

An Introduction to the IMDG Code

Welcome to this free introduction to the IMDG Code from Exis Technologies.

This provides a brief overview of the rules for shipping dangerous goods by sea, as contained in the International Maritime Dangerous Goods (IMDG) Code.



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What is the IMDG Code?

The International Maritime Dangerous Goods (IMDG) Code contains provisions for the safe carriage of dangerous goods by sea.

The key objectives are to:

- protect human life
- prevent marine pollution
- facilitate the free movement of dangerous goods.

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What is the IMDG Code?

The International Maritime Organization (IMO)

The IMDG Code is produced by the International Maritime Organization (IMO), a specialist United Nations (UN) agency responsible for developing and maintaining regulatory frameworks for sea transport.

The Code's provisions are based on recommendations developed by the UN.

These are published in the UN 'Recommendations on the Transport of Dangerous Goods', known as the 'Model Regulations' because the document provides a framework of rules for the safe transport of dangerous goods by all modes – air, road and rail as well as sea.

The UN Model Regulations provide a uniform set of safety procedures covering consignment and transport issues such as classification, identification, packing, marking and labelling, documentation, security and training.



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What are dangerous goods?

What are dangerous goods and why are they useful?

Dangerous goods are **substances** or **articles** which can pose a threat to people, property and/or the environment.

They can exist in three physical states – as a solid, liquid or gas – and can present a range of dangers in a transport environment – flammability, toxicity (poisonous) and corrosivity being the most common.

The physical state and properties affect packing, handling and transport decisions.

Many dangerous goods are essential in the manufacture of other products such as cars, plastics, electronics and pharmaceuticals on which progress and world trade depend.

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Different types of dangerous goods

Different types of dangerous goods

For transport purposes, dangerous goods are allocated to one of nine 'classes', according to the main danger they present. These are as follows:

Class 1 - Explosives

Class 2 - Gases

Class 3 - Flammable liquids

Class 4 - Flammable solids and other flammable substances

Class 5 - Oxidizing substances and organic peroxides

Class 6 - Toxic and infectious substances

Class 7 - Radioactive material

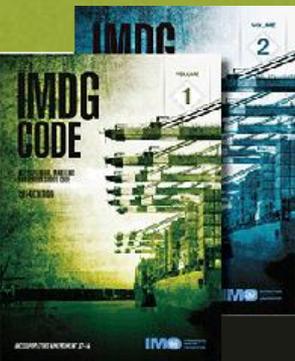
Class 8 - Corrosive substances

Class 9 - Miscellaneous dangerous substances and articles

Many of these classes are sub-divided. For example, toxic substances are allocated to Class 6.1; infectious substances are allocated to class 6.2.

Substances or articles are classified as 'dangerous goods' for sea shipment if they meet the criteria prescribed in the IMDG Code for any of these classes.

The danger(s) presented by a particular substance or article determine the safe transport procedures for it e.g. the way it needs to be packed, whether it can be loaded in the same freight container as other dangerous goods, where it needs to be stored within the port or stowed on board the ship.



Identifying Dangerous Goods

Identifying dangerous goods

Each class has a unique diamond label used to identify danger in transport.



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Identifying Dangerous Goods

Identifying dangerous goods

All dangerous goods are uniquely identified for transport using a number and name allocated by the United Nations (UN Number and 'Proper Shipping Name' or PSN). For example, Kerosene is classified as a flammable liquid (class 3); 'Kerosene' is a recognised PSN; the UN Number for it is UN 1223 – see the example below taken from **Hazcheck Online**.

Hazardous Substance/Article Details			
UNNo: 1223	Proper Shipping Name: KEROSENE		
Class: 3	Subsidiary Risks: None	Marine Pollutant: -	Packing Group: III
Flashpoint: -	State: Liquid		Limited Quantities: 5 L
High Consequence: No	Excepted Quantities: E1		
(IMDG Code Amendment 36-12)		ADR 2013	
Stowage Category: A	Emergency Schedule: F-E,S-E	Special Provisions: 363	
Instructions		Provisions	
Packing	P001 LP01	-	
IBCs	IBC03	-	
Portable tanks	T2	TP2	
Stowage and Segregation		Properties and Observations	

The UN number and PSN facilitate rapid and precise identification during transport to ensure correct handling, stowage, segregation etc., and appropriate actions in an emergency.

