

DGSA EXAMINATION
PERMITTED EXAMINATION MATERIAL

The following documents may be used in the DGSA examinations. This list will be further revised for subsequent examinations and you should ensure you have an amended version if sitting any examinations at a later date.

Examination questions will be based predominantly on RID/ADR/ADN. However, candidates should study the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (as amended) and the Carriage of Dangerous Goods: Approved Derogations and Transitional Provisions, with particular emphasis on the regulations and schedules listed on page two of the syllabus.

Candidates should note that the use of electronic equipment, including CD ROMs, is not permitted in the examination.

ONLY the following documents may be taken into the examination room. Any candidate found in possession of extraneous material will have their examination paper declared null and void by the SQA.

PERMITTED DOCUMENTS	ABBREVIATION
Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) 2023 or 2025 edition plus any corrigendum documents	ADR
Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) 2023 or 2025 edition plus any corrigendum documents	RID
European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterway (ADN) 2023 or 2025 edition plus any corrigendum documents	ADN
<p>Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 SI 1348</p> <p>Note: These regulations (“Original (As made)” or “Latest available (revised)” versions) can be downloaded free of charge from: www.legislation.gov.uk/ukxi/2009/1348.</p> <p>Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations 2011 SI 1885</p> <p>Note: These regulations (“Original (As made)” versions) can be downloaded free of charge from: www.legislation.gov.uk/ukxi/2011/1885</p> <p>Note: Amendments to CDG2009 implemented after 2011 under the Carriage of Dangerous Goods (Amendment) Regulations 2019 SI 598 and the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) (EU Exit) Regulations 2020 SI 1111 will not be examined in this examination diet.</p>	CDG2009
<p>Carriage of Dangerous Goods: Approved Derogations and Transitional Provisions</p> <p>Note: This document can be downloaded free of charge from: www.gov.uk/government/publications/the-carriage-of-dangerous-goods-approved-derogations-and-transitional-provisions</p>	ADTP
<p>Dangerous Goods Emergency Action Code List 2023 or 2025 edition</p> <p>Note: Candidates do not need to have a copy of the Dangerous Goods Emergency Action Code List (DG EAC List) for the examinations as documents containing relevant extracts will be issued with each exam paper on the day of the examinations. However, candidates are also permitted to take the full DG EAC List publication into the examination room.</p>	DG EAC List

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Introduction to the Emergency Action Codes

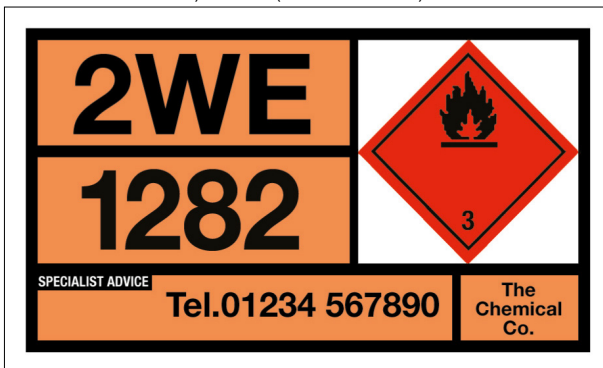
1.1 Introduction

- 1.1.1** Emergency Action codes (EACs), also known as Hazchem codes, are for the use of the emergency services in conjunction with Emergency Action Code Cards. EACs indicate to the emergency services actions that may be necessary, during the first few minutes of an incident involving dangerous goods, should the officer in charge of the incident deem it necessary to take immediate actions.
- 1.1.2** This document shall not be used for the purposes of markings on the orange coloured plate without reference to the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG 2009), as amended; or of the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (Northern Ireland) 2010 (CDG 2010), as amended; and ADR/RID. The fact that a United Nations (UN) number and emergency action code (EAC) for a given substance are shown in this document does not necessarily mean they should be used for the marking of road tankers, rail tank wagons or tank containers used for the carriage of that substance. An annotation (1) in the EAC column of Section 4 indicates that it is not applicable to the carriage of dangerous goods under RID or ADR.
- 1.1.3** This document contains all items listed by the United Nations in their publication "Recommendations on the Transport of Dangerous Goods Model Regulations (twenty third revised edition)" with the exception of substances in UN Class 1, i.e. explosives. EACs are not allocated to radioactive materials and these are annotated (2) in the EAC column of Section 4 of this document.

