tube or detonating cord. They may be of instantaneous design or incorporate delay elements. Detonating relays incorporating detonating cord are included. Other detonating relays are included in **Detonators, non-electric**.

Detonators
Articles consisting of a small metal or plastic tube containing explosives such as lead azide, PETN or combinations of explosives. They are designed to start a detonation train. They may be constructed to detonate instantaneously or may contain a delay element. The term includes

— **Detonators for ammunition**; and

— **Detonators** for blasting, **electric, non-electric** and **Electronic programmable**.

Detonating relays without flexible detonating cord are included.

Detonators, **Electronic programmable for blasting**
Detonators with enhanced safety and security features, utilizing electronic components to transmit a firing signal with validated commands and secure communications. Detonators of this type cannot be initiated by other means.

Entire load and **Total contents**
The phrases **Entire load** and **Total contents** mean such a substantial proportion that the practical hazard should be assessed by assuming simultaneous explosion of the whole of the explosive content of the load or package.

Explode
The verb used to indicate those explosive effects capable of endangering life and property through blast, heat and projection of missiles. It encompasses both deflagration and detonation.

Explosion of the total contents
The phrase **Explosion of the total contents** is used in testing a single explosive article or package or a small stack of explosive articles or packages.

Explosive, blasting
Detonating explosive substances used in mining, construction and similar tasks. Blasting explosives are assigned to one of five types. In addition to the ingredients listed, blasting explosives may also contain inert components such as kieselguhr, and minor ingredients such as colouring agents and stabilizers.

Explosive, blasting, type A
Explosive substances consisting of liquid organic nitrates such as nitroglycerin or a mixture of such ingredients with one or more of the following: nitrocellulose; ammonium nitrate or other inorganic nitrates; aromatic nitro derivatives, or combustible materials, such as wood meal and aluminum powder. Such explosives are in powdery, gelatinous or elastic form. The term includes dynamite gelatine, blasting and gelatine dynamites.

Explosive, blasting, type B
Explosive substances consisting of a) a mixture of ammonium nitrate or other inorganic nitrates with an explosive such as trinitrotoluene, with or without other substances such as wood meal and aluminum powder, or b) a mixture of ammonium nitrate or other inorganic nitrates with other combustible substances that are not explosive ingredients. Such explosives will not contain nitroglycerin, similar liquid organic nitrates or chlorates.

Explosive, blasting, type C
Explosive substances consisting of a mixture of either potassium or sodium chlorate or potassium, sodium or ammonium perchlorate with organic nitro derivatives or combustible materials such as wood meal or aluminum powder or a hydrocarbon. Such explosives will not contain nitroglycerin or similar liquid organic nitrates.

Explosive, blasting, type D
Explosive substances consisting of a mixture of organic nitrated compounds and combustible materials such as hydrocarbons and aluminum powder. Such explosives will not contain nitroglycerin, similar liquid organic nitrates, chlorates or ammonium nitrate. The term generally includes plastic explosives.

Explosive, blasting, type E
Explosive substances consisting of water as an essential ingredient and high proportions of ammonium nitrate or other oxidizers, some or all of which are in solution. The other constituents may include nitro derivatives such as trinitrotoluene, hydrocarbons or aluminum powder. The term includes **explosives**, **emulsion**; **explosives, slurry**, and **explosives, watergel**.

Explosive, deflagrating
An explosive substance (e.g. propellant) that reacts by deflagration rather than detonation when ignited and used in its normal manner.

Explosive, detonating
An explosive substance that reacts by detonation rather than deflagration when initiated and used in its normal manner.

Explosive, extremely insensitive substance (EIS)
An explosive substance that, although capable of sustaining a detonation, has demonstrated through tests that it is so insensitive that there is very little probability of accidental initiation.

Explosive, primary
An explosive substance manufactured to produce a practical effect by explosion that is very sensitive to heat, impact or friction and that, even in very small quantities, either detonates or burns very rapidly. It is able to transmit detonation (in the case of initiating explosive) or deflagration to secondary explosives close to it. The main primary explosives are mercury fulminate, lead azide and lead styphnate.

