

**Translation: Only the Danish version is authentic**

*The Danish Maritime Authority's Technical Regulation no. 4 of 15 March 1989*

**Technical regulation on training certificates  
for the transport by sea of dangerous goods on ro-ro ships**

In pursuance of section 11(2) and section 28 of the Act on Ship Safety, etc., cf. consolidated act no. 584 of 29 September 1988, the following provisions are laid down:

**Application**

- 1 This technical regulation shall apply to any Danish ro-ro ship that transports dangerous goods in accordance with the provisions of the "Memorandum of Understanding on the transport of dangerous goods (covered by the IMDG Code, ADR/RID) by ro-ro ships in the Baltic area (the Baltic Agreement)" as well as to foreign ro-ro ships registered in countries other than Finland, Sweden, West Germany and East Germany that, while engaged on regular crossings to and from Denmark, load dangerous goods (covered by the IMDG Code, ADR/RID) in Danish ports in accordance with the Baltic Agreement.

**General provisions on Danish ro-ro ships**

- 2.1 Danish ro-ro ships covered by this technical regulation are permitted to transport dangerous goods only if the masters, mates, chief engineer officers, other engineer officers, ship's assistants, ratings and motormen of the said ships hold a certificate certifying that they have completed a course in the transport by sea of dangerous goods mandatory for the position and function of each individual person, cf. annex A to this technical regulation.
- 2.2 Crew members of other categories than those mentioned in regulation 2.1 shall hold a certificate certifying that they have completed the training for ship's assistants, ratings and motormen stipulated in annex A if those persons – in accordance with the muster list – form part of a contingency arrangement on board to prevent accidents when transporting dangerous goods.
- 2.3 The master shall ensure that the categories of crew members mentioned in regulations 2.1 and 2.2 hold the certificate prescribed for the crew member in question, cf. annex A to this technical regulation.
- 2.4 Course certificates issued by Marstal Maritime School (Marstal Navigationskole) before the entry into force of this technical regulation shall remain valid and be regarded as equal to certificates covering all danger classes, IMDG, the Baltic Agreement, ADR as well as RID issued in pursuance of this technical regulation, cf. item 1 in annex A to this technical regulation.

**General provisions on foreign ro-ro ships**

- 3 Foreign ro-ro ships covered by this technical regulation shall be permitted to load dangerous goods in Danish ports only if the master and crew of the ship in question hold the certificate prescribed by section 2 relevant for the position and function on board of each individual person or if it is possible to demonstrate to the Danish Maritime Authority that the master and the crew have acquired the same knowledge in another way.

**Exemptions**

- 4 If – after having consulted the chief engineer officer – the master deems it reasonable, he or she may, in special circumstances in connection with one individual voyage, omit complying with the requirement stipulated in regulations 2.1 and 2.2 for a certificate for individual crew members; however, the crew members concerned may not belong to the same category of crew members.

**Penalty clause**

- 5 Persons who contravene regulation 2.1, 2.2, 2.3 or 3 shall be liable to punishment by fine or simple detention.

**Entry into force**

- 6 This technical regulation shall enter into force on 1 November 1989. However, the provisions of regulation 3 shall not enter into force until 1 May 1990.

Danish Maritime Authority, 15 March 1989  
N.J. Bagge / K. Skaareberg Eriksen

## **Annex A**

### **Traning of the ship's crew**

#### **MASTERS AND MATES**

- 1 Masters and mates shall have completed a course recognised by the Danish Maritime Authority for the purpose, which will provide each individual participant with sufficient knowledge to organise safe transport of dangerous goods, to be able to check and ensure that the regulations in force are observed and to be able to act correctly in case of incidents or accidents, cf. annex B.