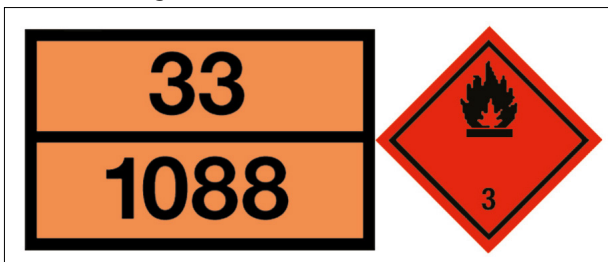
1.1.4 For internal transport operations in Great Britain and Northern Ireland there are two forms of placarding/plate marking permitted for tank transport and carriage in bulk under CDG 2009 (as amended); or CDG (Northern Ireland) 2010 (as amended). Both of these include the hazard warning diamond and the UN number. Road and Rail vehicles must also display one of two additional identification numbers.

- GB registered road and rail vehicles on domestic journeys must display the Emergency Action (Hazchem) Code
- All other vehicles must display the Hazard Identification Number (HIN) (see paragraphs 4.1.13–4.1.18).

1.1.5 Examples of these two systems are shown below. The requirements are contained in CDG 2009 (as amended); or CDG (Northern Ireland) 2010 (as amended).



Hazard Warning Panel



RID/ADR (Hazard Identification Number) orange coloured plate and placard

1.2 Danger Labels

1.2.1 The following are danger labels that will be shown during the transport of dangerous goods:

CLASS 1 – Explosive substances or articles



Division 1.1, 1.2 and 1.3



Division 1.4



Division 1.5



Division 1.6

CLASS 2 – Gases



Flammable gases



Non-flammable,
non-toxic gases



Toxic gases

CLASS 3 – Flammable liquids



CLASS 4.1 – Flammable solids, self-reactive substances and desensitized explosives



CLASS 4.2 – Substances liable to spontaneous combustion



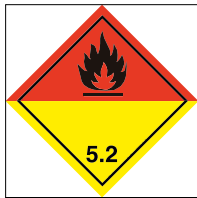
CLASS 4.3 – Substances which, in contact with water, emit flammable gases



CLASS 5.1 – Oxidizing substances



CLASS 5.2 – Organic peroxides



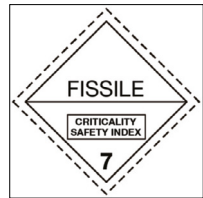
CLASS 6.1 – Toxic substances



CLASS 6.2 – Infectious substances



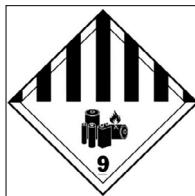
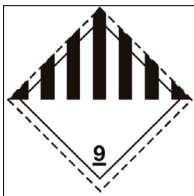
CLASS 7 – Radioactive material



CLASS 8 – Corrosive substance

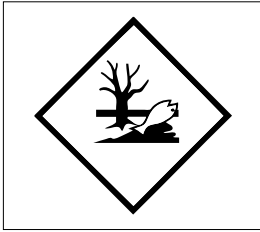


CLASS 9 – Miscellaneous dangerous substances and articles



Lithium Batteries

1.2.2 Under the requirements of the 2025 editions of ADR and RID all goods classified as dangerous in carriage, whether or not assigned to another Class, may need to have the EHS mark displayed on their packaging if they meet the EHS criteria contained in 2.2.9.1.10 of ADR and RID.

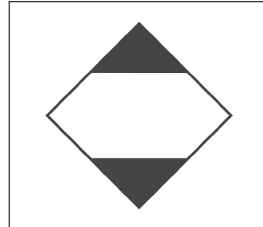


Environmentally hazardous substance mark

1.2.3 The following are marks that may appear on vehicles during the transport of dangerous goods and would appear in addition to the danger labels at 1.2.1.



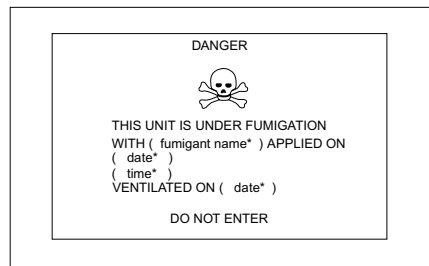
Mark for elevated temperature substances