Explosive, secondary
An explosive substance that is relatively insensitive (when compared to primary explosives) and that is usually initiated by primary explosives with or without the aid of boosters or supplementary charges. Such an explosive may react as a deflagrating or as a detonating explosive.

Fireworks
Explosive (pyrotechnic) articles designed for entertainment.

Flares
Explosive articles containing explosive (pyrotechnic) substances that are designed to illuminate, identify, signal or warn. The term includes

— **Flares, aerial**;

— **Flares, surface**.

Flash powder
An explosive (pyrotechnic) substance that produces an intense light when ignited.

Fountain
An explosive article consisting of a non-metallic case containing pressed or consolidated sparks and flame producing explosive (pyrotechnic) substance. Also known as volcanoes, gerbs, showers, lances, Bengal fire, flitter sparkle, cylindrical fountains, cone fountains or illuminating torches.

Fracturing devices, explosive, without detonator, for oil wells
Explosive articles consisting of a charge of detonating explosive contained in a casing without means of initiation. They are used to fracture the rock around a drill shaft to assist the flow of crude oil from the rock.

Fuse/Fuze (English text only)
Although these two words have a common origin (French fusée, fusil) and are sometimes considered to be different spellings, it is useful to maintain the convention that fuse refers to a cord-like igniting device whereas fuze refers to a device used in ammunition that incorporates mechanical, electrical, chemical or hydrostatic components to initiate a train by deflagration or detonation.

Fuse, igniter, tubular, metal clad
An explosive article consisting of a metal tube with a core of deflagrating explosive.

Fuse, instantaneous, non detonating (quickmatch)
An explosive article consisting of cotton yarns impregnated with fine black powder (quickmatch). It burns with an external flame and is used in ignition trains for fireworks, etc.

Fuse, safety
Explosive article consisting of a core of fine-grained black powder surrounded by a flexible woven fabric with one or more protective outer coverings. When ignited, it burns at a pre-determined rate without any external explosive effect.

Fuses
Explosive articles designed to start a detonation or a deflagration in ammunition. They incorporate mechanical, electrical, chemical or hydrostatic components and generally protective features. The term includes

— **Fuses, detonating**;

— **Fuses, detonating**, with protective features;

— **Fuses, igniting**.

Grenades, hand or rifle
Explosive articles that are designed to be thrown by hand or to be projected by a rifle. The term includes

— **Grenades**, hand or rifle, with bursting charge;

— **Grenades, practice**, hand or rifle.

The term excludes **Grenades, smoke** listed under **Ammunition, smoke**.

Igniters
Explosive articles containing one or more explosive substances used to start deflagration in an explosive train. They may be actuated chemically, electrically or mechanically. This term excludes the following articles that are listed separately: **Cord, igniter**; **Fuse, igniter**; **Fuse, instantaneous, non detonating**; **Fuses, igniting**; **Lighters, fuse**; **Primers, cap type**; **Primers, tubular**.

Ignition, means of
A general term used in connection with the method employed to ignite a deflagrating train of explosive (including pyrotechnic) substances (e.g. a primer for a propelling charge, an igniter for a rocket motor, an igniting fuse).

Initiation, means of
1. A device intended to cause the detonation of an explosive (e.g. a detonator, detonator for ammunition, a detonating fuse).

2. The phrase “with its own means of initiation” means that the contrivance has its normal initiating device assembled to it, and this device is considered to present a significant risk during transport but not one great enough to be unacceptable. The phrase does not apply, however, to a contrivance packed with its means of initiation, provided the device is packaged to eliminate the risk of detonation of the contrivance in the event of accidental functioning of the initiating device. The means of initiating can even be assembled to the contrivance provided there are protective features so that the device is very unlikely to cause detonation of the contrivance in conditions that are associated with transport.