You can try Hazcheck Online for free at www.hazcheck.com

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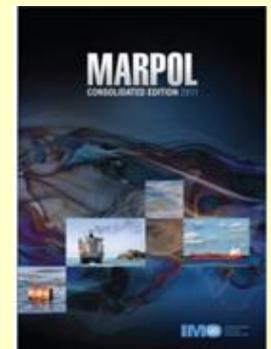
Application of the IMDG Code

Application of the IMDG Code

The IMDG Code's requirements apply to all ships which are subject to the following two conventions:

International Convention for the Safety of Life at Sea, 1974 (SOLAS 1974) – this covers the safety implications of dangerous goods onboard ships; and

International Convention for the Prevention of Pollution from Ships (MARPOL) – which covers the pollution aspects for ships carrying dangerous goods



Application of the IMDG Code

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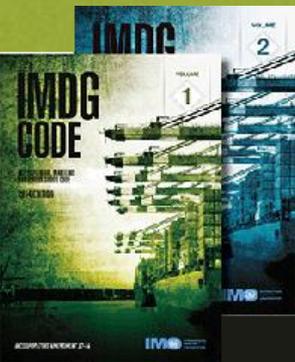
The IMDG Code amplifies the relevant safety and pollution prevention provisions of these Conventions.

Most of the requirements in the IMDG Code apply on a mandatory basis but there are a few provisions which are recommendatory.

The IMDG Code is applied automatically by the governments of all the States which are members of SOLAS, and has a worldwide application to the movement of dangerous goods by sea.

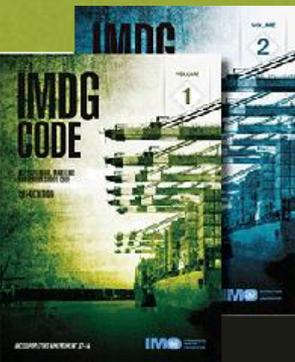
While some SOLAS Member Governments incorporate the requirements of the IMDG Code without amendment into their national legislation, others apply some different and/or additional (usually more stringent) national requirements.

continued



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Application of the IMDG Code



Application of the IMDG Code

Other international and national modal regulations also exist, e.g. road transport rules in Europe (**ADR**); compliance with these is required, as appropriate; they may recognise all or part of the provisions of the IMDG Code.

When shipping dangerous goods, it is also important to be aware of any further restrictions or requirements which may apply in a particular country or port.

Also, **competent authorities** may authorise, approve or grant exemptions from particular requirements of the IMDG Code.

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Overview of the IMDG Code

Overview of the IMDG Code

The IMDG Code requires certain provisions to be followed whenever dangerous goods are shipped by sea.

These provisions require that dangerous goods are correctly and safely:

- Classified and identified
- Packed
- Marked, labelled and placarded
- Documented
- Stowed on board the vessel
- Segregated from other goods with which they may react dangerously

Appropriate emergency response information must be made available.

The Code also contains security requirements designed to minimise the opportunity for terrorists to access and misuse dangerous goods.

Appropriate training **must** be given to all personnel involved in the transport of dangerous goods by sea.



Layout of the IMDG Code

Layout of the IMDG Code

The IMDG Code comprises 7 parts, presented in two volumes – Volume 1 and Volume 2.

Both volumes must be used to obtain the required information and instructions when dangerous goods are shipped by sea.

There is also a Supplement which provides additional guidance.

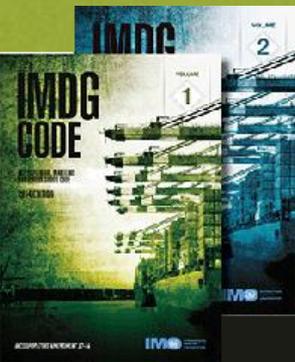
The IMDG Code is available in Printed, Windows, Web and Intranet formats.



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Layout of the IMDG Code



Layout of the IMDG Code

Volume 1 contains most of the detailed instructions for safely preparing and transporting dangerous goods by sea:

Part 1: General provisions, definitions and training

Part 2: Classification

Part 4: Packing and Tank Provisions

Part 5: Consignment Procedures

Part 6: Construction and Testing of Packagings, Intermediate Bulk Containers (IBCs), Large Packagings, Portable Tanks, Multiple Element Gas Containers (MEGCs) and Road Tank Vehicles

Part 7: Requirements Concerning Transport Operations

Volume 2 contains:

Part 3: Dangerous Goods List (DGL), Special Provisions and Exceptions (Limited and Excepted Quantities)

Appendix A: List of Generic and N.O.S. Proper Shipping Names

Appendix B: Glossary of terms

Alphabetical Index

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Dangerous Goods List (DGL)

Dangerous Goods List (DGL)

In the IMDG Code, most of the decisions on safe shipping and transport procedures stem from the use of the DGL located in Volume 2.

The **DGL** is an index of substances and articles, arranged in UN Number order.

It comprises 18 columns of information for each listed substance/article, presented as a two page spread in the printed books.