Dangerous goods packed in limited quantities



Risk of Asphyxiation warning sign



Fumigation warning sign

Displaying Emergency Action Codes

2.1 Assigning Emergency Action Codes

- 2.1.1** The codes allocated and shown in the list apply to tank transport and carriage in bulk of the single substance by road or rail except where it is also annotated (1). These codes will not necessarily apply for non-transport incidents although they may be used to provide some indication of the action that may be necessary.
- 2.1.2** Radioactive materials have not been allocated emergency action codes and are annotated (2).
- ADR 5.3.2.1.4 and RID 5.3.2.1.1 and 5.3.2.1.2 stipulate that transport units, containers or wagons carrying packaged radioactive material with a single UN number, required to be carried under exclusive use and with no other dangerous goods, display orange-coloured plates bearing the appropriate hazard identification number (HIN) and UN number.
- 2.1.3** The prefix '●' will sometimes appear before the EAC in the third column, e.g. UN 1193 Ethyl Methyl Ketone appears as ●2YE. The '●' here indicates to the emergency services that alcohol resistant foam is the preferred firefighting medium but this prefix **shall not** be displayed on plates, i.e. EACs displayed on road or rail vehicles will either be two characters without an 'E' or three characters including an 'E'. In a similar way an APP code will sometimes appear in the 4th column of the List at Section 4 indicating additional information for the emergency services but again this **shall not** be displayed on plates.

2.1.4 In some cases, where there is more than one EAC for a single UN number, it will be necessary to determine the EAC by reference to the packing group, e.g. for UN 1224 – the EAC will be 3YE for ketones of packing group II whereas the EAC will be 3Y for ketones of packing group III. In these cases the relevant packing groups will be identified in the ‘Substance’ column.

2.2 Assigning Emergency Action Codes to multi-loads

2.2.1 The following procedure shall be used to assign EACs when each of the dangerous goods comprising the multi-load is listed for carriage in a tank under RID or ADR.

1st character of the code

2.2.2 The number forming the first character of the code for a multi-load is the highest of the numbers occurring in the EACs for the individual dangerous goods.

2nd Character of the code

2.2.3 The letter forming the second character of the code shall be determined from the first letter of the EAC for each of the dangerous goods from the chart below.

Code chart for the determination of emergency action codes for multi-loads

	P	R	S	T	W	X	Y	Z
P	P	P	P	P	W	W	W	W
R	P	R	P	R	W	X	W	X
S	P	P	S	S	W	W	Y	Y
T	P	R	S	T	W	X	Y	Z
W	W	W	W	W	W	W	W	W
X	W	X	W	X	W	X	W	X
Y	W	W	Y	Y	W	W	Y	Y
Z	W	X	Y	Z	W	X	Y	Z

- 2.2.4** If the letter forming the second character of the code for each of the dangerous goods is the same, then that letter will automatically form the second character of the EAC for the multi-load.
- 2.2.5** If, however, the letter forming the second character of the code for each of the dangerous goods is different, then one of those letters shall be selected along the top of the horizontal line) and then a second letter shall be selected down the far left-hand column, i.e. the two bold sections. The letter in the square where the appropriate column and row meet is the 'resultant letter' for those two substances. If there are only two dangerous goods to be carried in the multi-load, then that resultant letter is the letter forming the second character of the EAC for that multi-load.
- 2.2.6** If there are more than two dangerous goods to be carried in the multi-load, then use the 'resultant letter' obtained in paragraph 2.2.5 along the top horizontal line as above and select another letter down the far left-hand column as above. The letter in the square where the appropriate column and row meet is the new 'resultant letter'. If there are no more dangerous goods to be carried in the multi-load, then that 'resultant letter' is the letter forming the second character of the code. If there are any further dangerous goods to be carried then this procedure must be repeated until all the other letters have been used.

Letter 'E'

- 2.2.7** The letter 'E' shall be included as the third character in the multi-load emergency action code if it occurs in the EAC of any of the dangerous goods to be carried. If the letter 'E' does not occur in any of the EACs of the dangerous goods to be carried, the EAC shall be just a two character code determined from paragraphs 2.2.2 to 2.2.6 above.

Example:

- 2.2.8** The following is an example of how to calculate the emergency action code for a multi-load.

There are three substances to be carried as a multi-load, having emergency action codes of 3Y, 2S and 4WE.

1st Character (number)

The first character of the EAC for each of the three substances is 3, 2 and 4. The highest number must be taken as the first character of the code for the multi-load and therefore the first character shall be **4**.

2nd Character (letter)

The second character for the EAC for each of the three substances is Y, S and W. Taking the Y along the top row of the chart and the S along the left hand column, the intersection is at Y and therefore the character for the first two substances would be Y. This resultant character (Y) is then taken along the top row and the character for the third substance (W) is taken along the left hand column. The intersection point is now W. The second character of the code for the three substances shall therefore be **W**.