3. For the purposes of classification, any means of initiation without two effective protective features should be regarded as Compatibility Group B; an article with its own means of initiation without two effective protective features would be Compatibility Group F. On the other hand, a means of initiation that possesses two effective protective features would be Compatibility Group D; and an article with a means of initiation that possesses two effective protective features would be Compatibility Group D or E. A means of initiation adjudged as having two effective protective features should have been approved by the competent national authority. A common and effective way of achieving the necessary degree of protection is to use a means of initiation that incorporates two or more independent safety features.

Jet perforating guns, charged, oil well, without detonator
Explosive articles consisting of a steel tube or a metallic strip, into which are inserted shaped charges connected by a detonating cord, without a means of initiation.

Lighters, fuse
Explosive articles of various design actuated by friction, percussion or electricity and used to ignite safety fuse.

Mass explosion
An explosion that affects almost the entire load virtually instantaneously.

Mines
Explosive articles consisting normally of metal or composition receptacles and a bursting charge. They are designed to be operated by the passage of ships, vehicles or personnel. The term includes “Bangalore torpedoes.”

Powder cake (powder paste), wetted
An explosive substance consisting of nitrocellulose impregnated with not more than 60% of nitroglycerin or other liquid organic nitrates or a mixture of these.

Powder, smokeless
An explosive substance based on nitrocellulose (NC) used as propellant. The term includes propellants with a single base (NC alone), those with a double base (such as NC and nitroglycerin [NG]) and those with a triple base (such as NC/NG/nitroguanidine). Cast, pressed or bag charges of smokeless powder are listed under **Charges, propelling** or **Charges, propelling for cannon**.

Primers, cap type
Explosive articles consisting of a metal or plastic cap containing a small amount of primary explosive mixture that is readily ignited by impact. They serve as igniting elements in small arms cartridges and in percussion primers for propelling charges.

Primers, tubular
Explosive articles consisting of a primer for ignition and an auxiliary charge of deflagrating explosive such as black powder used to ignite the propelling charge in a cartridge case for cannon, etc.

Projectiles
Explosive articles such as a shell or bullet that are projected from a cannon or other artillery gun, a rifle or other small arm. They may be inert, with or without a tracer, or may contain a burster or an expelling charge or a bursting charge. The term includes

— **Projectiles**, inert, with tracer;

— **Projectiles**, with burster or expelling charge;

— **Projectiles**, with bursting charge.

Propellants
Deflagrating explosive used for propulsion or for reducing the drag of projectiles.

Propellants, liquid
Explosive substances consisting of a deflagrating liquid explosive, used for propulsion.

Propellants, solid
Explosive substances consisting of a deflagrating solid explosive, used for propulsion.

Release devices, explosive
Explosive articles consisting of a small charge of explosive with a means of initiation designed to sever rods or links to release equipment quickly.

Rocket motors
Explosive articles consisting of a solid, liquid or hypergolic fuel contained in a cylinder fitted with one or more nozzles. They are designed to propel a rocket or a guided missile. The term includes

— **Rocket motors**;

— **Rocket motors with hypergolic liquids**, with or without expelling charge;

— **Rocket motors, liquid fuelled**.

Rockets
Explosive articles consisting of a rocket motor and a payload that may be an explosive warhead or other device. The term includes guided missiles and

— **Rockets, line throwing**;

— **Rockets, liquid fuelled**, with bursting charge;

— **Rockets**, with bursting charge;

— **Rockets**, with expelling charge;

— **Rockets**, with inert head.

Set piece
An assembly made from fireworks fountains or wheels and their associated fuses and igniters mounted on a frame or other means of support intended to be function at a fireworks display.

Signals
Explosive articles containing explosive (pyrotechnic) substances designed to produce signals by means of sound, flame or smoke or any combinations thereof. The term includes

— **Signal devices, hand**;

— **Signals, distress**, ship;

— **Signals, railway track, explosive**;

— **Signals, smoke**.

Sounding devices, explosive
Explosive articles consisting of a charge of detonating explosive. They are dropped from ships and function when they reach a predetermined depth or the sea bed.

