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GUIDELINES**

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**UN explosive hazard classification system
and codes**

Warning

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Contents	
Contents	ii
Foreword	iii
Introduction	iv
UN explosive hazard classification system and codes	1
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Background	2
5 Purpose of explosive hazard classification system and codes	3
6 Hazard classification codes	3
6.1 Hazard divisions (LEVEL 1)	3
6.1.1 Fire Divisions (LEVEL 1)	5
6.2 Compatibility Groups (LEVEL 1)	6
7 Storage of Compatibility Groups (LEVEL 1)	9
7.1 Mixing rules	9
7.2 Ammunition requiring separate storage (LEVEL 1)	9
8 Types of tests for UN hazard classification (LEVEL 3)	10
8.1 General	10
8.2 Test Identification Codes	10
8.3 Recommended tests for explosives and explosive articles	11
Annex A (normative) References	14
Annex B (informative) References	15
Annex C (informative) List of extant Hazard Classification Codes	16
Amendment record	25

Foreword

Ageing, unstable and excess conventional ammunition stockpiles pose the dual risks of **accidental explosions at munition sites** and **diversion to illicit markets**.

The humanitarian impact of ammunition-storage-area explosions, particularly in populated areas, has resulted in death, injury, environmental damage, displacement and disruption of livelihoods in over 100 countries. Accidental ammunition warehouse detonations count among the heaviest explosions ever recorded.

Diversion from ammunition stockpiles has fuelled armed conflict, terrorism, organized crime and violence, and contributes to the manufacture of improvised explosive devices. Much of the ammunition circulating among armed non-State actors has been illicitly diverted from government forces.¹ In recognition of these dual threats of explosion and diversion, the General Assembly requested the United Nations to develop **guidelines for adequate ammunition management**.² Finalized in 2011, the International Ammunition Technical Guidelines (IATG) provide voluntary, practical, modular guidance to support national authorities (and other stakeholders) in safely and securely managing conventional ammunition stockpiles. The UN SaferGuard Programme was simultaneously established as the corresponding knowledge-management platform to oversee and disseminate the IATG.

The IATG also ensure that the United Nations entities consistently deliver high-quality advice and support – from mine action to counter-terrorism, from child protection to disarmament, from crime reduction to development.

The IATG consist of 12 volumes that provide practical guidance for ‘through-life management’ approach to ammunition management. The IATG can be applied at the guidelines’ **basic, intermediate, or advanced levels**, making the IATG relevant for all situations by taking into account the diversity in capacities and resources available. Interested States and other stakeholders can **utilize the IATG for the development of national standards and standing operating procedures**.

The IATG are reviewed and updated at a minimum every five years, to reflect evolving ammunition stockpile-management norms and practices, and to incorporate changes due to changing international regulations and requirements. The review is undertaken by the UN SaferGuard Technical Review Board composed of national technical experts with the support of a corresponding Strategic Coordination Group comprised of expert organizations applying the IATG in practice.

The latest version of each IATG module can be found at www.un.org/disarmament/ammunition.

¹ S/2008/258.

² See also the urgent need to address poorly-maintained stockpiles as formulated by the United Nations Secretary-General in his Agenda for Disarmament, *Securing Our Common Future* (2018).

Introduction

In order to primarily promote the safe transport of dangerous goods, an internationally agreed system for classification was devised by the United Nations, which is now globally used. Whilst initially produced for the transport of dangerous goods the principles have been applied by many nations as the basis for a simplified consequential hazard and risk assessment for the storage of ammunition.

The system comprises Hazard Divisions that indicate the type of hazard to be expected primarily in the event of an accident involving a quantity of ammunition, and Compatibility Groups. The Compatibility Groups are designed to minimise the risk of storing items together that will either increase the risk of an accident or, for a given quantity, the magnitude of the effects of such an accident. This process does not take into account the probability of an incident. It assumes that if it can happen it will, and when it does, it identifies the extent of the hazards.

The combination of the Hazard Division and the Compatibility Group results in a range of Hazard Classification Codes for all types of ammunition and explosives. These codes, or a similar national system, are critical to the safe storage and movement of ammunition and explosives.

Ideally, a higher degree of safety may be achieved by storing and transporting every ammunition type separately, but this is usually not practicable for reasons of storage and transportation efficiency and capacity. In practice, ammunition of different Compatibility Groups may be stored and transported together in order to maximize the efficient use of available storage space or transport capacity, provided certain conditions are met.

UN explosive hazard classification system and codes

1 Scope

This IATG module introduces and explains the UN explosive classification system and codes, which is based on the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS).³

2 Normative references

A list of normative references is given in Annex A. These documents are referred to in the text in such a way that some or all their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

A further list of informative references is given in Annex B in the form of a bibliography, which lists documents that contain additional information related to the contents of this IATG module.

The term 'compatibility group' refers to *a grouping identified by a letter which, when referenced to a compatibility table, shows those explosives which may be stored or transported together without significantly increasing the probability of an accident or, for a given quantity, the magnitude of the effects of such an accident. Codes are used to indicate which natures may be safely stored together.*

The term 'hazard class' refers to *the UN recommended system of nine classes for identifying dangerous goods. Class 1 identifies explosives.*

The term 'hazard classification code' (HCC) refers to *an alpha-numeric symbol that denotes the complete HCC for a particular nature. The code consists of two or three digits indicating the hazard division followed by a letter corresponding to the compatibility group, e.g. 1.3G.*

The term 'hazard division' (HD) refers to *the UN classification system that identifies hazardous substances.*

The term 'storage sub-divisions' (SsD) refers to *a numeric code distinguishing the degree of hazard within a hazard division.*

3 Terms and definitions

For the purposes of this module the following terms and definitions, as well as the more comprehensive list given in IATG 01.40 *Glossary of terms, definitions and abbreviations*, shall apply.

In all modules of the International Ammunition Technical Guidelines, the words 'shall', 'should', 'may' and 'can' are used to express provisions in accordance with their usage in ISO standards.

- a) **'shall' indicates a requirement:** It is used to indicate requirements strictly to be followed in order to conform to the document and from which no deviation is permitted.
- b) **'should' indicates a recommendation:** It is used to indicate that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required, or that (in the negative form, 'should not') a certain possibility or course of action is deprecated but not prohibited.

³ *United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS)*. ST/SG/AC.10/30/Rev.6 Geneva. United Nations. 2015.

- c) **'may' indicates permission:** It is used to indicate a course of action permissible within the limits of the document.
- d) **'can' indicates possibility and capability:** It is used for statements of possibility and capability, whether material, physical or casual.

4 Background

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS)⁴ is the culmination of more than a decade of work. The work began with the premise that existing systems should be harmonized in order to develop a single, globally harmonized system to address classification of chemicals, labels, and safety data sheets; this included military and civil explosives. The existing *United Nations Recommendations on the Transport of Dangerous Goods Model Regulations*⁵ are used as a complementary document containing details of the symbols and hazard classes themselves. The relevant ones have been extracted into this IATG.

The international mandate that provided the impetus for completing this work was adopted in the 1992 United Nations Conference on Environment and Development (UNCED), as reflected in Agenda 21, paragraph 19.27:

'A globally harmonized hazard classification and compatible labelling system, including material safety data sheets and easily understandable symbols, should be available, if feasible, by the year 2000'.