Letter 'E'

The third substance has an 'E' as a third character and therefore the multi-load shall also have an '**E**'.

The resultant emergency action code for the three substances carried as a multi-load shall therefore be **4WE**.

Application of Emergency Action Codes for the Emergency Services

3.1 Interpretation of Codes

3.1.1 The interpretation of an emergency action code is determined using Emergency Action Code pocket cards, the latest version of which is shown below.

Hazchem Guide

1 COARSE SPRAY

3 FOAM

2 FINE SPRAY

4 DRY AGENT

P	V	LTS	DILUTE SPILLAGE	
R				
S	V	BA & FIRE KIT		
T				
W	V	LTS		CONTAIN SPILLAGE
X				
Y	V	BA & FIRE KIT		
Z				

E PUBLIC SAFETY HAZARD

KEY

V Can be violently or even explosively reactive.

LTS Liquid tight chemical protective clothing used in conjunction with BA.

DILUTE Spillages may be washed to drain with large quantities of water. However due care must be taken to avoid unnecessary pollution of watercourses. For further information contact the Environment Agency or Scottish Environmental Protection Agency.

CONTAIN Prevent the spillage from entering drains and watercourses using any means available.

DRY AGENT Water **must not** be allowed to come into contact with the substance.

E People should be warned to stay indoors with all doors and windows closed but evacuation may need to be considered. Consult Control, Police, and product expert.

Note: Laminated Emergency Action Code Cards – “Hazchem Scale Cards” – are available from NCEC. Similar cards are also available from TSO (ISBN 978 0 11 341295 2)

Extinguishing Media

3.1.2 The firefighting extinguishing medium is determined by reference to the first character of the EAC as follows:

- 1** denotes **coarse water spray**
- 2** denotes **fine water spray**
- 3** denotes **normal foam** i.e. protein based foam that is not alcohol resistant
- 4** denotes dry **agent** – water **MUST NOT** be allowed to come into contact with substance

3.1.3 ●2 and ●3, which sometimes appear in the List, are not displayed on the vehicle plates or on the Emergency Action Code Cards and will only be shown as 2 and 3 respectively. This information can therefore only be obtained by reference to this document or another appropriate source, e.g. fire control. ●2 denotes **alcohol resistant foam** but, if not available, fine water spray can be used. ●3 denotes **alcohol resistant foam** but, if not available, normal foam can be used.

Note: Any higher number than the one shown can be used but a lower number must not be used.

Personal Protection

3.1.4 Where the second character of the EAC is S, T, Y or Z normal firefighting clothing is appropriate, i.e. self-contained open circuit positive pressure compressed air breathing apparatus conforming to BS EN 137 worn in combination with fire kit conforming to BS EN 469, firefighters' gloves conforming to BS EN 659 and firefighters' footwear conforming to BS EN 15090 (Footwear for firefighters) type F3 – Hazmat and structural firefighting [CH – marking for chemical resistance] or alternatively firefighters' boots conforming to Home Office Specification A29 (rubber boots) or A30 (leather boots).

Note: Leather footwear, including those conforming to Home Office Specification A30 (leather boots), may not provide adequate chemical resistance therefore caution should be exercised in the use of these boots.

- 3.1.5** Where the second character of the EAC is P, R, W or X chemical protective clothing with liquid tight connections for whole body (Type 3) conforming to the relevant standards such as BS 8428 or EN 14605, in combination with breathing apparatus specified in paragraph 3.1.4, shall be used.

Violent Reaction

- 3.1.6** Where the second character of the EAC is a P, S, W or Y there is a danger that the substance can be violently or explosively reactive. This danger may be present due to one of the following:
- Violent or explosive decomposition of the material involved, including ignition or friction.
 - The ignition of a flammable gas or vapour cloud (this danger exists for all flammable gases and flammable liquids with a flash point below 60°C).
 - The rapid acceleration of combustion due to the involvement of an oxidizer.
 - A reaction with water which is itself violent, and may also evolve flammable gases.
- 3.1.7** The actual danger present can be determined from the vehicle placards or by reference to the United Nations Class in this document or another appropriate source, e.g. fire control.

