

**EXPLOSIVES REGULATORY DIVISION
DIVISION DE LA RÉGLEMENTATION DES EXPLOSIFS**

BULLETIN No. 8 (revision7)

CANADIAN REGULATIONS FOR PROPELLANT EXPLOSIVES AND SPORTING AMMUNITION

GENERAL

1. The *Explosives Act and Regulations* govern the manufacture, sale, storage and importation of explosives, including the various propellants, percussion caps (primers) and ammunition for shooters and collectors. Jurisdiction of road transport is split between the *Explosives Regulations* and the *Transportation of Dangerous Goods Regulations (TDG)*, the latter originally coming into force on July 1, 1985; the most recent revision is in force as of August 15, 2002.

2. The following is a summary of the requirements of these two regulations, which apply to shooters, collectors, handloaders, and to the suppliers of sporting ammunition and explosive components used in handloading. The *Explosives Act (R.S., c.E-15s.1)* and the *Explosives Regulations (C.R.C., c.599)* as amended, the *Transportation of Dangerous Goods Act (S.C. 29 Elizabeth II c.36)* and the *Transportation of Dangerous Goods Regulations (P.C. 2001-286; SOR:2001-286)* as amended should be consulted if a legal interpretation is required.

DEFINITION

3. The word “explosive” as defined by the *Explosives Act and Regulations* comprises many more products than one sometimes thinks as explosive.

The *Explosives Act* defines “explosive” as follows:

“Explosive” means any thing that is made, manufactured or used to produce an explosion or a detonation or pyrotechnic effect, and includes any thing prescribed to be an explosive by the regulations, but does not include gases, organic peroxides or any thing prescribed not to be an explosive by the regulations.

The *Explosives Regulations* define as “explosive” as:

“Explosive” means a substance that is made, manufactured or used to produce an explosion or detonation or a pyrotechnic effect and includes gunpowder, propellant powders, blasting agents, dynamite, detonating cord, lead azide, detonators, ammunition of all descriptions, rockets, fireworks, fireworks compositions, safety flares and other signals.

Thus products such a fireworks and road flares, as well as ammunition and propellants, are considered explosives for the purposes of the *Explosives Act and Regulations*.

CLASSIFICATION AND HAZARDS

4. All explosives legally available for sale in Canada are evaluated to ensure they conform to established safety and performance standards. At the same time, the ability of their packages to withstand the rigours of handling and transportation is assessed, as well as the conformance of the labelling or other markings on these packages with both the *Consumer Packaging and Labelling Regulations* and the

Explosives Regulations, including mandatory warnings as applicable. Those explosives that pass the various test are declared “Authorized Explosives” and are assigned to an explosives class and a classification code in accordance with the specifications set out in the ***Explosives Regulations*** and the ***Transportation of Dangerous Goods Regulations***.

TDG Classification Often Called UN (Transport) Classification

Transport Canada’s TDG Regulations closely follow the UN’s international system of classification, labelling and marking for packaging and transport of dangerous goods, ensuring safety in the international trade of dangerous goods. Explosives fall into Class 1 (and are further subdivided into subdivisions depending on potential hazards during transportation).

ERD Classification or Canadian Classification

The Explosives Regulatory Division (ERD) classifies explosives into seven classes based on their chemical composition, sensitivity, or use.

The classification and hazards of explosives related to sporting ammunition and handloading are as follows:

PROPELLANT EXPLOSIVES

5. Propellant explosives are essentially low explosives and differ widely in the rate at which they deliver their energy.