#### **Description of the aim**

The course shall be based on 24 lessons and shall provide the participants with knowledge about:

- The national and international rules that apply to the transport of dangerous goods, the IMDG Code, the Baltic Agreement and ADR/RID.
- The classes into which dangerous goods are divided.
- The properties that characterise the individual classes and the data that is of importance to safe transport.
- The marking of goods and transport units as well as of packages required by the various sets of regulations.
- The rules that apply to the documentation, placing and segregation of goods and transport units.
- The rules on liability, organisation and documentation in connection with the transport of dangerous goods.
- Health risk, emergency procedures and the containment/fighting of accidents and the use of personal protective equipment.
- Company procedures, knowledge about local conditions, contingency plan internally/externally as well as the reporting of accidents.

#### **CHIEF ENGINEER OFFICERS AND OTHER ENGINEER OFFICERS**

- 2 Chief engineer officers and other engineer officers shall have completed a course recognised by the Danish Maritime Authority for the purpose, which will provide each individual participant with sufficient knowledge about the rules in force on the transport of dangerous goods – including those on the technical installations on board – and sufficient knowledge to be able to act correctly in case of incidents or accidents, cf. annex B.

#### **Description of the aim**

The course shall be based on 20 lessons and shall provide the participants with knowledge about:

- The general rules that apply to the transport of dangerous goods, the IMDG Code, the Baltic Agreement and ADR/RID, including especially structural and installation-related rules in accordance with the SOLAS Convention, the IEC regulations, the IMDG Code and the Baltic Agreement.
- The classes into which dangerous goods are divided and the properties that characterise the individual classes.
- Provisions on the marking and segregation of dangerous goods and transport units.
- The rules on liability and organisation as well as the procedures and local provisions.

- Health risk, emergency procedures and the containment/fighting of accidents, contingency plan internally/externally as well as the use of personal protective equipment.

### **SHIP'S ASSISTANTS, RATINGS AND MOTORMEN**

- 3 Ship's assistants, ratings and motormen shall have completed a course recognised by the Danish Maritime Authority for the purpose, which will provide each individual participant with sufficient knowledge about the rules in force on the transport of dangerous goods and sufficient knowledge to be able to act correctly in case of incidents or accidents, cf. annex B.

#### **Description of the aim**

The course shall be based on 16 lessons and shall provide the participants with an understanding of:

- The sets of regulations that apply to the transport of dangerous goods, the IMDG Code, the Baltic Agreement and ADR/RID.
- The classes into which dangerous goods are divided and the identification of the marking of such goods.
- The basic principles on the segregation of vehicles/goods wagons transporting dangerous goods.
- Health risk, fighting of spillages and the correct way of acting in case of accidents as well as the use of personal protective equipment.
- Company procedures and knowledge about local conditions and rules.

#### **COURSE CERTIFICATES, ETC.**

- 4 When one of the courses mentioned in items 1, 2 and 3 has been completed, the instructor shall issue a course certificate on a form approved by the Danish Maritime Authority to the course participants whom the instructor deems to have acquired the knowledge necessary for the relevant category of personnel. As regards course participants holding a discharge book, the instructor shall, furthermore, stamp the text given on the course certificate into the discharge book along with the relevant date and the instructor's signature.
- 4.1 Persons who have previously completed the course mentioned in item 1 at Marstal Maritime School (Marstal Navigationsskole) may, if requesting the Danish Maritime Authority to do so, have the certificate issued previously exchanged for a new certificate issued in accordance with this technical regulation.

## **Annex B**

# **Guidelines for instructors on a teaching plan for courses in the transport of dangerous goods in accordance with the Baltic Agreement**

## **MASTERS AND MATES**

### **Purpose**

The course is aimed at navigators engaged on ro-ro ships transporting dangerous goods in accordance with the “Memorandum of Understanding on the transport of dangerous goods by ro-ro ships in the Baltic area” (in the following referred to as the Baltic Agreement). The purpose of the course is to provide each individual participant with sufficient knowledge to be able to organise safe transport of dangerous goods, to be able to check and ensure that the regulations in force are observed and to be able to act correctly in case of mistakes or accidents. This is acquired by providing the participants with extensive knowledge about the national and international rules and the elements of danger that the transport of the individual classes presents due to their physical and chemical properties. Furthermore, the participants are provided with knowledge about the division of responsibilities, the necessary control and documentation as well as a full account of how to handle a catastrophe or an accident, including the measures that should be launched to minimise the pollution and the damage to the environment.