Contain/Dilute

- 3.1.8** Where the second character of an EAC is W, X, Y or Z spillages, contaminated fire and decontamination run-off should be prevented from entering drains and surface and groundwaters. Where the second character of the code is P, R, S or T and there is an immediate threat to people, spillages and decontamination run-off may be washed to drains with large quantities of water. In such cases due care must be exercised to avoid unnecessary pollution of surface and groundwaters and wherever possible control measures such as the sealing of drains should be employed. More detailed advice on pollution control techniques and equipment can be found on the 'Environmental Protection' pages of the Published National Operational Guidance Programme (www.ukfrs.com/guidance).

Note 1: It should be noted that pollution offences within environmental legislation do apply to the Fire & Rescue Service. There maybe a defence available to FRS if pollution results from a discharge they made in an emergency, but this defence will only apply if all the criteria set out in the relevant legislation have been met.

Note 2: In recognition of the practical difficulties at incidents, the liaison between the environment agencies and the Fire and Rescue Service has been formalised. These are in the form of a Protocol in England and Wales and in Scotland and Northern Ireland that set out the roles and responsibilities of both parties together with the arrangements that should be followed when dealing with incidents where pollution may occur. These arrangements are detailed on the 'Environmental Protection' pages of the Published National Operational Guidance Programme (www.ukfrs.com/guidance).

Note 3: Ideally most spillages/run off and decontamination run-off should be contained. However, environment agencies accept that life saving will take precedence over environmental protection activities. Nevertheless, all steps that are reasonably practicable should be taken to contain contaminants and the Fire & Rescue Service should always inform the environment Agencies as soon as possible so that appropriate advice can be given. Specific information on the legal position of the Fire & Rescue Services at incidents can be found on the 'Environmental Protection' pages of the Published National Operational Guidance Programme (www.ukfrs.com/guidance).

Note 4: Potentially polluting substances include even apparently harmless substances such as food and beverages, which can cause serious problems if discharged into a water body: e.g. a spillage of a soft drink or beer above domestic quantities can constitute a pollutant as it can lead to deoxygenation of the water. Firefighting foams are also a potential source of pollution and their entry into a drainage system and or ground and surface waters should be prevented whenever possible.

Note 5: Other helpful guidance on environmental issues is available on the 'Environmental Protection' pages of the Published National Operational Guidance Programme (www.ukfrs.com/guidance).

E “Public Safety Hazard”

- 3.1.9** An 'E' following the first two characters of an EAC indicates that there may be a public safety hazard outside the immediate area of the incident, and that the following actions should be considered:
- 3.1.10** People should be warned to stay indoors with all doors and windows closed, preferably in rooms upstairs and facing away from the incident. Ignition sources should be eliminated and any ventilation stopped.
- 3.1.11** Effects may spread beyond the immediate vicinity. All non-essential personnel should be instructed to move at least 250 metres away from the incident.
- 3.1.12** Police and Fire and Rescue Service incident commanders should consult each other and with a product expert, or with a source of product expertise.
- 3.1.13** The possible need for subsequent evacuation should be considered, **but it should be remembered that in most cases it will be safer to remain in a building than to evacuate.**

Situations where evacuation may be necessary include the following:

Introduction to the Emergency Action Codes

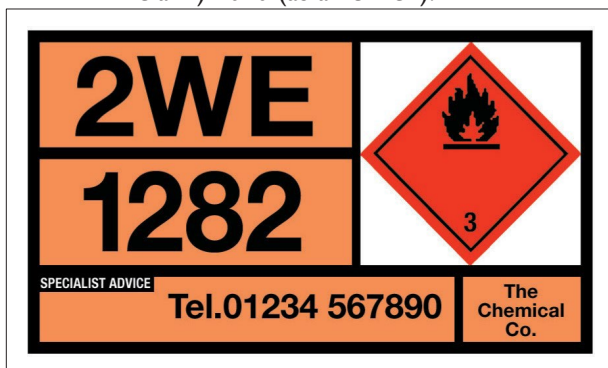
I.1 Introduction

- I.1.1** Emergency Action codes (EACs), also known as Hazchem codes, are for the use of the emergency services in conjunction with Emergency Action Code Cards. EACs indicate to the emergency services actions that may be necessary, during the first few minutes of an incident involving dangerous goods, should the officer in charge of the incident deem it necessary to take immediate actions.
- I.1.2** This document shall not be used for the purposes of markings on the orange coloured plate without reference to the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG 2009), as amended; or of the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (Northern Ireland) 2010 (CDG 2010), as amended; and ADR/RID. The fact that a United Nations (UN) number and emergency action code (EAC) for a given substance are shown in this document does not necessarily mean they should be used for the marking of road tankers, rail tank wagons or tank containers used for the carriage of that substance. An annotation (1) in the EAC column of Section 4 indicates that it is not applicable to the carriage of dangerous goods under RID or ADR.
- I.1.3** This document contains all items listed by the United Nations in their publication “Recommendations on the Transport of Dangerous Goods Model Regulations (twenty second revised edition)” with the exception of substances in UN Class 1, i.e. explosives. EACs are not allocated to radioactive materials and these are annotated (2) in the EAC column of Section 4 of this document.

