IMDG Code update

Operational provisions of the changes in Amendment 39-18

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IMDG Code update sequence

The IMDG Code is amended every two years, but every Amendment has a three year life

The last year of an expiring Amendment can legally be used as an alternative to a new Amendment in the first year

Amendment 38-16	**2017**	**2018**	**2019**				
Amendment 39-18			**2019**	**2020**	**2021**		
Amendment 40-20					**2021**	**2022**	**2023**

In practice, most organisations migrate to the new Amendment around June of the first year (June 2019)

Numerous minor updates to 39-18 to align with the UN Model Regulations

- A highly visible change in IMDG is that “Risk” is replaced by “Hazard” throughout the text
- The IMDG DG List Column 4 headed “Subsidiary risk” becomes “Subsidiary hazard”

UN No. **1**	**Proper Shipping Name** **2**	**Class or division** **3**	**Subsidiary ~~risk~~ hazard** **4**

Most UN changes have been adopted by IMDG

Including:

- Classification changes – e.g. samples / Class 8
- Viscous liquids - packaging
- Chemical / first aid kits – content limits
- Documentation of pressurised fuel systems
- Numerous minor packaging updates
- Numerous UN 3xx Special Provision updates

Explosives: more stringent classification of certain fireworks

- “Waterfall” is a UN designated type of firework that has been re-classified from 1.3G (fire hazard) to 1.1G (major blast hazard)

- Consequence: 1.3G is insurable and acceptable by some carriers, but 1.1G is very problematic to insure and to obtain port entry permission.

Ref: IMDG 2.1.3.5.1.1

Explosives: 100+ Class 1 UN Numbers have had stowage restrictions relaxed

- Many changes from:

Stowage Category 5: “ON DECK ONLY IN CLOSED CTU” and

Stowage Category 4: “ON/UNDER DECK IN CLOSED CTU”

- Have been changed to:

Stowage Category 3: “ON DECK IN CLOSED CTU” OR “UNDER DECK”

Increased flexibility for shipping large explosive articles that do not fit into containers.

Offshore oil explosives: jet perforating guns, charged (shaped charges)

- Carried on off-shore supply vessels
- Previously had to be in closed CTUs on deck
- Now can be carried in packages on deck

Applies to: UN 0124 & UN 0494

Ref: IMDG 7.1.4.4.5 & 7.2.7

Significant benefit for the offshore oil industry.

Class 4.1 – Polymerizing substances

- Molecules in polymerizing substances respond to a rise in temperature by runaway self-reaction leading to violent physical expansion and emission of heat and gas.

- If constrained (e.g. in a tank container) result is a high temperature rupture and gas emission.

38-16 tried & failed to clarify IMDG procedures for polymerizing substances: 39-18 tries again

- "Substances meeting the criteria for polymerizing substance and also for inclusion in classes 1 to 8 are subject to the requirements of **SP 386**"

i.e**. SP 386** provisions are not restricted to Class 4.1 Ref: 2.4.2.5.2

SP 386 – if a substance requires stabilization either:

1. **Add a chemical inhibitor, or**
2. **CARRY UNDER TEMPERATURE CONTROL**

If you opt for temperature control SP386 directs you to IMDG 7.3.7

- Chapter 7.3.7 **“Cargo transport units under temperature control**” has had a massive 6 page redraft in 39-18

Specifies when temperature control is required for

- polymerizing substances
- self-reactive substances, and
- organic peroxides

Determination of control temperatures for polymerizing substances (SAPT)

Table ref: IMDG 7.3.7.2.6

	Column 1	Column 2	Column 3
Packaging	**SADT / SAPT**	**Control temperature**	**Emergency temperature**
Single & IBCs	< 20ºC	20ºC below SADT/SAPT	10ºC below SADT/SAPT
	>20ºC to 35ºC	15ºC below SADT/SAPT	10ºC below SADT/SAPT
	>35ºC	10ºC below SADT/SAPT	5ºC below SADT/SAPT
Tanks	<45ºC	10ºC below SADT/SAPT	5ºC below SADT/SAPT

The SADT temperatures are tabulated to identify control and emergency temperatures for self-reactive substances and organic peroxides.

The table now applies equally to the SAPT for polymerizing substances.

IMDG 7.3.7 Grey area – why temperature control remains problematic

- The SADT / SAPT threshold reactive temperature is fixed

- 7.3.7.4 requires a shipper and carrier to make judgement on variable factors, including:

1. The seasonal ambient temperature
2. Length and route of voyage
3. Stowage position on the ship

Documentation for temperature controlled consignments

- When goods are shipped under temperature control, the words "TEMPERATURE CONTROLLED" shall be added to the Proper Shipping Name.

Ref: IMDG 3.1.2.6

There is no absolute control over temperature exposure unless cargo is carried in a mechanically controlled environment.