Substances, explosive, very insensitive (substances, EVI), n.o.s.
Explosive substances that present a mass explosion hazard but are so insensitive that there is very little probability of initiation, or of transition from burning to detonation (under normal conditions of transport) and have passed Test Series 5 of the UN Recommendations on the Transportation of Dangerous Goods.

Torpedoes
Explosive articles containing an explosive or non-explosive propulsion system and designed to be propelled through water. They may contain an inert head or a warhead. The term includes

— **Torpedoes, liquid fuelled**, with inert head;

— **Torpedoes, liquid fuelled**, with or without bursting charge;

— **Torpedoes**, with bursting charge.

Tracers for ammunition
Sealed articles containing explosive (pyrotechnic) substances, designed to reveal the trajectory of a projectile.

Warheads
Explosive articles consisting of detonating explosives. They are designed to be fitted to a rocket, guided missile or torpedo. They may contain a burster, expelling charge or bursting charge. The term includes

— **Warheads, rocket**, with burster or expelling charge;

— **Warheads, rocket**, with bursting charge;

— **Warheads, torpedo**, with bursting charge.

Wheel
An assembly including drivers containing explosive (pyrotechnic) substances and provided with a means of attaching it to a support so that it can rotate. Also known as Catherine wheels or Saxon wheels.

Table C.1 — UN numbers for terms in the glossary

Description or term	UN number
Air bag inflators, pyrotechnic Air bag modules, pyrotechnic Seat-belt pretensioners, pyrotechnic	0503
Ammunition, illuminating	0171, 0254, 0297
Ammunition, incendiary	0009, 0010, 0243, 0244, 0247, 0300
Ammunition, practice	0362, 0488
Ammunition, proof	0363
Ammunition, smoke	0015, 0016, 0245, 0246, 0303
Ammunition, tear-producing	0018, 0019, 0301
Ammunition, toxic	0020, 0021
Articles, EEI	0486
Articles, pyrophoric	0380
Articles, pyrotechnic, for technical purposes	0428, 0429, 0430, 0431, 0432
Black powder (Gunpowder)	0027, 0028
Bombs	0033, 0034, 0035, 0037, 0038, 0039, 0291, 0299, 0399, 0400
Boosters	0042, 0225, 0268, 0283
Bursters, explosive	0043
Cartridges, flash	0049, 0050
Cartridges for weapons	0005, 0006, 0007, 0012, 0014, 0321, 0326, 0327, 0328, 0338, 0339, 0348, 0412, 0413, 0417
Cartridges, oil well	0277, 0278
Cartridges, power device	0275, 0276, 0323, 0381
Cartridges, signal	0054, 0312, 0405
Cartridges, small arms	0012, 0339, 0417
Cases, cartridge, empty, with primer	0055, 0379
Cases, combustible, empty, without primer	0446, 0447
Charges, demolition	0048
Charges, depth	0056
Charges, explosive, commercial, without detonator	0442, 0443, 0444, 0445
Charges, propelling	0271, 0272, 0415, 0491
Charges, propelling, for cannon	0242, 0279, 0414
Charges, shaped, without detonator	0059, 0439, 0440, 0441
Charges, shaped, flexible, linear	0237, 0288
Charges, supplementary, explosive	0060