### **Material**

A compendium entitled “Transport of dangerous goods by dry cargo ships” is handed out to each participant. This compendium will be supplemented by sections on the Baltic Agreement, ADR/RID, etc.

### **Books and equipment**

The following books and equipment shall be available for use during the course:

IMDG Codes	Up-dated	
EmS	-	A minimum of one set per two students
MFAG	-	
ADR	-	
RID	-	

Books and technical literature on dangerous goods.

Two complete chemical suits with gloves.

Two complete smoke helmets.

Examples of other kinds of personal protective equipment.

Examples of gas measuring equipment.

A selection of films and videotapes.

### **Content**

The teaching includes:

1.	Introduction	1 lesson
2.	National and international rules	2 lessons
3.	Chemical and physical properties	2 lessons
4.	The classes	4 lessons
5.	Marking	1 lesson
6.	The Baltic Agreement	3 lessons

7.	Placing and segregation	3 lessons
8.	Use of protective equipment	2 lessons
9.	Health risks	2 lessons
10.	The fighting of fires and catastrophes	2 lessons
11.	Documentation and responsibility	2 lessons
	<i>In total</i>	<i>24 lessons</i>

In the following, the course content will be described. In this connection, it should be mentioned that the course instructors shall be completely familiar with the participants' background and field of work and shall know the arrangement and equipment of the ships; a knowledge that shall, of course, be used when deciding on the emphasis put on as well as the time spent on each individual element.

### **1. Introduction (1 lesson)**

General welcome, practical remarks. Presentation of the teacher(s) and his or her (their) background. Purpose of the course, including the technical regulation on training certificates for the transport by sea of dangerous goods on ro-ro ships. Definition of dangerous goods and the elements of danger involved; means to prevent these in general. Examples of accidents. Film: Dangerous goods, part I.

### **2. National and international rules (2 lessons)**

Relevant sections of the SOLAS Convention and Notices from the Ships Inspection, primarily chapter VII. Systematic account of international rules.

- The Orange Book
- Ashore: ADR/RID
- At sea: IMDG
- In the air: DGR
- The Baltic Agreement

### **3. Chemical and physical properties (2 lessons)**

The chemical properties and characteristics of the individual classes are taught. Especially explosives, organic compounds, oxidants, acids and bases. The participants are provided with knowledge about the most common chemical expressions in connection with dangerous goods. Interpretation of chemical formulas. Furthermore, the participants are provided with knowledge about the relevant physical constants and properties, including vapour pressure, boiling point, explosion limits, flash point, self-ignition point, radioactivity (REM, transport index), toxicity (LC 50, LD 50), limit values.

### **4. The classes (4 lessons)**

The participants are made familiar with the structure and arrangement of the IMDG Code. The use of UN numbers and examples of references. Expressions in the INDEX are explained, including MFAG and EmS. The ADR/RID system of regulations. The main division of the regulations. The individual classes are presented with information about their special properties and elements of risk. In this connection, examples are given of the most common, transported substances with reference to their placing in ADR/RID. Relevant video spots are shown during the presentation hereof in class. Reference exercises in ADR/RID as group work.

### **5. Marking (1 lesson)**

The participants are provided with extensive knowledge about the rules on marking in accordance with both the IMDG Code and ADR/RID.

### **6. The Baltic Agreement (3 lessons)**

Presentation of the structure of the agreement, the definitions and tables used. Particular emphasis is put on the tables on stowage on board passenger ships and ships with a limited number of passengers, including the connection with the point system of ADR/RID. Examples of ro-ro ships and section 7 permits. Film made by the Danish State Railways (DSB): "Dangerous goods".