If in doubt ….

The carrier will demand mechanical temperature control

New safety responsibilities for packers of self-reactive/polymerizing goods

- When packaged self-reactive goods are loaded into a container the packer becomes responsible for minimizing the risk of explosion by careful attention to:
  - total quantity and type of packages, and
  - stacking arrangement / air circulation
  - PACKER MUST SIGN A PACKING CERTIFICATE!

Ref: IMDG 7.3.7.2.1

Why does IMDG pay so much attention to the polymerization issue?

Unexpected polymerization of cargo in transit has been associated with major ship fires

Process issues for that 39-18 hopes to have finally resolved

1. Shipper has the duty to identify liability to polymerize and to determine the SADT/SAPT, control & emergency temperatures

2. Booking application to shipping line must include "TEMPERATURE CONTROLLED" and control / emergency temperatures

3. The carrier needs that information to judge whether he can maintain a safe control temperature or whether he should reject the booking

New N.O.S. entries for Articles containing dangerous goods

- Used when articles contain more than the Limited Quantity amounts of dangerous goods:

  Ref: 2.0.6

- New Packing Instruction P006 – allows a wide range of packagings or unpackaged

(IMDG follows UN Model Regulations)

All entries for ARTICLE CONTAINING DANGEROUS GOODS XXX, N.O.S. (*technical name*), follow the same pattern

UN 3538 - class 2.2
UN 3539 – class 2.3*
UN 3540 – class 3
UN 3541 – class 4.1
UN 3542 – class 4.2*
UN 3543 – class 4.3*
UN 3544 – class 5.1*
UN 3545 – class 5.2*
UN 3546 – class 6.1
UN 3547 – class 8
UN 3548 – class 9

Labelling & marking requirements:
- Class label in the normal manner
- Additional lithium battery mark or lithium battery label as appropriate
- Orientation arrows if containing liquids

- Competent Authority Approval required for these UN Numbers, or
- any articles with more than one hazard class

UN 3166 – Vehicles in containers

- SP 312, SP 380 & SP 385 are deleted and consolidated into SP 388

- **SP 388** now clarifies the definition of vehicles:
  - Defines “vehicle” very widely by use
  - Only internal combustion engines & hybrids entered under UN 3166
  - Excludes battery-only vehicles (entered under UN 3171)
  - **IMDG SP 961 & SP 962 provisions apply to maritime**

Lithium batteries

- Revised SP 376 refers to a new PI 911 flameproof packagings for damaged lithium batteries

- However, problematic to get damaged lithium batteries accepted on container ships

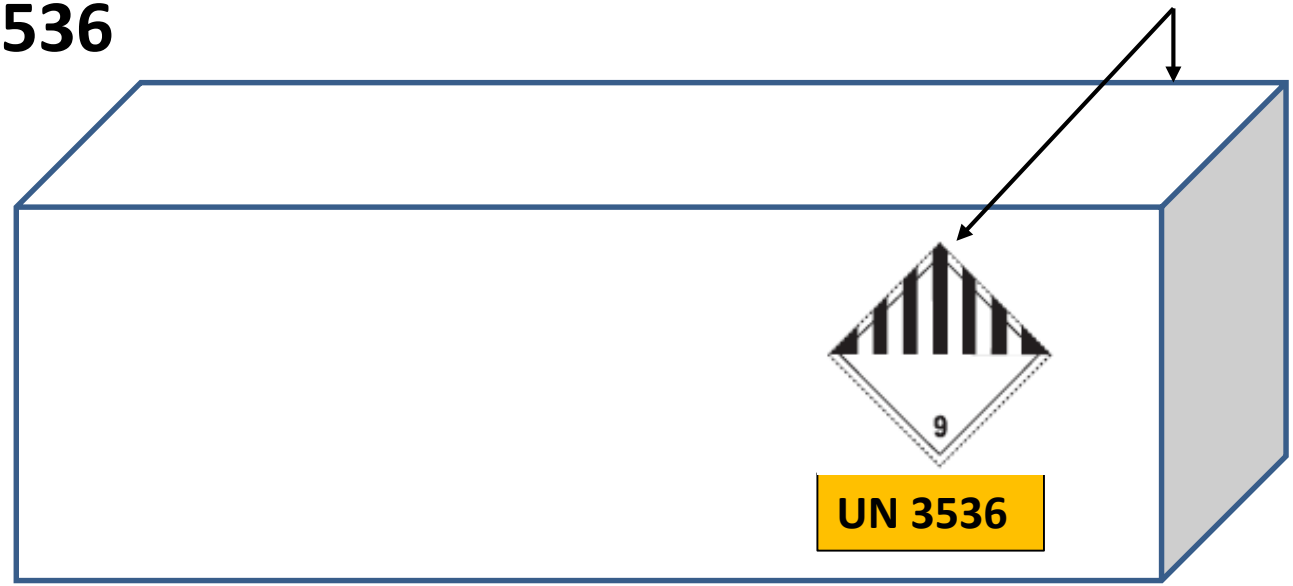
(IMDG follows UN Model Regulations)

New entry: UN 3536, LITHIUM BATTERIES INSTALLED IN CONTAINERS

SP 389 applies minimal conditions

UN 3536, LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT, Class 9.