6. **BLACK POWDER - Canadian Explosive Class 1.1**. This material is also known as GUNPOWDER and is an intimate mixture of potassium nitrate, sulphur and charcoal. This composition is extremely sensitive to spark and friction, particularly under dry conditions. It is one of the fastest burning propellants and burns essentially at the same rate whether confined (as in a gun) or unconfined. (Transport of Dangerous Goods classification abbreviated as TDG: UN 0027 BLACK POWDER, 1.1D)

7. **SMOKELESS POWDER - Canadian Explosive Classes 3.1 and 3.2**. These materials may be either double-based (3.1) or single-based (3.2), and consist of colloided nitrocellulose, which in the double-base product contains some nitroglycerine. The colloidal compounds are extremely flammable and capable of detonation under extreme confinement and powerful stimulus. Their burning speed is greatly increased when confined. The term "smokeless" powder was originally used to distinguish it from "smoking" black powder. (TDG: UN 0161 POWDER, SMOKELESS, 1.3C)

8. Propellants require no oxygen from the air for combustion, and are ignited when heated above their ignition temperature (about 160°C) by such things as the flame of a match, hot cigarette ash, flash from a percussion cap, a static or other electrical spark, a spark from grinding, or by fire directed against or near a closed container even if the powder itself is not exposed to the flame.

PERCUSSION CAPS (PRIMERS)

9. **PERCUSSION CAPS - Canadian Explosive Class 6.1** (safety class). Caps are given this classification if they are of such strength and design that ignition of one cap will not ignite other like caps in the same package. Fragments of a cap accidentally ignited may be projected over short distances and would be a hazard mainly to the eyes and exposed flesh. (TDG: UN 0044 PRIMERS, CAP TYPE, 1.4S)

10. **PERCUSSION CAPS - Explosive Class 6.3**. Caps are given this classification if they fail to meet the non-communication requirements of Class 6.1. Caps of Class 6.3 are subject to mass explosion

or communication within a sub-package if the package is involved in a fire or if one cap is accidentally ignited by impact.

(TDG: UN 0377 PRIMERS, CAP TYPE, 1.1B or UN 0378, PRIMERS, CAP TYPE, 1.4B)

SPORTING AMMUNITION (Safety Cartridges)

11. **AMMUNITION - Canadian Class Explosive 6.1.** Cartridges for any shotgun, gun, rifle, pistol, revolver and industrial gun, the case of which can be extracted after firing and that is so closed as to prevent any explosion in one cartridge being communicated to another cartridge but does not include tracer, incendiary, high explosive or other similar military-type cartridges, are given this classification. Although ammunition fires are noisy as a result of the individual explosion of percussion caps, missile hazard is minimal and protection may be provided by face masks and a covering over other exposed portions of the body. (TDG: UN 0012 CARTRIDGES, SMALL ARMS, 1.4S or UN 0014 CARTRIDGES, SMALL ARMS, BLANK, 1.4S)

REPACKING OF PROPELLANTS

12. It is unlawful to repack for sale any propellants except under the terms of a licence for an explosives factory or magazine or by special permission of the Chief Inspector. However, it is permitted for an individual to repack for personal use or to prepare black powder charges for muzzle loaders or cannon.

IMPORTATION

13. Only those explosives of which the composition and properties have been considered by the Explosives Regulatory Division and which have been declared “authorized” may be imported into Canada. Laboratory testing may be conducted on any explosive for which authorization is sought. Applications for an **Explosives Importation Permit** should be submitted well in advance of any proposed importation to:

Natural Resources Canada
Explosives Regulatory Division
1431 Merivale Road
Ottawa, Ontario K1A 0E4

Ressources Naturelles Canada
Division de la réglementation des explosifs
1431 chemin Merivale
Ottawa (Ontario) K1A 0E4

14. When submitting an application for an Explosives Importation Permit, it is important that:
- a) the application be completed in detail giving:
 - i) brand or trade name(s) of the explosives article(s);
 - ii) quantity by unit, or by weight in the case of propellants;
 - iii) name of manufacturer; and
 - iv) name of consignor or shipper.
 - b) the required fee for a General Explosives Importation Permit (single shipment) or for an Annual Explosives Importation Permit (multiple shipments) by cheque or money order payable to THE RECEIVER GENERAL FOR CANADA be enclosed.

15. "Unauthorized" explosives that are included on any application will be deleted. Any "unauthorized" explosives that arrive at Customs will be rejected and the related costs of storage, reshipping or other suitable disposal will be assigned to the importer.