### **7. Placing and segregation (3 lessons)**

The participants are provided with extensive knowledge about the rules on stowage and segregation in accordance with the IMDG Code and the Baltic Agreement, including the use and interpretation of segregation tables. The subjects taught are supplemented and checked by means of exercises and group exercises.

### **8. Use of safety equipment (2 lessons)**

The participants are informed about the elements of risk in connection with gas and vapour leakages, especially in spaces that are not sufficiently ventilated. The use of the chemical suit and the smoke helmet is demonstrated, possibly by making a course participant wear the two. The participants are informed about the generally known resistance periods of the said equipment. Measuring equipment for measuring CO and gases is described shortly with information about what is measurable and, especially, the limitations.

### **9. Health risks (2 lessons)**

Information about toxic substances, acids, bases, organic solvents, carbon monoxide and anoxia in connection with dangerous goods. The list of limit values issued by the Danish Environmental Protection Agency is handed out and defined. The use of MFAG is explained. Film: Artificial respiration through the blowing-in method. Resuscitation and artificial respiration is practised by means of a phantom. First-aid in connection with chemical accidents.

### **10. The fighting of fires and catastrophes (2 lessons)**

The fighting of fires and special elements of risk in connection with fires are presented for each individual class of dangerous goods. The use of EmS is explained. Elements of risk in connection with spillages and the fighting of spillages, including environmental considerations (pollutants). Reporting systems, how to raise the alarm and what information to provide. Video spot: The closing systems of tank lorries.

### **11. Documentation and responsibility (2 lessons)**

A presentation of the documents necessary for safe transport of dangerous goods. The statutory requirements for such documents. Drivers' declarations. Relevant manuals with the necessary additional information about dangerous goods. The responsibility of the master and his or her delegation hereof. Film: Dangerous goods, part II. Final discussion and evaluation.

## **CHIEF ENGINEER OFFICERS AND OTHER ENGINEER OFFICERS**

## Purpose

The course is aimed at chief engineer officers and engineer officers engaged on ro-ro ships transporting dangerous goods in accordance with the “Memorandum of Understanding on the transport of dangerous goods by ro-ro ships in the Baltic area” (in the following referred to as the Baltic Agreement). The purpose of the course is to provide each individual participant with sufficient knowledge about the regulations in force on the transport of dangerous goods, including the technical installations on board, as well as sufficient knowledge to be able to interpret an accident and act correctly during the initial phase. Furthermore, the aim of the course is to make the participants capable of using personal protective equipment and fire-fighting equipment in a correct way, including the correct use of ventilation systems. Furthermore, the participants are provided with knowledge about the problems related to health risks and the provisions on pollution in force as regards marine-pollutants.

## Material

A compendium entitled “Transport of dangerous goods by dry cargo ships” is handed out to each participant. This compendium will be supplemented by sections on the Baltic Agreement, ADR/RID, etc.

## Books and equipment

The following books and equipment shall be available for use during the course:

IMDG Codes	Up-dated	
EmS	-	a minimum of one set per two students
MFAG	-	
ADR	-	
RID	-	

Books and technical literature on dangerous goods.

Two complete chemical suits with gloves.

Two complete smoke helmets.

Examples of other kinds of personal protective equipment.

Examples of gas measuring equipment.

A selection of films and videotapes.

## Content

The teaching includes:

1.	Introduction	1 lesson
2.	National and international rules	2 lessons
3.	The Baltic Agreement	3 lessons
4.	The classes	4 lessons
5.	Safety equipment	2 lessons
6.	Health risks	2 lessons
7.	The fighting of fires and catastrophes	2 lessons
8.	Marking, reports on accidents, etc.	4 lessons
	<i>In total</i>	<i>20 lessons</i>

In the following, the course content will be described. In this connection, it should be mentioned that the course instructors shall be completely familiar with the participants' background and field of work and shall know the arrangement and equipment of the ships; a knowledge that shall, of course, be used when deciding on the emphasis put on as well as the time spent on each individual element.