Much of the information is in a coded form to make it easier to present in a table.

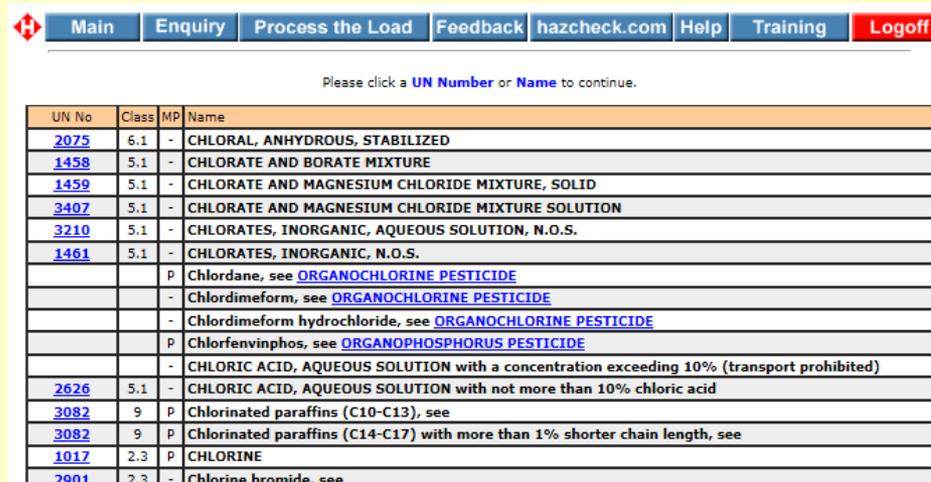
The meaning and implications of these codes are explained in the relevant chapters and sections of Volumes 1 and 2, an initial point of reference being provided at the head of each column.

Decisions on packing arrangements, marking and labelling requirements, documentation entries, stowage, segregation and other shipping and transport duties generally stem from the columns of the DGL.

Alphabetical Index

Alphabetical Index

At the end of Volume 2 of the IMDG Code, there is an alphabetical index of substances/articles – see example below taken from Hazcheck Online.



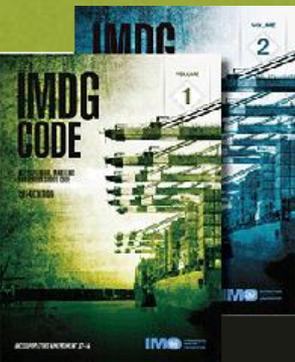
The screenshot shows the Hazcheck Online website interface. At the top, there is a navigation bar with buttons for Main, Enquiry, Process the Load, Feedback, hazcheck.com, Help, Training, and Logoff. Below the navigation bar, a message reads "Please click a UN Number or Name to continue." Below this message is a table with columns for UN No, Class, MP, and Name. The table lists various substances, including Chloral, Chlorate and Borate Mixture, Chlorate and Magnesium Chloride Mixture, Chlorates, Inorganic, Aqueous Solution, N.O.S., Chlorine, and Chlorine bromide. Some entries include references to other sections of the code, such as "see ORGANOCHEMICAL PESTICIDE" or "see ORGANOPHOSPHORUS PESTICIDE".

UN No	Class	MP	Name
2075	6.1	-	CHLORAL, ANHYDROUS, STABILIZED
1458	5.1	-	CHLORATE AND BORATE MIXTURE
1459	5.1	-	CHLORATE AND MAGNESIUM CHLORIDE MIXTURE, SOLID
3407	5.1	-	CHLORATE AND MAGNESIUM CHLORIDE MIXTURE SOLUTION
3210	5.1	-	CHLORATES, INORGANIC, AQUEOUS SOLUTION, N.O.S.
1461	5.1	-	CHLORATES, INORGANIC, N.O.S.
		P	Chlordane, see ORGANOCHLORINE PESTICIDE
			- Chlordimeform, see ORGANOCHLORINE PESTICIDE
			- Chlordimeform hydrochloride, see ORGANOCHLORINE PESTICIDE
		P	Chlorfenvinphos, see ORGANOPHOSPHORUS PESTICIDE
			- CHLORIC ACID, AQUEOUS SOLUTION with a concentration exceeding 10% (transport prohibited)
2626	5.1	-	CHLORIC ACID, AQUEOUS SOLUTION with not more than 10% chloric acid
3082	9	P	Chlorinated paraffins (C10-C13), see
3082	9	P	Chlorinated paraffins (C14-C17) with more than 1% shorter chain length, see
1017	2.3	P	CHLORINE
2901	2.3	-	Chlorine bromide, see

This can be used as the initial point of reference when the name of the substance rather than the UN Number is known.