Description or term	UN number
Components, explosive train, n.o.s.	0382, 0383, 0384, 0461
Contrivances, water-activated	0248, 0249
Cord, detonating, flexible	0065, 0289
Cord (fuse), detonating, metal clad	0102, 0104, 0290
Cord, igniter	0066
Cutters, cable, explosive	0070
Detonator assemblies, non-electric for blasting	0360, 0361, 0500
Detonators	0029, 0030, 0073, 0255, 0267, 0364, 0365, 0366, 0455, 0456
Detonators, electronic programmable for blasting	0511, 0512, 0513
Explosive, blasting, type A	0081
Explosive, blasting, type B	0082, 0331
Explosive, blasting, type C	0083
Explosive, blasting, type D	0084
Explosive, blasting, type E	0241, 0332
Explosive, deflagrating	0027, 0028, 0077, 0132, 0160, 0161, 0190, 0234, 0235, 0236, 0342, 0343, 0406, 0407, 0448, 0495, 0497, 0498, 0499, 0508, 0509
Explosive, detonating	0004, 0072, 0074, 0075, 0076, 0078, 0079, 0081, 0082, 0083, 0084, 0113, 0114, 0118, 0129, 0130, 0133, 0135, 0143, 0144, 0146, 0147, 0150, 0151, 0153, 0154, 0155, 0160, 0190, 0207, 0208, 0209, 0213, 0214, 0215, 0216, 0217, 0218, 0219, 0220, 0222, 0223, 0224, 0226, 0241, 0266, 0282, 0331, 0332, 0340, 0341, 0385, 0386, 0387, 0388, 0389, 0390, 0391, 0392, 0393, 0394, 0401, 0402, 0411, 0489, 0490, 0504
Explosive, primary	0074, 0113, 0114, 0129, 0130, 0135, 0224
Explosive, secondary	0004, 0027, 0028, 0072, 0075, 0076, 0077, 0078, 0079, 0081, 0082, 0083, 0084, 0118, 0132, 0133, 0143, 0144, 0146, 0147, 0150, 0151, 0153, 0154, 0155, 0160, 0161, 0190, 0207, 0208, 0209, 0213, 0214, 0215, 0216, 0217, 0218, 0219, 0220, 0222, 0223, 0226, 0234, 0235, 0236, 0241, 0266, 0282, 0331, 0332, 0340, 0341, 0342, 0343, 0385, 0386, 0387, 0388, 0389, 0390, 0391, 0392, 0393, 0394, 0401, 0402, 0406, 0407, 0411, 0489, 0490, 0504, 0508
Fireworks	0333, 0334, 0335, 0336, 0337
Flares, aerial	0093, 0403, 0404, 0420, 0421
Flares, surface	0092, 0418, 0419
Flash powder	0094, 0305

Description or term	UN number
Fracturing devices, explosive, without detonator, for oil wells	0099
Fuse, igniter, tubular, metal clad	0103
Fuse, non-detonating	0101
Fuse, safety	0105
Fuzes	0106, 0107, 0257, 0316, 0317, 0367, 0368, 0408, 0409, 0410
Grenades, hand or rifle	0110, 0284, 0285, 0292, 0293, 0318, 0372, 0452
Igniters	0121, 0314, 0315, 0325, 0454
Jet perforating guns, charged, oil well, without detonator	0124, 0494
Lighters, fuse	0131
Mines	0136, 0137, 0138, 0294
Powder cake (powder paste)	0159, 0433
Powder, smokeless	0160, 0161, 509
Primers, cap type	0044, 0377, 0378
Primers, tubular	0319, 0320, 0376
Projectiles	0167, 0168, 0169, 0324, 0344, 0345, 0346, 0347, 0424, 0425, 0426, 0427, 0434, 0435
Propellants, liquid	0495, 0497
Propellants, solid	0498, 0499, 501
Release devices, explosive	0173
Rocket motors	0186, 0250, 0280, 0281, 0322, 0395, 0396, 0510
Rockets	0180, 0181, 0182, 0183, 0238, 0240, 0295, 0397, 0398, 0436, 0437, 0438, 0453, 0502
Signals	0191, 0192, 0193, 0194, 0195, 0196, 0197, 0313, 0373, 0487, 0492, 0493, 0505, 0506, 0507
Sounding devices, explosive	0204, 0296, 0374, 0375
Substances EVI, n.o.s.	0482
Torpedoes	0329, 0330, 0449, 0450, 0451
Tracers for ammunition	0212, 0306
Warheads	0221, 0286, 0287, 0369, 0370, 0371

Bibliography

[1] Canadian Standards Association (CSA Group), CSA B621 — *Selection and use of highway tanks, TC portable tanks, and other large containers for the transportation of dangerous goods, Classes 3, 4, 5, 6.1, 8, and 9*. Available from: www.csagroup.org/store.