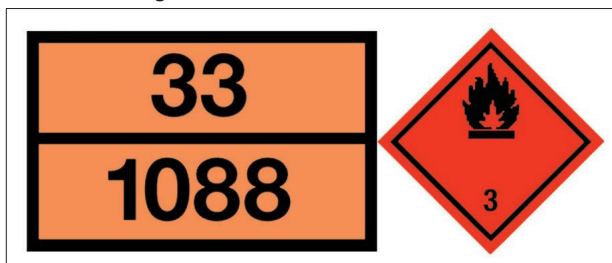
I.1.4 For internal transport operations in Great Britain there are two forms of placarding/plate marking permitted for tank transport and carriage in bulk under CDG 2009 (as amended); or CDG (Northern Ireland) 2010 (as amended). Both of these include the hazard warning diamond and the UN number. Road and Rail vehicles must also display one of two additional identification numbers.

- GB registered road and rail vehicles on domestic journeys must display the Emergency Action (Hazchem) Code
- All other vehicles must display the Hazard Identification Number (HIN) (see paragraphs 4.1.13–4.1.18).

I.1.5 Examples of these two systems are shown below. The requirements are contained in CDG 2009 (as amended); or CDG (Northern Ireland) 2010 (as amended).



Hazard Warning Panel



RID/ADR (Hazard Identification Number) orange coloured plate and placard

1.2 Danger Labels

1.2.1 The following are danger labels that will be shown during the transport of dangerous goods:

CLASS 1 – Explosive substances or articles



Division 1.1, 1.2 and 1.3



Division 1.4



Division 1.5



Division 1.6

CLASS 2 – Gases



Flammable gases



Non-flammable, non-toxic gases



Toxic gases

CLASS 3 – Flammable liquids



CLASS 4.1 – Flammable solids, self-reactive substances and desensitized explosives



CLASS 4.2 – Substances liable to spontaneous combustion



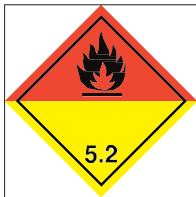
CLASS 4.3 – Substances which, in contact with water, emit flammable gases



CLASS 5.1 – Oxidizing substances



CLASS 5.2 – Organic peroxides



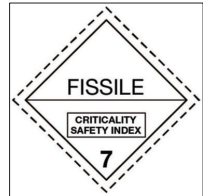
CLASS 6.1 – Toxic substances



CLASS 6.2 – Infectious substances



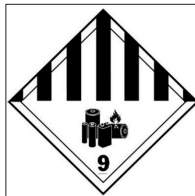
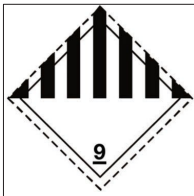
CLASS 7 – Radioactive material



CLASS 8 – Corrosive substance



CLASS 9 – Miscellaneous dangerous substances and articles



Lithium Batteries

1.22 Under the requirements of the 2023 editions of ADR and RID all goods classified as dangerous in carriage, whether or not assigned to another Class, may need to have the EHS mark displayed on their packaging if they meet the EHS criteria contained in 2.2.9.1.10 of ADR and RID.

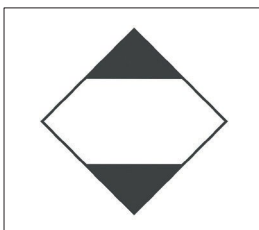


Environmentally hazardous substance mark

1.23 The following are marks that may appear on vehicles during the transport of dangerous goods and would appear in addition to the danger labels at 1.2.1.



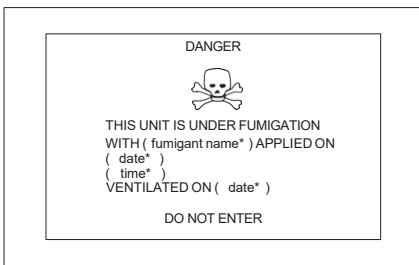
Mark for elevated temperature substances



Dangerous goods packed in limited quantities



Risk of Asphyxiation warning sign



Fumigation warning sign

Displaying Emergency Action Codes

2.1 Assigning Emergency Action Codes

2.1.1 The codes allocated and shown in the list apply to tank transport and carriage in bulk of the single substance by road or rail except where it is also annotated (1). These codes will not necessarily apply for non-transport incidents although they may be used to provide some indication of the action that may be necessary.