The work was coordinated and managed under the auspices of the Inter-organization Programme for the Sound Management of Chemicals (IOMC) Coordinating Group for the Harmonization of Chemical Classification Systems (CG/HCCS). The technical focal points for completing the work were the International Labour Organization (ILO); the Organization for Economic Cooperation and Development (OECD); and the United Nations Economic and Social Council's Sub-Committee of Experts on the Transport of Dangerous Goods (UNSCETDG).

Once completed in 2001, the work was transmitted by the IOMC to the new United Nations Economic and Social Council's Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals (UNSCGHS). This Sub-committee was established by the Council's resolution 1999/65 of 26 October 1999 as a subsidiary body of the former UNCETDG, which was reconfigured and renamed at the same occasion 'Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals' (UNSCGHS). The Committee and its sub-committees work on a biennium basis.

The UNSGHS is responsible for maintaining the GHS and promoting its implementation. It provides additional guidance as needs arise while maintaining stability in the system to encourage its adoption. Under its auspices, the document is regularly revised and updated to reflect national, regional and international experiences in implementing requirements into national, regional and international laws, as well as experiences of those doing the classification and labelling. This IATG shall be updated to reflect any applicable changes in the GHS.

⁴ *United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS)*. ST/SG/AC.10/30/Rev.6. Geneva. United Nations. 2015

⁵ *United Nations Recommendations on the Transport of Dangerous Goods Model Regulations*, (Nineteenth revised edition), ST/SG/AC.10/1/Rev.19, , 2015. (Referred to as the UN Model Regulations).

5 Purpose of explosive hazard classification system and codes

The purpose of explosive hazard classification codes is to:

- a) enhance the protection of human health and the environment by providing an internationally comprehensible system for hazard communication;
- b) provide a recognised framework for those countries without an existing explosive hazard classification system;
- c) reduce the need for testing and evaluation of ammunition, explosives, propellants and pyrotechnics; and
- d) facilitate internal and external movement of ammunition and explosives whose hazards have been properly assessed and identified on an international basis.

6 Hazard classification codes

In order to primarily promote the safe transport of dangerous goods, an internationally agreed system for classification has been devised as explained in Clause 4. Whilst initially produced for the transport of dangerous goods the principles have been applied by many nations as the basis for a simplified consequential hazard and risk assessment for the storage of ammunition. The system consists of 9 dangerous goods classes of which Class 1 comprises ammunition and explosives.

Class 1 is then divided into Hazard Divisions, which indicate the type of hazard to be expected primarily in the event of an accident involving a quantity of ammunition. Class 1 ammunition is further divided into Compatibility Groups designed to minimise the risk of storing items together that will either increase the risk of an accident or, for a given quantity, the magnitude of the effects of such an accident. This process does not take into account the probability of an incident. It assumes that if it can happen it will, and when it does, it identifies the extent of the hazards.

The UN hazard classification code (HCC) for an explosive or type of ammunition shall therefore consist of a combination of:

- a) the Hazard Division; and
- b) the Compatibility Group.

6.1 Hazard divisions (LEVEL 1)




The Hazard Division for a particular explosive or type of ammunition, within Hazard Class 1 of the GHS, shall be determined by its performance and test results according to Part I of the *Manual of Tests and Criteria*⁶ of the UN Recommendations on the Transport of Dangerous Goods.⁷

Stockpile management organisations should ensure that the ammunition and explosives in their possession is classified in accordance with the GHS. Table 1 summarises the Hazard Divisions that should be adopted during the stockpile management of conventional ammunition, although alternative local systems may be utilised.

HD 1.2 and HD 1.3 have been sub-divided into storage sub-divisions (SsD), which are applicable only to storage situations. These are explained in IATG 05.20 Types of Buildings for Explosives Storage (articles 5.2 and 5.3).

⁶ *United Nations Manual of Tests and Criteria*, (6th revised edition), ST/SG/AC.10/11/Rev.6, , 2015. (Referred to as *UN Manual of Tests and Criteria*).

⁷ The UN Recommendations effectively consist of two parts: 1) *The Manual of Tests and Criteria*; and 2) *The Model Regulations* (both normative references in Annex A).

Hazard Division/ Storage Sub-division	Description	Pictogram ⁸	Signal Word	Hazard Statement
1.1	Ammunition that has a mass explosion hazard.		▪ Danger	▪ Mass explosion hazard.
1.2	Ammunition that has a projection hazard but not a mass explosion hazard.		▪ Danger	▪ Severe projection hazard.
1.2.1 (SsD)	Ammunition that has a projection hazard but not a mass explosion hazard. <small>(More hazardous items of HD 1.2, which give large fragments over an extended range). SsD 1.2.1 contains articles which have above 0.136kg NEQ of HE content.</small>		▪ Danger	▪
1.2.2 (SsD)	Ammunition that has a projection hazard but not a mass explosion hazard. <small>(The less hazardous items of HD 1.2, which give smaller fragments of limited range). SsD 1.2.2 contains articles which have 0.136kg NEQ of HE content and below</small>		▪ Danger	▪
1.2.3 (SsD)	Ammunition that exhibit at most an explosion reaction during sympathetic reaction testing and a burning reaction in bullet impact and heating tests. ⁹		▪ Danger	▪
1.3	Ammunition that has a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.		▪ Danger	▪ Fire, blast or projection hazard.
1.3.1 (SsD)	Ammunition that has a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard. <small>(The more hazardous items with mass fire hazard and considerable thermal radiation).</small>		▪ Danger	▪

⁸ The examples shown also include the Compatibility Group.

⁹ This is a 'new' HD and is derived from NATO AASTP-3, Edition 1, Change 3. *Manual of NATO Safety Principles for the Hazard Classification of Military Ammunition and Explosives*. August 2009

Hazard Division/ Storage Sub-division	Description	Pictogram ⁸	Signal Word	Hazard Statement
1.3.2 (SsD)	Ammunition that has a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard. (The less hazardous items that burn sporadically).		▪ Danger	▪
1.4	Ammunition that presents no significant hazard.		▪ Warning	▪ Fire or projection hazard.
1.5	Very insensitive substances, which have a mass explosion hazard.		▪ Danger	▪ May mass explode in fire.
1.6	Extremely insensitive articles which do not have a mass explosion hazard.		▪ <i>No Signal Word</i>	▪ <i>No hazard statement.</i>
Unstable Explosive	Any explosive in an unstable condition.	<i>No pictogram assigned as the transport of unstable explosive is not permitted.</i>	▪ Danger	▪ Unstable explosive.

Table 1: Hazard Divisions¹⁰

6.1.1. Fire Divisions (LEVEL 1)

The six fire divisions, which equate to the hazard divisions, should be indicated during storage and transportation by one of four distinctive symbols in order to be recognised by the fire-fighting personnel approaching the fire scene. Hazard Division symbols may also be used for this purpose. A fire division number is shown on each symbol. Due to similar fire-fighting hazards, the Fire Division 1 fire symbol and number are also used for Fire Division 5 and the Fire Division 2 fire symbol and number are also used for Fire Division 6. The symbols in Table 2 shall be used when fire divisions are indicated during storage and transport:

¹⁰ GHS Annex 1.







Fire Division	Symbol	Remarks
1.1		▪
1.2		▪
1.3		▪
1.4		▪
1.5		▪ Fire Division 1 symbol used due to similar fire-fighting hazards.
1.6		▪ Fire Division 2 symbol used due to similar fire-fighting hazards.