16. Any person may import for personal use and definitely not for resale, without an importation permit, the following maximum quantities:

- | | |
|--|--|
| 1. Safety cartridges..... | 5000 units |
| 2. Percussion caps (primers) for safety cartridges.... | 5000 units |
| 3. Empty primed cartridge cases..... | 5000 units |
| 4. Gunpowder (black powder) in canisters of 500 g or less and smokeless powder in canisters of 4000 g or less..... | 8 kg |
| 5. Model rocket engines..... | 6 units |
| 6. Pyrotechnic distress signals and life saving devices. | Any quantity necessary for the safe operation of the aircraft, train, vessel or vehicle in which they are transported, or for the safety of the occupants. |

STORAGE AND POSSESSION OF PROPELLANT POWDERS

POSSESSION AND PERSONAL USE

17. Propellants not exceeding 10 kg in their approved canisters, caddies and kegs may be stored on residential property, providing they are in a locked substantial magazine that is kept clean and used **exclusively** for propellants. No federal licence or possession permit is required for this type of storage. The outside of the magazine must be marked with the word "EXPLOSIVE." **No flammable or highly combustible material may be stored in or near the magazine.**

18. Propellants not exceeding 75 kg in their approved canisters, caddies and kegs must be kept in a locked magazine located at safe distances from living quarters and dwellings, and from public thoroughfares such as streets and alleys. No federal licence or possession permit is required for this type of storage. The magazine, either a building or receptacle, must be marked on the outside with the word "EXPLOSIVES" in letters of appropriate size in a manner that does not attract undue attention. **No flammable or highly combustible materials may be stored in or near the magazine.**

NOTE: Total storage of explosives under paragraphs 17 and 18 must not exceed 75 kg.

19. Propellants in excess of 75 kg may only be stored in licensed magazines under the terms and conditions stipulated in the licence. Application for such licences must be made on the approved forms to the Explosives Regulatory Division, Ottawa.

SALE - UNLICENSED

20. Propellants not exceeding 12 kg may be kept in a retail establishment in a suitable receptacle not accessible to the public, provided individual packages do not exceed a capacity of 500 g. It is recommended that the propellants on display should not include more than one 500-g container of black powder. Shelving not accessible to the public and out of reach of children is deemed to constitute a suitable receptacle. **No federal licence or possession permit is required.**

SALE - LICENSED

21. Total quantities of propellant stored for sale in excess of 12 kg, even in multiple locations or only overnight, must be licensed by the Explosives Regulatory Division. If the magazine(s) is located within a secure building, it need only be locked with a suitable padlock. In the case of several magazines in a secure building, no one magazine shall store more than 125 kg of smokeless powder and must be separated from all other magazines by at least 10 m to prevent direct propagation of an explosion.

Containers must not exceed a capacity of 12 kg. If black powder is to be stored, the maximum quantity in any one magazine is 25 kg in 500-g containers. If black powder is stored with smokeless powder, the total quantity of the two together must not exceed 25 kg. Individual magazines must be separated from vulnerable points in accordance with the Quantity Distance table at the end of this document. If any magazine stores not more than 25 kg of propellants in individual canisters of 500 g or less and there is some degree of fire resistance between magazines, then the normal distance requirements may be modified by an inspector. Storage in built-up areas will generally be restricted to a maximum quantity of 500 kg suitably dispersed. Fire protection within the storage area must conform to provincial or municipal fire codes or by-laws.

22. If the magazine(s) is situated in an unsecure location, it must conform to the security requirement laid out in "Magazine Standards" (available from the Explosives Regulatory Division). For quantities less than 1000 kg, excluding black powder, the magazine(s) may usually be sited in accordance with Table 1. However, particularly when the quantity in any magazine exceeds 1000 kg, many other factors, such as the density of the exposed population, the nearness of storage areas for other dangerous goods and the presence of effective traverses, must be considered to prevent propagation prior to granting a licence (consult your regional Inspector of Explosives).