Once the relevant UN Number is discovered from this index, the DGL can be used as the source of further information, as indicated on the previous page.

IMDG Code Classification System



Layout of the IMDG Code

The IMDG Code Supplement contains the following sections related to the Code.

- Emergency Response Procedures for Ships Carrying Dangerous Goods;
- Medical First Aid Guide;
- Reporting Procedures;
- Safe Use of Pesticides in Ships, in CTUs and cargo holds;
- International Code for the Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-level Radioactive Wastes on board ships.
- An appendix of relevant IMO Resolutions and Circulars



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Identification of Dangerous Goods

Updating the IMDG Code

The IMDG Code is an international regulation that is updated every two years to reflect biennial revisions in the UN Recommendations on the Transport of Dangerous Goods (UN Model Regulations).

These changes reflect:

- the inclusion of newly classified dangerous substances/articles, amendments to or deletions of existing entries;
- new technology and new methods of handling dangerous goods;
- safety concerns which arise as a result of human experience; and
- new materials and designs for packaging

Although the Code is updated every two years, in general, the basic principles remain constant and once you have understood them, you will be able to look up information in future versions of the IMDG Code.



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Amendment cycle of the IMDG Code

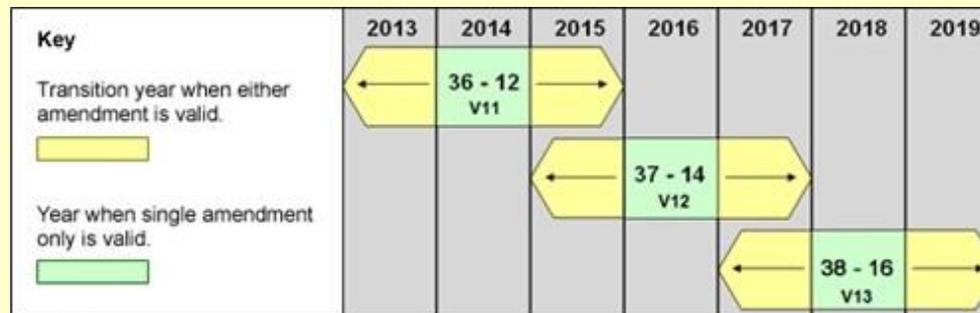
The Amendment Cycle of the IMDG Code

New Amendments to the IMDG Code are released according to the timeframes in the chart below. A new Amendment is published every two years. Each Amendment is valid for up to three years

New Amendments can be used from 1 January of odd numbered years (shown in yellow) subject to the timing of National Competent Authority adoption

During even numbered years (shown in green) **only** the current Amendment can be used

The years before an Amendment comes into force on a mandatory basis are known as transition years (shown in yellow) when either the current or newly published Amendment may be used



Training requirements

Training requirements for shore side personnel

The successful application of dangerous goods transport regulations is greatly dependent on all persons concerned appreciating the risks involved and having an appropriate understanding of the requirements.

This can only be achieved by properly planned and maintained training and retraining programmes for all relevant personnel.

Chapter 1.3 of the IMDG Code deals with the training of shore-side staff.



The training requirements for shore-side personnel are **mandatory**

Training requirements

Training requirements for shore-side personnel

Personnel engaged with the transport of dangerous goods by sea **must** be trained according to their role and responsibilities. Staff directly involved in dangerous goods operations must have function specific training while general awareness training is required for those who although not directly involved, do require a familiarisation with the IMDG Code.

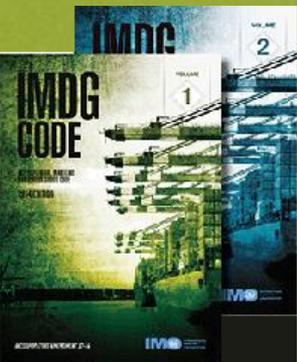
Companies must determine which personnel need to be trained, the level of training required and appropriate methods for conducting the training.

Exis Technologies developed IMDG Code e-learning in collaboration with the International Maritime Organization to meet the challenge of training large numbers of shore side staff to the IMDG Code requirements.



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Compliance solutions



Compliance solutions from Exis Technologies

IMDG Code e-learning

Shippers, ferry operators, port operators, freight forwarders and 11 of the top 20 container lines use our IMDG e-learning courses to train their staff worldwide.

For more information about these course, and to purchase please click here www.imdgc-learning.com

Hazcheck Systems

Exis also supply compliance tools for the automatic validation of dangerous goods shipments. These tools are available for all sectors of the transport of dangerous goods by sea chain. For more information, free demos, trials and to purchase please click here www.hazcheck.com



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