Table 2: Fire Divisions

6.2 Compatibility Groups (LEVEL 1)

There may be hundreds of thousands of individual ammunition items, of many different types, stored in a single stockpile. The different types of ammunition will vary in purpose, calibre, explosive type and manufacturer, all with varying degrees of volatility. In order to improve overall safety by reducing the magnitude of an accident that may occur, each specific type of conventional ammunition should be allocated to a Compatibility Group. Strict application of the Mixing Rules (Clause 7.1) will then ensure a significant reduction and/or mitigation of the risk.

Compatibility Group	Full Description ¹¹	Examples
A	▪ Primary explosive substance.	▪ Examples are lead azide, lead styphnate, mercury fulminate, tetracene, dry RDX, and dry PETN.
B	▪ Articles containing a primary explosive substance and not containing two or more effective protective features. Some articles, such as detonators for blasting, detonator assemblies for blasting and primers, cap-type, are included, even though they do not contain primary explosives.	▪ Examples are detonators, blasting caps, small arms primers, and fuses without two or more safety features. ▪

¹¹ Full descriptions are from the *UN Model Regulations*.

Compatibility Group	Full Description ¹¹	Examples
C	<ul style="list-style-type: none"> ▪ Propellant explosive substance or other deflagrating explosive substance or article containing such explosive substance. 	<ul style="list-style-type: none"> ▪ Examples are single-, double-, triple-based, and composite propellants, rocket motors (solid propellant), and ammunition with inert projectile.
D	<ul style="list-style-type: none"> ▪ Secondary detonating explosive substance or black powder or article containing a secondary detonating explosive substance, in each case without means of initiation and without a propelling charge, or article containing a primary explosive substance and containing two or more effective protective features. 	<ul style="list-style-type: none"> ▪ Examples are bulk TNT, Composition B, wet RDX, bombs, projectiles, warheads, or fuzes with two or more safety features.
E	<ul style="list-style-type: none"> ▪ Article containing a secondary detonating explosive substance without means of initiation, with propelling charge (other than one containing a flammable liquid or gel or hypergolic liquids). 	<ul style="list-style-type: none"> ▪ Examples are artillery ammunition, rockets, or guided missiles.
F	<ul style="list-style-type: none"> ▪ Article containing a secondary detonating explosive substance with its own means of initiation, with a propelling charge (other than one containing a flammable liquid or gel or hypergolic liquids) or without a propelling charge. 	<ul style="list-style-type: none"> ▪ An example is a rocket propelled grenade.
G	<ul style="list-style-type: none"> ▪ Pyrotechnic substance, or article containing a pyrotechnic substance, or article containing both an explosive substance and an illuminating, incendiary, tear- or smoke-producing substance (other than a water activated article or one containing white phosphorus, phosphides, a pyrophoric substance, a flammable liquid or gel, or hypergolic liquids). 	<ul style="list-style-type: none"> ▪ Examples are flares, signals, incendiary or illuminating ammunition, and other smoke and tear producing devices.
H	<ul style="list-style-type: none"> ▪ Article containing both an explosive substance and white phosphorus. 	<ul style="list-style-type: none"> ▪ Examples are WP, plasticized white phosphorus (PWP), or other ammunition containing pyrophoric material.
J	<ul style="list-style-type: none"> ▪ Ammunition containing both an explosive substance and a flammable liquid or gel. 	<ul style="list-style-type: none"> ▪ Examples include liquid- or gel-filled incendiary ammunition.
K	<ul style="list-style-type: none"> ▪ Articles containing both an explosive substance and a toxic chemical agent. 	<ul style="list-style-type: none"> ▪ Examples are artillery or mortar ammunition (fuzed or unfuzed), grenades, and rockets or bombs filled with a lethal or incapacitating chemical agent.
L	<ul style="list-style-type: none"> ▪ Explosive substance or article containing an explosive substance and presenting a special risk (e.g. due to water activation or presence of hypergolic liquids, phosphides or a pyrophoric substance) and needing isolation of each type. 	<ul style="list-style-type: none"> ▪ Examples are pre-packaged hypergolic liquid-fuelled rocket engines, TPA (thickened TEA).

Compatibility Group	Full Description ¹¹	Examples
N	<ul style="list-style-type: none"> ▪ Articles containing only extremely insensitive detonating substance (EIDS). 	<ul style="list-style-type: none"> ▪ Examples are bombs and warheads. ▪ If dissimilar Group N munitions, such as Mk 82 and Mk 84 Bombs, are mixed together and have not been tested to assure non-propagation; the mixed munitions are considered to be Hazard Division 1.2, Compatibility Group D for purposes of transportation and storage.
S	<ul style="list-style-type: none"> ▪ Substance or article so packed or designed that any hazardous effects arising from accidental functioning are confined within the package unless the package has been degraded by fire, in which case all blast or projection effects are limited to the extent that they do not significantly hinder or prohibit fire-fighting or other emergency response efforts in the immediate vicinity of the package. 	<ul style="list-style-type: none"> ▪ Examples are small arms cartridges (ball), explosive switches or valves.

Table 3: Compatibility Groups

A list of extant Hazard Classification Codes for explosives and explosive articles, together with the appropriate UN Serial Number for transport has been extracted from the *UN Model Regulations* and is at Annex C for information.

NOTES

(1) Attention is drawn to the descriptions of CGs B, F, D and E. The essential differences between them are subtle and depend on such things as:

- (a) Whether a means of initiation is or is not fitted.
- (b) Whether the means of initiation has at least two effective protective measures that prevent the initiation of the ammunition in the event of accidental functioning of the means of initiation during handling, storage and transportation.
- (c) Whether the means of initiation is packed in the same package as the ammunition (but separately). The method of packaging is such as to prevent the initiation of the ammunition in the event of an accidental functioning of the initiating device.

(2) These differences are best illustrated by examples, as follows:

- (a) A detonating fuze will be CG B if it does not have at least two effective protective features but will be CG D if it does.
- (b) A plugged HE shell, or bomb will be CG D.
- (c) An HE shell, or bomb fitted with a CG D fuze will be classified as CG D.
- (d) An HE shell, or bomb fitted with a CG B fuze will be classified as CG F.
- (e) HE grenades packed with their fuzes will be classified as CG D only if it has been demonstrated that even if the fuzes function accidentally, the grenades will not be initiated; otherwise they will be classified CG F.
- (f) An HE round fitted with a CG D fuze will be CG E but will be CG F if it has a CG B fuze.

(3) CG D applies only when secondary detonating explosive (High Explosives) substances, or Black Powder, are properly packaged in an approved dust-tight container. Otherwise CG L applies.

7 Storage of Compatibility Groups (LEVEL 1)

7.1 Mixing rules

Ideally, a higher degree of safety may be achieved by storing every ammunition type separately, but this is usually not practicable for reasons of storage capacity. Ammunition of different Compatibility Groups may be stored together in order to maximise the efficient use of available storage space.

Conventional ammunition should be stored by Compatibility Group in accordance with the mixing rules illustrated in Table 4.