PERCUSSION CAPS (PRIMERS):

STORAGE AND POSSESSION

POSSESSION FOR OWN USE

23. A reasonable number of percussion caps (primers) for one's own use, and not for sale, may be kept on residential or other property, out of reach of children and away from heat and substances of a flammable nature. Such storage must be separated from propellant storage in a locked container or receptacle marked "EXPLOSIVES." **No federal licence or permit to possess is required for such storage.**

SALE

24. No licence to store 10 000 percussion caps (primers) or less for sale is required. This quantity may be stored in any retail establishment showcase or cupboard, or on a shelf inaccessible to the public. Such storage must be in a separate location to any propellant display or storage areas (see paragraph 20). **No possession permit is required.**

25. Storage for sale of quantities in excess of 10 000 percussion caps (primers) must be covered by a licence. The main storage must be in a locked cupboard, container, room or structure away from the sale areas and other areas to which the public has access, and in a location separate from propellant display or storage areas (see paragraphs 21 and 22). A maximum of 10 000 caps may be stored for display in the sale areas under the same licence in the manner outlined in paragraph 24.

This quantity may be increased to 40 000 caps if the caps are in Class 6.1 (UN hazard Class 1.4S). Application forms for the required licence may be obtained from the Explosives Regulatory Division.

RECORDS OF SALES

26. All licensed vendors of propellants must maintain the following information records regarding sales:

- a) the name and address of the purchaser;
- b) the date of the sale(s) transaction;
- c) the brand of propellant;
- d) the size of container(s); and
- e) the quantity of propellant sold.

Additional shipping documentation and records may be required under the TDG Regulations for shipments made by common carrier.

SPORTING AMMUNITION:

STORAGE AND POSSESSION

27. A person may keep on residential or other property for private use, and not for sale, such quantity of sporting ammunition as he/she may reasonably require for a rifle, revolver or shotgun or as part of a collection. He/she must take reasonable precautions against accidents, such as keeping the cartridges out of reach of children and away from flammables, and he/she should store the cartridges separate from the weapons in which they may be used.

28. No practical quantity limitation is imposed on the storage for sale of sporting ammunition (and industrial cartridges) in retail stores, warehouses and other general occupancies except those imposed by storage space and safe handling practices. Storage must be separated from substances of a flammable or highly combustible nature and kept out of reach of children. (Although the *Explosives Regulations* impose a limit of 225 kg net explosives quantity per unlicensed ammunition storehouse, few storehouses are large enough to contain the amount of ammunition this quantity entails and none have ever been licensed in Canada except as part of a factory.)

LOADING OF AMMUNITION

HANDLOADING FOR PERSONAL USE

29 Sporting ammunition cartridges may be filled or refilled on residential premises for non-commercial use without a factory licence subject to the following conditions:

- a) The place at which the filling takes place shall be separated from the magazine in which the propellant is kept. "Place" means a bench or area of work and not necessarily an enclosed space.
- b) In addition to that contained in the cartridges already made, there shall be no more than **2 kg** of propellant at the place.
- c) No other work shall be undertaken at the place while filling is in progress.

- d) No fire, heater or artificial light (except a light that is of such construction, position and character that it will not cause any danger of fire or explosion) shall be allowed where the filling takes place (and this includes "NO SMOKING").
- e) When operations have ceased, the place shall be cleaned to ensure that all spills, loose percussion caps, etc., are cleaned up and destroyed. Remaining propellant and caps should be returned to their respective packages and then to the magazines.

LOADING (LIMITED) FOR SALE

30. Safety cartridges may be loaded for sale at a place other than a licensed factory subject to the following conditions:

- a) Samples of the loaded safety cartridges must have been tested by the Canadian Explosives Research Laboratory and declared "authorized" by the Chief Inspector. The authorization is subject to continuing satisfactory test results on subsequent sampling of the ammunition.
- b) The outer package in which the reloaded safety cartridges are to be sold, displayed or distributed is conspicuously marked with the name and address of the person or firm who reloaded them and with the words "RELOADED CARTRIDGES."
- c) The operational procedures used have been approved by the Chief Inspector.
- d) Quality control designed to eliminate defective safety cartridges and to ensure proper workmanship has been instituted and approved by the Chief Inspector.
- e) The person has submitted a general arrangement drawing to the Chief Inspector and has obtained the Chief's approval of the place that shows:
 - i) the area where the loading of the safety cartridges is to be carried out;
 - ii) the storage areas for propellant, primers and finished ammunition; and
 - iii) the general arrangement of the equipment to be used.
- f) The person has given the Chief Inspector a statement setting out the maximum quantity of primers, propellant and finished ammunition to be kept at any time in his/her respective storage area and has obtained approval for these quantities.
- g) The operating area is separate from the magazines in which the primers and propellant used are kept or stored.
- h) If lighting, other than natural lighting, is required in the reloading area, it must be of such construction and character and located in such a manner as not to cause any danger of fire or explosion.
- i) No person shall smoke or have matches or other fire-producing devices in their possession in this area.
- j) No other work shall be undertaken in the loading area while filling is in progress.

- k) No member of the public is allowed in the area when the loading is being carried out.

Otherwise, industrial loading of ammunition is carried out at a licensed factory.

DETERIORATED SMOKELESS POWDER

(Abstracted from SAAMI Leaflet "Properties and Storage of Smokeless Powder")

31. Although modern smokeless powders are basically free from deterioration under proper storage conditions, safe practices require a recognition of the signs of deterioration and its possible effects.

32. Powder deterioration can be checked by opening the caps (lids) on the containers and smelling the contents. **Powder in a state of advanced deterioration has an irritating acidic odour.** (Do not confuse this with common solvent odours such as alcohol, ether and acetone.) **Such powder must be disposed of without delay.**

33. Check to make certain that the powder is not exposed to extreme heat or this may cause deterioration. Such exposure produces an acidity that accelerates further reaction and has been known, because of the heat generated by the reaction, to cause spontaneous combustion.

34. **Never salvage powder from old cartridges and do not attempt to blend salvaged powder with new powder. Do not accumulate old powder stocks.**

35. **The best way to dispose of deteriorated smokeless powder is** to burn it out in the open at an isolated location in small shallow piles (not over 25 mm deep). **The quantity burned in any one pile should never exceed 500 g.** Use an ignition train of slow burning combustible material so that you may retreat to a safe distance before the powder is ignited. (Never use the same spot twice because of latent heat in the ground.) After the burn, check to ensure that all propellant has been consumed.

DETERIORATED BLACK POWDER

36. The deterioration of black powder is usually evidenced by the appearance of white crystals and the caking of the grains. In this condition, it is best destroyed by complete soaking in water with agitation until the separation of the constituents is complete. The constituents should then be disposed of separately.

TRANSPORTATION

37. On July 1, 1985, the first phase of the new *Transportation of Dangerous Goods Regulations* (TDG Regs) came into force. This has been superseded by the recent August 15, 2001 Amendment. Explosives under the purview of the *Explosives Regulations* (EX Regs) are dangerous goods of Class 1 and hence subject to the *TDG Regs*. The provisions of the *TDG Regs* now in force supersede those provisions of the *EX Regs* that deal with classification for transport, labelling, marking, placarding, driver training and documentation.

38. The regulations, whether new or old, are designed to guard against fire or the spread of fire in the event of an accident, and to establish an appropriate emergency response to be followed should the need ever arise. **Propellants and ammunition of primary concern to shooters are therefore classified for transport as:**

Product Identification No. No d'identification du produit	Proper Shipping Name Appelation règlementaire	Classification Code Code de classement
UN / ONU 0027	Black Powder / Poudre noire	1.1D
UN / ONU 0161	Powder Smokeless / Poudre sans fumée	1.3C
UN / ONU 0499	Propellant, Solid Propergol, solide	1.3C (Pyrodex)
UN / ONU 0377	Primers, cap type / Amorces à percussion	1.1B
UN / ONU 0378	Primers, cap type / Amorces à percussion	1.4B
UN / ONU 0044	Primers, cap type / Amorces à percussion	1.4S
UN / ONU 0012	Cartridges, small arms Cartouches pour armes de petit calibre	1.4S
UN / ONU 0014	Cartridges, small arms blank / Cartouches à blanc pour armes de petit calibre	1.4S Starter pistol Pistolet de starter, etc.
UN / ONU 0323	Cartridges, power devices / Cartouches pour pyromécanismes	1.4S Power loads Lance-attache, etc

The manufacturer must ensure that this information is marked on the outer package with the Classification Code appearing on the orange label. It must also appear on the documents accompanying a shipment.