### **1. Introduction (1 lesson)**

General welcome, practical remarks. Presentation of the teacher and his or her background. Purpose of the course, including the technical regulation on training certificates for the transport by sea of dangerous goods on ro-ro ships. Definition of dangerous goods and the elements of danger involved; means to prevent these in general. Examples of accidents. Film: Dangerous goods, part I.

### **2. National and international rules (2 lessons)**

Relevant sections of the SOLAS Convention and Notices from the Ships Inspection, primarily chapter VII. Systematic account of international rules.

- The Orange Book
- Ashore: ADR/RID
- At sea: IMDG
- In the air: DGR
- The Baltic Agreement

The participants are made familiar with the structure and arrangement of the IMDG Code. The use of UN numbers and examples of references. Explanation of expressions in the INDEX, including MFAG and EmS.

### **3. The Baltic Agreement (3 lessons)**

Presentation of the structure of the agreement, the definitions and tables used. Particular emphasis is put on technical sections 7-9 with a presentation of the IEC degrees of encapsulation. Examples of ro-ro ships and section 7 permits. Film made by the Danish State Railways (DSB): "Dangerous goods".

### **4. The classes (4 lessons)**

The ADR/RID system of regulations. The main division of the regulations. The individual classes are presented with information about their special properties and elements of risk. In this connection, examples are given of the most common, transported substances with reference to their placing in ADR/RID. Relevant physical and chemical properties are defined and explained in connection with the classes, including: explosion limits, flash point, REM, transport index (class 7), LC 50, LD 50, vapour pressure. Relevant video spots are shown during the presentation in class. Reference exercises in ADR/RID as group work.

### **5. Safety equipment (2 lessons)**

The participants are informed about the elements of risk in connection with gas and vapour leakages, especially in spaces that are not sufficiently ventilated. The use of the chemical suit and the smoke helmet is demonstrated, possibly by making a course participant wear the two. The participants are informed about the generally known resistance periods of the said equipment. Measuring equipment for measuring CO and gases is described shortly with information about what is measurable and, especially, the limitations.

### **6. Health risks (2 lessons)**

Information about toxic substances, acids, bases, organic solvents, carbon monoxide and anoxia in connection with dangerous goods. The list of limit values issued by the Danish

Environmental Protection Agency is handed out and defined. The use of MFAG is explained.  
Film: Artificial respiration through the blowing-in method.

### **7. The fighting of fires and catastrophes (2 lessons)**

The fighting of fires and special elements of risk in connection with fires are presented for each individual class. The use of EmS is explained. Elements of risk in connection with spillages and the fighting of spillages, including environmental considerations (pollutants).  
Film: Dangerous goods, part II. Group exercise: Catastrophe on car deck.

### **8. Marking, accident reporting, etc. (4 lessons)**

Rules on the marking of dangerous goods. The meaning of risk notes. The meaning of orange signs. Other kinds of marking. Video film: Simmersted. Rules on the segregation of dangerous goods. Exercises in connection with marking and segregation. Presentation of a loading plan with an explanation of the meaning of the information contained therein. Division of responsibilities. Reporting systems, how to raise the alarm and what information to provide. Video spot: The closing systems of tank lorries. Final discussion and evaluation.

## **SHIP'S ASSISTANTS, RATINGS AND MOTORMEN**

### **Purpose**

The course is aimed at ship's assistants, ratings and motormen engaged on ro-ro ships transporting dangerous goods in accordance with the "Memorandum of Understanding on the transport of dangerous goods by ro-ro ships in the Baltic area" (in the following referred to as the Baltic Agreement). The purpose of the course is to provide each individual participant with sufficient knowledge about the regulations in force on the transport of dangerous goods, as well as sufficient knowledge to be able to act correctly in case of mistakes or accidents. Furthermore, the purpose of the course is to provide the participants with knowledge about the sets of regulations in force on the transport of dangerous goods, especially the IMDG Code, the Baltic Agreement and ADR/RID and about the classes into which dangerous goods are divided as well as with sufficient knowledge to be able to identify the marking of such goods. Furthermore, knowledge about health risks, fighting of spillages and the correct way of acting in case of accidents as well as about the use of personal protective equipment. Company procedures and knowledge about local conditions and rules.