Compatibility Group	A	B	C	D	E	F	G	H	J	K	L	N	S
A	X												
B		X	X (1)	X (1)	X (1)	X (1)	X (1)						X
C		X (1)	X	X	X	X (2)	X (3)					X (4)	X
D		X (1)	X	X	X	X (2)	X (3)					X (4)	X
E		X (1)	X	X	X	X (2)	X (3)					X (4)	X
F		X (1)	X (2)	X (2)	X (2)	X	X (2,3)						X
G		X (1)	X (3)	X (3)	X (3)	X (2,3)	X						X
H								X					X
J									X				X
K										X			
L											(5)		
N			X (4)	X (4)	X (4)							X (6)	X (7)
S		X	X	X	X	X	X	X	X			X (7)	X

Table 4: Compatibility Group Mixing Rules

- NOTE 1 Compatibility Group B fuzes may be stored with the articles to which they will be assembled, but the Net Explosive Quantity (NEQ) shall be aggregated and treated as Compatibility Group F.
- NOTE 2 Storage in the same building may be permitted if effectively segregated to prevent propagation.
- NOTE 3 Mixing of articles of Compatibility Group G with articles of other compatibility groups is at the discretion of the National Competent Authority.
- NOTE 4 Articles of Compatibility Group N should not in general be stored with articles in other compatibility groups except S. However, if such articles are stored with articles of Compatibility Group C, D and E, the articles of Compatibility Group N should be considered as having the characteristics of Compatibility Group D and the compatibility groups mixing rules apply accordingly.
- NOTE 5 Compatibility Group L articles shall always be stored separately from all articles of other compatibility groups as well as from all other articles of different types of Compatibility Group L.
- NOTE 6 It is allowed to mix 1.6N munitions. The Compatibility Group of the mixed set remains N if the munitions belong to the same family or if it has been demonstrated that, in case of a detonation of one munition, there is no instant transmission to the munitions of another family (the families are then called 'compatible'). If it is not the case the whole set of munitions should be considered as having the characteristics of Compatibility Group D.
- NOTE 7 A mixed set of munitions 1.6N and 1.4S may be considered as having the characteristics of Compatibility Group N.

7.2 Ammunition requiring separate storage (LEVEL 1)

In addition to the mixing rules (Clause 7.1) certain types of conventional ammunition should always be stored separately (or under specific conditions) from other types of ammunition:

- a) detonators and blasting caps (separated from Compatibility Groups C, D, E, and F by a dividing wall capable of preventing sympathetic detonation of other items);
- b) damaged ammunition. (If considered unsafe for storage, damaged munitions should be destroyed at the earliest convenience);
- c) ammunition in an unknown condition. (This shall be stored at such a distance that detonation of this ammunition will not jeopardize other stocks);
- d) ammunition that has deteriorated and become hazardous. (This shall be stored in isolation and destroyed at the earliest convenience).

8 Types of tests for UN hazard classification (LEVEL 3)

8.1 General

There is a range of tests stipulated in Part 1 of the *UN Manual of Tests and Criteria* that should be used to determine the Hazard Division applicable to a certain type of ammunition. This testing should usually be done by the ammunition and explosives manufacturer prior to initial sale.

If the Hazard Division of conventional ammunition is not known, records have been lost or the system has never been used before in the country, then stockpile management organisations may be able to allocate the appropriate Hazard Division by comparison of the ammunition characteristics to similar ammunition for which a Hazard Division has been allocated. This would negate the requirement for a range of expensive and time-consuming tests. Alternatively, the ammunition may be allocated HCC 1.1.F if it is not G, H, J, K or L. This Clause of the IATG only seeks to introduce the test classification system; full details are available in the *UN Manual of Tests and Criteria*.

The full range of test series covers:

Test Series	Test Aim
1	▪ To determine if a substance has explosive properties.
2	▪ To determine if a substance is too insensitive for inclusion in Class 1 (Explosives).
3	▪ To determine if a substance is thermally stable and not too dangerous to transport in the form in which it was tested.
4	▪ To determine if an article, packaged article or packaged substance is too dangerous for transport.
5	▪ To determine if a substance may be allocated to Hazard Division 1.5.
6	▪ To determine if a substance may be allocated to Hazard Divisions 1.1, 1.2, 1.3 or 1.4 or to exclude it from Hazard Class 1.
7	▪ To determine if an article may be assigned to Hazard Division 1.6.
8	▪ To determine if an ammonium nitrate emulsion, suspension or gel, intermediate for blasting explosives (ANE), is insensitive enough for inclusion in Hazard Division 5.1 and to evaluate the suitability for transport in tanks.

Table 5: Summary of Part 1 Test Series

8.2 Test Identification Codes

Each test has a specific identification code that indicates:

- a) the part of the *UN Manual of Tests and Criteria* that the test relates to. (i.e. I for Part I, which covers Hazard Class 1 - explosives);
- b) the test series, (see Clause 8.1);
- c) test type; and

d) test number.

This is summarised in Table 6:

Part of Manual	Test Series	Test Type	Test Number	Example Test Identification Code
I	1 – 8	(a), (b), (c) etc	(i), (ii), (iii) etc	1 (b) (iii)

Table 6: Test Identification Codes

8.3 Recommended tests for explosives and explosive articles

Table 7 lists the recommended tests from the *UN Manual of Tests and Criteria* for explosives and explosive articles (ammunition):

Test Series	Test Type	Test Identification Code	Test Name	Remarks
1	(a)	1 (a)	UN Gap Test	▪
1	(b)	1 (b)	Koenen Test	▪
1	(c)	1 (c) (i)	Time / Pressure Test	▪
2	(a)	2 (a)	UN Gap Test	▪
2	(b)	2 (b)	Koenen Test	▪
2	(c)	2 (c) (i)	Time / Pressure Test	▪
3	(a)	3 (a) (ii)	BAM Fallhammer	▪
3	(b)	3 (b) (i)	BAM Friction Apparatus	▪
3	(c)	3 (c)	Thermal Stability Test at 75°C	▪
3	(d)	3 (d)	Small-scale Burning Test	▪
4	(a)	4 (a)	Thermal Stability Test	▪ For unpacked articles and packaged articles.
4	(b)	4 (b) (i)	Steel Tube Drop Test for liquids	▪
4	(c)	4 (b) (ii)	12m Drop Test	▪ For unpacked articles, packaged articles and packaged substances.
5	(a)	5 (a)	Cap Sensitivity Test	▪
5	(b)	5 (b) (ii)	USA DDT ¹² Test	▪
5	(c)	5 (c)	External Fire Test for Division 1.5	▪
6	(a)	6 (a)	Single Package Test	▪
6	(b)	6 (b)	Stack Test	▪
6	(c)	6 (c)	External Fire (Bonfire) Test	▪
6	(d)	6 (d)	Unconfined Package Test	▪
7	(a)	7 (a)	EIS ¹³ Cap Test	▪
7	(b)	7 (b)	EIS Gap Test	▪

¹² Deflagration to Detonation Transfer.

¹³ Extremely Insensitive Substance (EIS).