Two opposing sides to be placarded "9" with UN 3536



- Stowage Category A: No restrictions
  On deck or under deck – passenger or cargo ship

New IMO Type 9 tank created for non-UN gas element vehicles

- IMDG 4.2.6 – operational provisions
- IMDG 6.8.3.4 - design, construction and approval provisions

Tanks: lead-lined

- Tank Provision TP10 is amended to allow lead-lined (eg Bromine) tanks to be transported empty uncleaned for 3 months after the expiry of the annual inspection certificate.

Two new IMDG Special Provisions

- SP 973 – clarifies marking, labelling & placarding for bales and certain other goods carried in containers

- SP 974 – indicates which gases are permitted to be carried in the new IMO Type 9 road tanks

IMDG Chapter 5: Consignment

- 5.3.1.1.4.1 clarifies the placarding requirements for bulk containers, and flexible bulk containers (BK3)

Russian BK3 flexible bulk container

IMDG Part 7

Segregation

Helpful changes to assist the calculation of general segregation

- IMDG table 7.2.4 establishes general segregation rules between classes 1-8

- However, many substances have reactionary characteristics requiring greater segregation than the general segregation rules allow

- These substances are assigned one of 18 “Segregation Groups” that have similar chemical properties

The Segregation Group can now be found at a glance in Column 16b

- Previously there was no quick way to identify which substances were in a segregation group
- Column 16b of the DG List now identifies the segregation group with new SGG codes
- This facilitates segregation calculation for container packers

Current Amendment IMDG 38-16

Proper Shipping Name	16a Stowage & handling	16b Segregation	17 Properties & observations	UN No.
CHLOROACETONITRILE **6.1**	Category D SW1 SW2	**SG35**	…….	**2668**
…….	……		……	2669
CYANURIC CHLORIDE **8**	Category A SW1 SW2	**-**	……	**2670**

CHLOROACETONITRILE is assigned segregation code SG 35 which means that must be stowed "Separated from ACIDS"

Cannot pack these until we know whether CYANURIC CHLORIDE is an acid - but how do we know? ***Check UN Nos. in 3.4.4.1***

39-18 adds Segregation Group Codes (SGG Codes) to Column 16b

Proper Shipping Name	16a Stowage & handling	16b Segregation	17 Properties & observations	UN No.
CHLOROACETONITRILE **6.1**	Category D SW1 SW2	**SG35**	.....	2668
			.....	2669
CYANURIC CHLORIDE **8**	Category A SW1 SW2	**SGG1**	.....	2670

SGG1 – ACIDS - The DG List tells us that the substance is an acid so these two substances cannot be packed in the same container .

New table 7.2.5.2 decodes the 18 Segregation Group (SGG) Codes

Segregation Group Code	Segregation Group	Description
SGG1	1	Acids
SGG1a	1, entries marked *	*identifies strong acids
SGG2	2	Ammonium compounds
SGG3	3	Bromates
SGG4	4	Chlorates
SGG5	5	Chlorites
SGG6	6	Cyanides
Continues to SGG18	Continues to SGG18	Continues …

This is simple and time-saving for the container packer

Don’t be confused between SG and SGG codes in Column 16b!

SG codes are the existing SEGREGATION CODES - they are segregation instructions for particular substances

– e.g. “SG35 - Stow away from Acids”

The new **SGG codes** simply indicate that a substance happens to be in a particular Segregation Group

e.g. “SGG1 –ACIDS”

Changes to segregation

- Three new segregation codes have been created – SG 76, SG 77 & SG 78.
- SG 1 segregation for substances with an explosives sub-hazard has been modified
- Many substances have had SG 35, SG 36 & SG 49 added, making them more restrictive
- Extension to 5.2 segregation tables 7.2.6.3.3

Finally - major container ship fires continue to haunt the industry

- Maritime incidents rarely make the headlines
- The cause is rarely the ship – the seeds of the incident are usually sown on land
- Some shippers deliberately mis-declare, but many simply don’t bother to learn the IMDG Code rules.

Incidents such as these cause fatalities and cost millions

Ship operators and insurers continue to be concerned at their frequency and scale

IMDG training for shore-based staff is vital to help prevent these terrible events.

Thank you ladies and gentlemen

There may be time for a few questions – if not I am happy to answer questions later