### **Material**

A compendium with a detailed description of the subjects covered by the course is handed out to each participant.

### **Books and equipment**

The following books and equipment shall be available for use during the course:

IMDG Codes	Up-dated	a minimum of one set per two students
EmS	-	
MFAG	-	
ADR	-	
RID	-	

Furthermore, background literature in the form of works of reference as well as personal protective equipment with a chemical suit.

## **Content**

The teaching includes:

1. Introduction	1 lesson
2. The classes	3 lessons
3. The Baltic Agreement	2 lessons
4. Chemical and physical properties	2 lessons
5. Marking	2 lessons
6. Accidents with dangerous goods	3 lessons
7. Personal safety	3 lessons
<i>In total</i>	<i>16 lessons</i>

In the following, the course content will be described. In this connection, it should be mentioned that the course instructors shall be completely familiar with the conditions on board the ro-ro ships, have complete knowledge of the equipment available and of the participants' background so that they know what to emphasise, in particular, during the course and so that they can answer any relevant questions.

### **1. Introduction (1 lesson)**

General welcome, practical remarks. Presentation of the teacher(s) and his or her (their) background. Purpose of the course, including the technical regulation on training certificates for the transport by sea of dangerous goods on ro-ro ships. Definition of dangerous goods and the elements of danger involved; means to prevent these in general. Examples of accidents. Film: Dangerous goods, part I.

### **2. The classes (3 lessons)**

The participants are provided with insight into the sets of regulations that apply to the various kinds of transport. The IMDG Code and ADR/RID are described with information about their main divisions. The individual classes are presented with information about their characteristics and elements of danger. In this connection, examples are given of the most common, transported substances. The teaching will be supplemented by exercises.

### **3. The Baltic Agreement (2 lessons)**

The historical background of the Agreement is presented in short, including the fact that the Agreement constitutes a relaxation in relation to the rules of the IMDG Code. The difference between passenger ships and cargo ships and between open and enclosed ro-ro decks is explained, and the participants are informed about the significance hereof as regards the transfer of the most common types of dangerous goods. Examples of the placing of known ro-ro ships in the system, including the significance of section 7 permits. Information about the drawing up of loading plans and the information that they contain. Rules on the placing of dangerous goods, including rules on segregation (table 4) in short.

### **4. Chemical and physical properties (2 lessons)**

The relevant chemical and physical properties of dangerous goods are taught so that the participants acquire an understanding of the ways in which the following can be described or measured: the contamination risk, the corrosion risk, the cauterisation risk, the fire risk, the explosion risk, the radiation risk and the pollution risk, such as those elements of risk may be expressed during the general handling of the goods and in case of leakages. The information generally given in safety cards and transport documents is presented and interpreted.

### **5. Marking (2 lessons)**

General rules on the marking of dangerous goods. The marking of individual parcels. The marking of goods wagons and lorries, including tank lorries. The participants are made able to interpret the immediate information given by risk notes and orange signs. The subjects taught are controlled and supplemented by exercises.

### **6. Accidents with dangerous goods (3 lessons)**

The participants are informed about and taught how to act correctly when accidents or errors are detected in connection with dangerous goods. Reporting internally and externally. The signs used in connection with the initial measures to be taken and elements of risk are presented. Contingency plans. Fire-fighting theory. Pollution-limiting measures that can be launched. Film: Dangerous goods, part II. Exercises.

### **7. Personal safety (3 lessons)**

The participants are presented to and taught about: Symptoms of poisoning, personal protection and hygiene, first-aid (in case of burning, caustic burning, poisoning and breathing difficulties). Chemical suit and other personal protective equipment, including the cleaning, maintenance and storage of such equipment, as well as information about limited resistance (resistance periods). Final discussion and evaluation.