Test Series	Test Type	Test Identification Code	Test Name	Remarks
7	(c)	7 (c) (ii)	Friability Test	▪
7	(d)	7 (d) (i)	EIS Bullet Impact Test	▪
7	(e)	7 (e)	EIS External Fire Test	▪
7	(f)	7 (f)	EIS Slow Cook-off Test	▪
7	(g)	7 (g)	1.6 Article External Fire Test	▪
7	(h)	7 (h)	1.6 Article Slow Cook-off Test	▪
7	(j)	7 (j)	1.6 Article Bullet Impact Test	▪
7	(k)	7 (k)	1.6 Article Stack Test	▪
7	(l)	7 (l)	1.6 Article Fragment Impact Test	▪
8	(a)	8 (a)	Thermal Stability Test	▪ For ANE ¹⁴
8	(b)	8 (b)	ANE Gap Test	▪
8	(c)	8 (c)	Koenen Test	▪
8	(d)	8 (d)	Vented Pipe Test	▪ This evaluates suitability for transport in storage tanks.
Test Series	Test Type	Test Identification Code	Test Name	Remarks
1	(a)	1 (a)	UN Gap Test	▪
1	(b)	1 (b)	Koenen Test	▪
1	(c)	1 (c) (i)	Time / Pressure Test	▪
2	(a)	2 (a)	UN Gap Test	▪
2	(b)	2 (b)	Koenen Test	▪
2	(c)	2 (c) (i)	Time / Pressure Test	▪
3	(a)	3 (a) (ii)	BAM Fallhammer	▪
3	(b)	3 (b) (i)	BAM Friction Apparatus	▪
3	(c)	3 (c)	Thermal Stability Test at 75°C	▪
3	(d)	3 (d)	Small-scale Burning Test	▪
4	(a)	4 (a)	Thermal Stability Test	▪ For unpacked articles and packaged articles.
4	(b)	4 (b) (i)	Steel Tube Drop Test for liquids	▪
4	(c)	4 (b) (ii)	12m Drop Test	▪ For unpacked articles, packaged articles and packaged substances.
5	(a)	5 (a)	Cap Sensitivity Test	▪
5	(b)	5 (b) (ii)	USA DDT ¹⁵ Test	▪
5	(c)	5 (c)	External Fire Test for Division 1.5	▪

¹⁴ Ammonium Nitrate Explosives. Unlikely to be required for military ammunition and explosives.

¹⁵ Deflagration to Detonation Transfer.

Test Series	Test Type	Test Identification Code	Test Name	Remarks
6	(a)	6 (a)	Single Package Test	▪
6	(b)	6 (b)	Stack Test	▪
6	(c)	6 (c)	External Fire (Bonfire) Test	▪
6	(d)	6 (d)	Unconfined Package Test	▪
7	(a)	7 (a)	EIS ¹⁶ Cap Test	▪
7	(b)	7 (b)	EIS Gap Test	▪
7	(c)	7 (c) (ii)	Friability Test	▪
7	(d)	7 (d) (i)	EIS Bullet Impact Test	▪
7	(e)	7 (e)	EIS External Fire Test	▪
7	(f)	7 (f)	EIS Slow Cook-off Test	▪
7	(g)	7 (g)	1.6 Article External Fire Test	▪
7	(h)	7 (h)	1.6 Article Slow Cook-off Test	▪
7	(j)	7 (j)	1.6 Article Bullet Impact Test	▪
7	(k)	7 (k)	1.6 Article Stack Test	▪
7	(l)	7 (l)	1.6 Article Fragment Impact Test	▪
8	(a)	8 (a)	Thermal Stability Test	▪ For ANE ¹⁷
8	(b)	8 (b)	ANE Gap Test	▪
8	(c)	8 (c)	Koenen Test	▪
8	(d)	8 (d)	Vented Pipe Test	▪ This evaluates suitability for transport in storage tanks.

Table 7: Recommended tests

¹⁶ Extremely Insensitive Substance (EIS).

¹⁷ Ammonium Nitrate Explosives. Unlikely to be required for military ammunition and explosives.

Annex A (normative) References

The following normative documents contain provisions, which, through reference in this text, constitute provisions of this part of the guideline. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of the guideline are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO maintain registers of currently valid ISO or EN:

- a) IATG 01.40 *Terms, glossary and definitions*. UNODA. 2015;
- b) *United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS)*. ST/SG/AC.10/30/Rev.6. Geneva. United Nations. 2015; http://www.unece.org/trans/danger/publi/ghs/ghs_rev06/06files_e.html#c38156
- c) *United Nations Manual of Tests and Criteria*, (6th revised edition), ST/SG/AC.10/11/Rev.6 New York and Geneva, United Nations, 2015; <https://shop.un.org/>
- d) *United Nations Recommendations on the Transport of Dangerous Goods Model Regulations*, (Nineteenth revised edition), ST/SG/AC.10/1/Rev.19, New York and Geneva, United Nations, 2015. <https://shop.un.org/>

The latest version/edition of these references should be used. The UN Office for Disarmament Affairs (UNODA) holds copies of all references¹⁸ used in this guideline and these can be found at: www.un.org/disarmament/un-safeguard/references/. A register of the latest version/edition of the International Ammunition Technical Guidelines is maintained by UNODA, and can be read on the IATG website: www.un.org/disarmament/ammunition/. National authorities, employers and other interested bodies and organisations should obtain copies before commencing conventional ammunition stockpile management programmes.

¹⁸ Where copyright permits.

Annex B **(informative)** **References**

The following informative documents contain provisions, which should also be consulted to provide further background information to the contents of this guideline:

- e) *Handbook of Best Practices on Conventional Ammunition*, Chapters 1 and 2. Decision 6/08. OSCE. 2008.

The latest version/edition of these references should be used. The UN Office for Disarmament Affairs (UNODA) holds copies of all references¹⁹ used in this guideline and can be found at: www.un.org/disarmament/un-safeguard/references/. A register of the latest version/edition of the International Ammunition Technical Guidelines is maintained by UNODA, and can be read on the IATG website: www.un.org/disarmament/ammunition/. National authorities, employers and other interested bodies and organisations should obtain copies before commencing conventional ammunition stockpile management programmes.

¹⁹ Where copyright permits.

Annex C (informative) List of extant Hazard Classification Codes²⁰

Explosive Substance or Ammunition Type	Hazard Classification Code	UN Serial Number
Amatols	1.1D	0082
Ammonium Nitrate Explosive (ANE)	1.1D 1.5D	0082 0331
Ammonium Nitrate (<i>with more than 0.2% combustible substances, including any organic substance, calculated as carbon, to the exclusion of any other added substance</i>).	1.1D	0222
Ammonium Perchlorate	1.1D	0402
Ammunition (Blank)	1.1C 1.2C 1.3C 1.4C 1.4S	0326 0413 0327 0338 0014
Ammunition, Fixed Ammunition, Semi-Fixed Ammunition, Separate Loading	1.1E 1.1F 1.2E 1.2F 1.4E 1.4F	0006 0005 0321 0007 0412 0348
Ammunition, Illuminating (<i>with or without burster, expelling charge or propelling charge</i>)	1.2G 1.3G 1.4G	0171 0254 0297
Ammunition, Incendiary (<i>liquid or gel, with burster, expelling charge or propelling charge</i>)	1.3J	0247
Ammunition, Incendiary (<i>liquid or gel, with or without burster, expelling charge or propelling charge</i>)	1.2G 1.3G 1.4G	0009 0010 0300
Ammunition, Incendiary (<i>water activated contrivances, with burster, expelling charge or propelling charge</i>)	1.2L 1.3L	0248 0249
Ammunition, Incendiary, White Phosphorus (<i>with burster, expelling charge or propelling charge</i>)	1.2H 1.3H	0243 0244
Ammunition, Industrial	1.2C 1.3C 1.3C 1.4C 1.4C 1.4S	0381 0275 0277 0276 0278 0323
Ammunition, Lachrymatory	1.2G 1.3G 1.4G	0018 0019 0301
Ammunition, Practice	1.3G 1.4G	0488 0362
Ammunition, Proof	1.4G	0363
Ammunition, Smoke (<i>with or without burster, expelling charge or propelling charge</i>)	1.2G 1.3G 1.4G	0015 0016 0303
Ammunition, Smoke, White Phosphorus (<i>water activated contrivances, with burster, expelling charge or propelling charge</i>)	1.2L	0248
Ammunition, Smoke, White Phosphorus (<i>with burster, expelling charge or propelling charge</i>)	1.2H 1.3H	0245 0246
Ammunition, Sporting	1.2C 1.3C 1.4C 1.4S	0328 0417 0339 0012
Ammunition, Tear-producing (<i>with burster, expelling charge or propelling charge</i>)	1.2G 1.3G 1.4G	0018 0019 0301
Ammunition, Toxic (<i>with burster, expelling charge or propelling charge</i>)	1.2K 1.3K	0020 0021
Ammunition, Toxic (<i>water activated contrivances, with burster, expelling charge or propelling charge</i>)	1.2L 1.3L	0248 0249
Articles, EEI	1.6N	0486

²⁰ Extracted from the *Alphabetical Index of Articles and Substances* contained within the *UN Model Regulations*.