2.1.2 Radioactive materials have not been allocated emergency action codes and are annotated (2).

ADR 5.3.2.1.4 and RID 5.3.2.1.1 and 5.3.2.1.2 stipulate that transport units, containers or wagons carrying packaged radioactive material with a single UN number, required to be carried under exclusive use and with no other dangerous goods, display orange-coloured plates bearing the appropriate hazard identification number (HIN) and UN number.

2.1.3 The prefix 'e' will sometimes appear before the EAC in the third column, e.g. UN 1193 Ethyl Methyl Ketone appears as e2YE. The 'e' here indicates to the emergency services that alcohol resistant foam is the preferred firefighting medium but this prefix **shall not** be displayed on plates, i.e. EACs displayed on road or rail vehicles will either be two characters without an 'E' or three characters including an 'E'. In a similar way an APP code will sometimes appear in the 4th column of the List at Section 4 indicating additional information for the emergency services but again this **shall not** be displayed on plates.

2.1.4 In some cases, where there is more than one EAC for a single UN number, it will be necessary to determine the EAC by reference to the packing group, e.g. for UN 1224 – the EAC will be 3YE for ketones of packing group II whereas the EAC will be 3Y for ketones of packing group III. In these cases the relevant packing groups will be identified in the ‘Substance’ column.

2.2 Assigning Emergency Action Codes to multi-loads

2.2.1 The following procedure shall be used to assign EACs when each of the dangerous goods comprising the multi-load is listed for carriage in a tank under RID or ADR.

Ist character of the code

2.2.2 The number forming the first character of the code for a multi-load is the highest of the numbers occurring in the EACs for the individual dangerous goods.

2nd Character of the code

2.2.3 The letter forming the second character of the code shall be determined from the first letter of the EAC for each of the dangerous goods from the chart below.

Code chart for the determination of emergency action codes for multi-loads

	P	R	S	T	W	X	Y	Z
P	P	P	P	P	W	W	W	W
R	P	R	P	R	W	X	W	X
S	P	P	S	S	W	W	Y	Y
T	P	R	S	T	W	X	Y	Z
W	W	W	W	W	W	W	W	W
X	W	X	W	X	W	X	W	X
Y	W	W	Y	Y	W	W	Y	Y
Z	W	X	Y	Z	W	X	Y	Z

- 2.2.4** If the letter forming the second character of the code for each of the dangerous goods is the same, then that letter will automatically form the second character of the EAC for the multi-load.
- 2.2.5** If, however, the letter forming the second character of the code for each of the dangerous goods is different, then one of those letters shall be selected along the top of the horizontal line) and then a second letter shall be selected down the far left-hand column, i.e. the two bold sections. The letter in the square where the appropriate column and row meet is the 'resultant letter' for those two substances. If there are only two dangerous goods to be carried in the multi-load, then that resultant letter is the letter forming the second character of the EAC for that multi-load.
- 2.2.6** If there are more than two dangerous goods to be carried in the multi-load, then use the 'resultant letter' obtained in paragraph 2.2.5 along the top horizontal line as above and select another letter down the far left-hand column as above. The letter in the square where the appropriate column and row meet is the new 'resultant letter'. If there are no more dangerous goods to be carried in the multi-load, then that 'resultant letter' is the letter forming the second character of the code. If there are any further dangerous goods to be carried then this procedure must be repeated until all the other letters have been used.

Letter 'E'

- 2.2.7** The letter 'E' shall be included as the third character in the multi-load emergency action code if it occurs in the EAC of any of the dangerous goods to be carried. If the letter 'E' does not occur in any of the EACs of the dangerous goods to be carried, the EAC shall be just a two character code determined from paragraphs 2.2.2 to 2.2.6 above.

Example:

- 2.2.8** The following is an example of how to calculate the emergency action code for a multi-load.

There are three substances to be carried as a multi-load, having emergency action codes of 3Y, 2S and 4WE.

1st Character (number)

The first character of the EAC for each of the three substances is 3, 2 and 4. The highest number must be taken as the first character of the code for the multi-load and therefore the first character shall be **4**.