39. When transporting propellants, the cargo area must be enclosed and locked, free from sources of fire or of loose objects that could strike the explosives. The vehicle must be in sound mechanical condition, particular attention being paid to the exhaust system, electrical wiring, fuel tank, fuel lines, brakes, steering and tires. It must not be overloaded. Smoking on or near the vehicle is not allowed.

When laden with more than 25 kg Net Explosives Quantity (NEQ) of propellants, the vehicle must display the appropriate orange placard (1.1D or 1.3C) on all four sides and a 5-B:C fire extinguisher must be carried.

Permits for Equivalent Level of Safety have been issued by Transport Canada that allow transportation of up to 50 kg without placards (for further information consult a TDG Inspector).

A maximum of 75 kg may be carried in a private passenger vehicle. The trunk is acceptable. For small quantities, the glove compartment may be used. **Under no circumstances may propellants be taken onto or shipped by public passenger vehicle.**

40. No quantity limitations are imposed on the transportation of sporting ammunition, primers and power device cartridges when classified as 1.4S. For the purposes of retail sales for consumption by

individuals, these articles have been designated a "consumer commodity" and are hence exempted from many provisions of the *TDG Regulations*.

Chris Watson

Chief Inspector of Explosives / Inspecteur en chef des explosifs

TABLE 1 - TABLEAU 1
QUANTITY DISTANCE TABLE

QUANTITY DISTANCE TABLE - TABLE POIDS-DISTANCE

QUANTITY OF PROPELLANT EXPLOSIVES	DISTANCE FROM: PUBLIC ROADS, RAILWAYS, NAVIGABLE WATERWAYS, OPEN AREAS OF RESORT AND WORK SITES	DISTANCE FROM: OCCUPIED BUILDINGS INCLUDING DWELLINGS, SCHOOLS, FACTORIES AND BULK STORAGE SITES FOR FLAMMABLE SUBSTANCES	QUANTITÉ DE POWDRE PROPULSIVE	DISTANCE DE: RUES ET VOIES PUBLIQUES, VOIES FERRÉES, VOIES NAVIGABLES PAR BATEAUX, LIEUX PUBLICS ET DE RÉCRÉATION	DISTANCE DE: DEMEURES ET HABITATIONS OCCUPÉES; INCLUANT ÉCOLES, USINES ET ENTREPÔTS DE MATIÈRES INFLAMMABLES
Kg	METRES	METRES	KG	MÈTRES	MÈTRES
up to 50	25	25	jusqu'à 50	25	25
75	25	28	75	25	28
100	25	30	100	25	30
125	25	33	125	25	33
250	27	41	250	27	41
300	29	43	300	29	43
350	30	46	350	30	46
400	32	48	400	32	48
500	34	51	500	34	51
600	36	54	600	36	54
700	38	57	700	38	57
800	40	60	800	40	60
900	42	62	900	42	62
1000	43	64	1000	43	64

Notes:

- Quantity-distances for explosives quantities less than 125 kg shall be determined in consultation with Regional Inspectors who will take into account the strength of the structure, intervening partitions or walls, and the location of occupied areas of the building, as well as the type of propellants and size of containers to be stored.
- A minimum separation distance of 10 m between magazines or cupboards is expected to prevent direct propagation of an explosion between their content of propellants.
- For quantities in excess of 1000 kg, the chemical nature of the propellants, their granulation, the size of containers and the stacking arrangement must be considered to prevent the normal deflagration explosion and fireball transitioning to the more devastating detonation.
- This table does not apply to the storage of any quantity of black powder (1.1D). Consult your Regional Inspector of Explosives.**

5. This table supersedes all other previous tables.