Explosive Substance or Ammunition Type	Hazard Classification Code	UN Serial Number
Articles, Explosive, NOS	1.1C	0462
	1.1D	0463
	1.1E	0464
	1.1F	0465
	1.1L	0354
	1.2C	0466
	1.2D	0467
	1.2E	0468
	1.2F	0469
	1.2L	0355
	1.3C	0470
	1.3L	0356
	1.4B	0350
	1.4C	0351
	1.4D	0352
1.4E	0471	
1.4F	0472	
1.4G	0353	
1.4S	0349	
Articles, Pyrophoric	1.2L	0380
Articles, Pyrotechnic	1.1G	0428
	1.2G	0429
	1.3G	0430
	1.4G	0431
	1.4S	0432
Bag Charges	1.1C	0279
	1.2C	0414
	1.3C	0242
Ballistite	1.1C	0160
	1.3C	0161
Bangalore Torpedos	1.1D	0137
	1.1F	0136
	1.2D	0138
	1.2F	0294
Barium Azide (<i>dry or wetted with less than 50% water by mass</i>)	1.1A	0224
Black Powder, Compressed	1.1D	0028
Black Powder, Granular or as a Meal	1.1D	0027
Black Powder, In Pellets	1.1D	0028
Blasting Caps, Assemblies	1.1B	0360
	1.4B	0361
Blasting Caps, Electric	1.1B	0030
	1.1B	0255
	1.1S	0456
Blasting Caps, Non-Electric	1.1B	0029
	1.4B	0267
	1.4S	0455
Bombs (<i>with bursting charge</i>)	1.1D	0034
	1.1F	0033
	1.2D	0035
	1.2F	0291
Bombs, Illuminating	1.3G	0254
Bombs, Photo-Flash	1.1D	0038
	1.1F	0037
	1.2G	0039
	1.3G	0299
Bombs, Smoke, Target Identification	1.2G	0171
	1.3G	0254
	1.4G	0297
Bombs with Flammable Liquid (<i>with bursting charge</i>)	1.1J	0399
	1.2J	0400
Bombs (<i>without detonator</i>)	1.1D	0042
	1.2D	0283
Bombs (<i>with detonator</i>)	1.1B	0225
	1.2B	0268
Bursters, Explosive	1.1.D	0043
Cartridge Case, Empty, Primed	1.4C	0379
	1.4S	0055
Cartridges, Explosive	1.1D	0048
Cartridges, Flash	1.1G	0049
	1.3G	0050

Explosive Substance or Ammunition Type	Hazard Classification Code	UN Serial Number
Cartridges for Weapons <i>(with bursting charge)</i>	1.1E	0006
	1.1F	0005
	1.2E	0321
	1.2F	0007
	1.4E	0412
	1.4F	0348
Cartridges for Weapons, Blank	1.1C	0326
	1.2C	0413
	1.3C	0327
	1.4C	0338
	1.4S	0014
Cartridges for Weapons, Inert projectile	1.2C	0328
	1.3C	0417
	1.4C	0339
	1.4S	0012
Cartridges, Illuminating	1.2G	0171
	1.3G	0254
	1.4G	0297
Cartridges, Signal	1.3G	0054
	1.4G	0312
	1.4S	0405
Cartridges, Small Arms	1.3C	0417
	1.4C	0339
	1.4S	0012
Cartridges, Small Arms, Blank	1.3C	0327
	1.4C	0338
	1.4S	0014
Charges, Bursting, Plastic Bonded	1.1D	0457
	1.2D	0458
	1.4D	0459
	1.4S	0460
Charges, Demolition	1.1D	0048
Charges, Depth	1.1D	0056
Charges, Propelling	1.1C	0271
	1.2C	0415
	1.3C	0272
	1.4C	0491
Charges, Propelling for Cannon	1.1C	0279
	1.2C	0414
	1.3C	0242
Charges, Shaped, Flexible, Linear	1.1D	0288
	1.4D	0237
Charges, Shaped <i>(without detonator)</i>	1.1D	0059
	1.2D	0439
	1.3D	0440
	1.4S	0441
Charges, Supplementary, Explosive	1.1D	0060
Collodion Cottons	1.1D	0340
	1.1D	0341
	1.3C	0342
Components, Explosive Train, NOS	1.1B	0461
	1.2B	0382
	1.3B	0383
	1.DS	0384
Contrivances, Water Activated <i>(with burster, expelling charge or propelling charge)</i>	1.2L	0249
	1.3L	0249
Cord, Detonating, Flexible	1.1D	0065
	1.4D	0289
Cord Detonating, Metal Clad	1.1D	0102
	1.2D	0290
Cord Detonating, Mild Effect, Metal Clad	1.4D	0104
Cord, Igniter	1.4G	0066
Cordite	1.1C	0160
	1.3C	0161
Cutters, Cable, Explosive	1.4S	0070
Cyclonite		0072
	1.1D	0391
		0483
Cyclotetramethylene-Tetranitramine, Desensitised	1.1D	0484

Explosive Substance or Ammunition Type	Hazard Classification Code	UN Serial Number
Cyclotetramethylene-Tetranitramine, Wetted (with not less than 15% water by mass)	1.1D	0226
Cyclotrimethylenetrinitramine and Cyclotetramethylene-Tetranitramine, Desensitised (with not less than 10% phlegmatizer by mass)	1.1D	0391
Cyclotrimethylenetrinitramine and Cyclotetramethylene-Tetranitramine, Wetted (with not less than 15% water by mass)	1.1D	0391
Cyclotrimethylenetrinitramine, Desensitised	1.1D	0483
Cyclotrimethylenetrinitramine, Wetted (with not less than 15% water by mass)	1.1D	0072
Deflagrating Salts of Aromatic Nitroderivatives	1.3C	0132
Detonating Relays	1.1B 1.1B 1.4B 1.4B 1.4S 1.4S	0029 0360 0267 0361 0455 0500
Detonator Assemblies, Non-Electric (for blasting)	1.1B 1.4B 1.4S	0360 0361 0500
Detonators for Ammunition	1.1B 1.2B 1.4B 1.4S	0073 0364 0365 0366
Detonators, Electric (for blasting)	1.1B 1.4B 1.4S	0030 0255 0456
Detonators, Non-Electric (for blasting)	1.1B 1.4B 1.4S	0029 0267 0455
Diazonitrophenol, Wetted (with not less than 40% water, or mixture of water and alcohol by mass)	1.1A	0074
Diethyleneglycol Dinitrate, Desensitised (with not less than 25% non-volatile, water-insoluble phlegmatizer, by mass)	1.1D	0075
Dingu	1.1.D	0489
Dinitroglycoluril	1.1D	0489
Dinitrophenol, Wetted (with not less than 15% water by mass)	1.1D	0076
Dinitroresorcinol (dry or wetted with not less than 15% water by mass)	1.1D	0078
Dinitrosobenzene	1.3C	0406
Dinitrotoluene mixed with Sodium Chlorate	1.1D	0083
Dipricrylamine	1.1D	0079
Dipricryl Sulphide (dry or wetted with not less than 10% water by mass)	1.1D	0401
Dynamite	1.1D	0081
Engines, Rocket	1.2L 1.3L	0322 0250
Explosive, Blasting, Type A	1.1D	0081
Explosive, Blasting, Type B	1.1D 1.5D	0081 0331
Explosive, Blasting, Type C	1.1D	0083
Explosive, Blasting, Type D	1.1D	0084
Explosive, Blasting, Type E	1.1D 1.5D	0241 0332
Explosives, Emulsion	1.1D 1.5D	0241 0332
Explosive, Seismic	1.1D 1.1D 1.1D 1.5D	0081 0082 0083 0331
Explosive, Slurry	1.1D 1.5D	0241 0332
Explosive, Water Gel	1.1D 1.5D	0241 0332
Fireworks	1.1G 1.2G 1.3G 1.4G 1.4S	0333 0334 0335 0336 0337
Flares, Aerial or Aeroplane	1.1G 1.2G 1.3G 1.4G 1.4S	0420 0421 0093 0403 0404

Explosive Substance or Ammunition Type	Hazard Classification Code	UN Serial Number
Flares, Highway, Distress or Railway	1.4G	0191
	1.4S	0373
Flares, Water-Activated	1.2L	0248
	1.3L	0249
Flash Powder	1.1G	0094
	1.3G	0305
Fracturing Devices, Explosive (<i>without detonator, for oil wells</i>)	1.1D	0099
Fuse, Safety	1.4S	0105
Fuse, Combination, Percussion or Time	1.1B	0106
	1.2B	0107
	1.3G	0257
	1.4B	0316
	1.4G	0317
	1.4S	0367
	1.4S	0368
Fuze, Detonating	1.1B	0106
	1.2B	0107
	1.3B	0257
	1.4S	0367
Fuzes, Detonating (<i>with protective features</i>)	1.1D	0408
	1.2D	0409
	1.4D	0410
Fuses, Igniting	1.3G	0316
	1.4G	0317
	1.4S	0368
Gelatin, Blasting	1.1D	0081
Gelatin, Dynamites	1.1D	0081
Glyceryl Trinitrate	1.1D	0143
	1.1D	0144
Grenades, Hand or Rifle, (<i>with bursting charge</i>)	1.1D	0284
	1.1F	0292
	1.2D	0285
	1.2F	0293
Grenades, Illuminating	1.2G	0171
	1.3G	0254
	1.4G	0297
Grenades, Practice, Hand or Rifle	1.2G	0372
	1.3G	0318
	1.4G	0452
	1.4S	0110
Grenades, Smoke	1.2G	0015
	1.2H	0245
	1.3G	0016
	1.3H	0246
	1.4G	0303
Guanylnitrosamino-Guanylidene Hydrazine, Wetted (<i>with not less than 30% water by mass</i>)	1.1A	0113
Guanylnitrosamino-Guanylidene Hydrazine, Wetted (<i>with not less than 30% water, or mixture of water and alcohol, by mass</i>)	1.1A	0114
Gunpowder, Compressed	1.1D	0028
Gunpowder, Granular or as a Meal	1.1D	0027
Gunpowder, In Pellets	1.1D	0028
Hexanitrodiphenylamine	1.1D	0179
Hexanitrostilbene	1.1D	0392
Hexagon	1.1D	0072
	1.1D	0391
	1.1D	0483
Hexolite (<i>dry or wetted, with less than 15% water by mass</i>)	1.1D	0118
Hexotol	1.1D	0118
Hexoctonal	1.1D	0393
Hexoctonal, Cast	1.1D	0393
Hexyl	1.1D	0079
HMX	1.1D	0226
	1.1D	0391
	1.1D	0484
1-Hydroxybenzotriazole, Anhydrous, Wetted (<i>dry or wetted, with less than 20% water by mass</i>)	1.3C	0508

Explosive Substance or Ammunition Type	Hazard Classification Code	UN Serial Number
Igniters	1.1G	0121
	1.2G	0314
	1.3G	0315
	1.4G	0325
	1.4S	0454
Lead Azide, Wetted (with not less than 20% water, or mixture of water and alcohol by mass)	1.1A	0129
Lead Styphnate, Wetted (with not less than 20% water, or mixture of water and alcohol by mass)	1.1A	0130
Lead Trinitroresorcinate, Wetted	1.1A	0130
Lighters, Fuse	1.4S	0131
Mannitol Hexanitrate, Wetted (with not less than 40% water, or mixture of water and alcohol by mass)	1.1D	0133
5-Mercaptotetrazol-1-Acetic Acid	1.4C	0448
Mercury Fulminate, Wetted (with not less than 20% water, or mixture of water and alcohol by mass)	1.1A	0135
Mines (with bursting charge)	1.1D	0137
	1.1F	0136
	1.2D	0138
	1.2F	0298
Missiles	1.1E	0181
	1.1F	0180
	1.1J	0397
	1.2C	0436
	1.2E	0182
	1.2F	0295
	1.2J	0398
	1.3C	0183
	1.3C	0437
1.4C	0438	
5-Nitrobenzotriazol	1.1D	0385
Nitrocellulose (dry or wetted with less than 25% water or alcohol, by mass)	1.1D	0340
Nitrocellulose, Unmodified or Plasticised (with less than 18% plasticising substance by mass)	1.1D	0341
Nitrocellulose, Plasticised (with not less than 18% plasticising substance by mass)	1.3C	0343
Nitrocellulose, Wetted (with not less than 25% alcohol by mass)	1.3C	0342
Nitroglycerin, Desensitised (with not less than 40% non-volatile water-insoluble phlegmatizer by mass)	1.1D	0143
Nitroglycerin Solution in Alcohol (with more than 1% but not more than 10% nitroglycerin)	1.1D	0144
Nitroguanidine (dry or wetted with less than 20% water, by mass)	1.1D	0282
Nitromannite, Wetted	1.1D	0133
Nitrostarch (dry or wetted with less than 20% water, by mass)	1.1D	0146
Nitrotriazolene	1.1D	0490
Nitro Urea	1.1D	0147
NTO	1.1D	0490
Octogen		0226
		0391
		0484
Octol (dry or wetted with less than 15% water, by mass)	1.1D	0266
Octolite (dry or wetted with less than 15% water, by mass)	1.1D	0266
Octonal	1.1D	0496
PETN Pentaerythritetranitrate (with not less than 7% wax by mass)	1.1D	0411
PETN Pentaerythritetranitrate (desensitised with not less than 15% phlegmatizer by mass)	1.1D	0150
PETN Pentaerythritetranitrate (with not less than 25% water by mass)	1.1D	0150
PETN Pentaerythritetranitrate	1.1D	0151
		0411
Pentolite (dry or wetted with less than 15% water, by mass)	1.1D	0151
Picramide	1.1D	0153
Picric Acid	1.1D	0154
Picrite	1.1D	0282
Picryl Chloride	1.1D	0155
Plastic Explosives	1.1D	0084
Potassium Chlorate mixed with Mineral Oil	1.1D	0083
Powder, Cake, Wetted (with not less than 17% alcohol by mass)	1.1C	0433
Powder, Cake, Wetted (with not less than 25% water by mass)	1.3C	0159
Powder, Paste	1.1C	0433
	1.3C	0159

Explosive Substance or Ammunition Type	Hazard Classification Code	UN Serial Number
Powder, Smokeless	1.1C	0160
	1.3C	0161
Power Devices, Explosive	1.2C	0381
	1.3C	0275
	1.4C	0276
	1.4S	0323
Primers, Cap Type	1.1B	0377
	1.4B	0378
	1.4S	0044
Primers, Small Arms	1.4S	0044
Primers, Tubular	1.2G	0319
	1.4G	0320
	1.4S	0376
Projectiles, Illuminating	1.2G	0171
	1.3G	0254
	1.4G	0297
Projectiles (<i>inert with tracer</i>)	1.3G	0424
	1.4G	0425
	1.4S	0345
Projectiles (<i>with burster or expelling charge</i>)	1.2D	0346
	1.2F	0426
	1.2G	0434
	1.4D	0347
	1.4F	0427
	1.4G	0435
Projectiles (<i>with bursting charge</i>)	1.1D	0168
	1.1F	0167
	1.2D	0169
	1.2F	0324
	1.4D	0344
Propellant, Liquid	1.1C	0497
	1.3C	0495
Propellant, Solid	1.1C	0498
	1.3C	0499
	1.4C	0501
Propellant, Single Based	1.1C	0160
Propellant, Double Based		0161
Propellant, Triple Based		
RDX	1.1D	0072
		0391
		0483
Release Devices, Explosive	1.4S	0173
Rivets, Explosive	1.4S	0174
Rocket Motors	1.1C	0280
	1.2C	0281
	1.3C	0186
Rocket Motors, Liquid Fuelled	1.2J	0395
	1.3J	0396
Rocket Motors with Hypergolic Liquids (<i>with or without expelling charge</i>)	1.2L	0322
	1.3L	0250
Rockets (<i>with bursting charge</i>)	1.1E	0181
	1.1F	0180
	1.2E	0182
	1.2F	0295
Rockets (<i>with expelling charge</i>)	1.2C	0436
	1.3C	0437
	1.4C	0438
Rockets (<i>with inert head</i>)	1.2C	0502
	1.3C	0183
Rockets, Line-Throwing	1.2G	0238
	1.3G	0240
	1.4G	0453
Rockets, Liquid Fuelled (<i>with bursting charge</i>)	1.1J	0397
	1.2J	0398
Shaped Charges	1.1D	0059
	1.2D	0439
	1.4D	0440
	1.4S	0441

Explosive Substance or Ammunition Type	Hazard Classification Code	UN Serial Number
Signal Devices, Hand	1.4G	0191
	1.4S	0373
Signals, Distress, Ship	1.1G	0194
	1.3G	0195
	1.4G	0440
	1.4S	0441
Signals, Distress Ship, Water-activated	1.3L	0249
Signals, Railway Track, Explosive	1.1G	0194
	1.3G	0195
	1.4G	0505
	1.4S	0506
Signals, Smoke	1.1G	0196
	1.2G	0313
	1.3G	0487
	1.4G	0197
	1.4S	0507
Sodium Chlorate mixed with Dinitrotoluene	1.1D	0083
Sodium Dinitro-o-Cresolate (dry or wetted with less than 15% water, by mass)	1.3C	0234
Sodium Picramate (dry or wetted with less than 20% water, by mass)	1.3C	0235
Sounding Devices, Explosive	1.1D	0374
	1.1F	0296
	1.2D	0375
	1.2F	0204
Squibs	1.4G	0325
	1.4S	0454
Styphnic Acid	1.1D	0219
	1.1D	0394
Substances, Explosive, NOS	1.1A	0473
	1.1C	0474
	1.1D	0475
	1.1G	0476
	1.1L	0357
	1.2L	0358
	1.3C	0477
	1.3G	0478
	1.3L	0359
	1.4C	0479
	1.4D	0480
	1.4G	0485
	1.4S	0481
	Substances, Explosive, Very Insensitive, NOS	1.5D
Tetranitroaniline	1.1D	0207
Tetrazene, Wetted	1.1A	0114
Tetrazole-1-Acetic Acid	1.4C	0407
1H-Tetrazole	1.1D	0504
Tetryl	1.1D	0208
Torpedos (with bursting charge)	1.1D	0451
	1.1E	0329
	1.1F	0330
Torpedos, Liquid Fuelled (with inert head)	1.3J	0450
Torpedos, Liquid Fuelled (with or without bursting charge)	1.1J	0449
Tracers for Ammunition	1.3G	0212
	1.4G	0306
Trinitroaniline	1.1D	0153
Trinitroanisole	1.1D	0213
Trinitrobenzene (dry or wetted with less than 30% water, by mass)	1.1D	0214
Trinitrobenzenesulphonic Acid	1.1D	0386
Trinitrobenzoic Acid (with not less than 30% water by mass)	1.1D	0215
Trinitrochlorobenzene	1.1D	0155
Trinitro-m-cresol	1.1D	0216
Trinitrofluorenone	1.1D	0387
Trinitronaphthalene	1.1D	0217
Trinitrophenetole	1.1D	0218
Trinitrophenol (dry or wetted with less than 30% water, by mass)	1.1D	0154
Trinitrophenylmethylnitramine	1.1D	0208
Trinitroresorcinol (dry or wetted with less than 20% water, or mixture of water and alcohol, by mass)	1.1D	0219
Trinitroresorcinol, Wetted (with not less than 20% water, or mixture of water and alcohol, by mass)	1.1D	0394

Explosive Substance or Ammunition Type	Hazard Classification Code	UN Serial Number
TNT Trinitrotoluene (<i>dry or wetted with less than 30% water, by mass</i>)	1.1D	0209
TNT Trinitrotoluene and Hexanitrostilbene Mixture	1.1D	0388
TNT Trinitrotoluene and Trinitrobenzene Mixture	1.1D	0388
TNT Trinitrotoluene Mixture containing Trinitrobenzene and Hexanitrostilbene	1.1D	0389
TNT Trinitrotoluene mixed with Aluminium	1.1D	0390
Tritonal	1.1D	0390
Urea Nitrate (<i>dry or wetted with less than 20% water, by mass</i>)	1.1D	0220
Warheads, for Guided Missiles	1.1D	0286
	1.1F	0369
	1.2D	0287
	1.4D	0370
	1.4F	0371
Warheads, Rocket (<i>with burster or expelling charge</i>)	1.4D	0370
	1.4F	0371
Warheads, Rocket (<i>with bursting charge</i>)	1.1D	0286
	1.1F	0369
	1.2D	0287
Warheads, Torpedo (<i>with bursting charge</i>)	1.1D	0221
Zirconium Picramate (<i>dry or wetted with less than 20% water, by mass</i>)	1.3C	0236

Table C.1: List of Hazard Classification Codes