2nd Character (letter)

The second character for the EAC for each of the three substances is Y, S and W. Taking the Y along the top row of the chart and the S along the left hand column, the intersection is at Y and therefore the character for the first two substances would be Y. This resultant character (Y) is then taken along the top row and the character for the third substance (W) is taken along the left hand column. The intersection point is now W. The second character of the code for the three substances shall therefore be **W**.

Letter 'E'

The third substance has an 'E' as a third character and therefore the multi-load shall also have an '**E**'.

The resultant emergency action code for the three substances carried as a multi-load shall therefore be **4WE**.

Application of Emergency Action Codes for the Emergency Services

3.1 Interpretation of Codes

3.1.1 The interpretation of an emergency action code is determined using Emergency Action Code pocket cards, the latest version of which is shown below.

Hazchem Guide	
1	COARSE SPRAY
2	FINE SPRAY
3	FOAM
4	DRY AGENT

P	V	LTS	DILUTE SPILLAGE
R		BA & FIRE KIT	
S	V		
T			
W	V	LTS	CONTAIN SPILLAGE
X		BA & FIRE KIT	
Y	V		
Z			

E	PUBLIC SAFETY HAZARD
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KEY

V Can be violently or even explosively reactive.

LTS Liquid tight chemical protective clothing used in conjunction with BA.

DILUTE Spillages may be washed to drain with large quantities of water. However due care must be taken to avoid unnecessary pollution of watercourses. For further information contact the Environment Agency or Scottish Environmental Protection Agency.

CONTAIN Prevent the spillage from entering drains and watercourses using any means available.

DRY AGENT Water **must not** be allowed to come into contact with the substance.

E People should be warned to stay indoors with all doors and windows closed but evacuation may need to be considered. Consult Control, Police, and product expert.

Note: Laminated Emergency Action Code Cards – “Hazchem Scale Cards” – are available from NCEC. Similar cards are also available from TSO (ISBN 978 0 11 341295 2)

Extinguishing Media

3.1.2 The firefighting extinguishing medium is determined by reference to the first character of the EAC as follows:

- 1 denotes **coarse water spray**
- 2 denotes **fine water spray**
- 3 denotes **normal foam** i.e. protein based foam that is not alcohol resistant
- 4 denotes dry **agent** – water **MUST NOT** be allowed to come into contact with substance

3.1.3 e2 and e3, which sometimes appear in the List, are not displayed on the vehicle plates or on the Emergency Action Code Cards and will only be shown as 2 and 3 respectively. This information can therefore only be obtained by reference to this document or another appropriate source, e.g. fire control. e2 denotes **alcohol resistant foam** but, if not available, fine water spray can be used. e3 denotes **alcohol resistant foam** but, if not available, normal foam can be used.

Note: Any higher number than the one shown can be used but a lower number must not be used.

Personal Protection

3.1.4 Where the second character of the EAC is S, T, Y or Z normal firefighting clothing is appropriate, i.e. self-contained open circuit positive pressure compressed air breathing apparatus conforming to BS EN 137 worn in combination with fire kit conforming to BS EN 469, firefighters' gloves conforming to BS EN 659 and firefighters' footwear conforming to BS EN 15090 (Footwear for firefighters) type F3 – Hazmat and structural firefighting [CH – marking for chemical resistance] or alternatively firefighters' boots conforming to Home Office Specification A29 (rubber boots) or A30 (leather boots).

Note: Leather footwear, including those conforming to Home Office Specification A30 (leather boots), may not provide adequate chemical resistance therefore caution should be exercised in the use of these boots.

- 3.1.5** Where the second character of the EAC is P, R, W or X chemical protective clothing with liquid tight connections for whole body (Type 3) conforming to the relevant standards such as BS 8428 or EN 14605, in combination with breathing apparatus specified in paragraph 3.1.4, shall be used.

Violent Reaction

- 3.1.6** Where the second character of the EAC is a P, S, W or Y there is a danger that the substance can be violently or explosively reactive. This danger may be present due to one of the following:
- Violent or explosive decomposition of the material involved, including ignition or friction.
 - The ignition of a flammable gas or vapour cloud (this danger exists for all flammable gases and flammable liquids with a flash point below 60°C).
 - The rapid acceleration of combustion due to the involvement of an oxidizer.
 - A reaction with water which is itself violent, and may also evolve flammable gases.
- 3.1.7** The actual danger present can be determined from the vehicle placards or by reference to the United Nations Class in this document or another appropriate source, e.g. fire control.

Contain/Dilute

- 3.1.8** Where the second character of an EAC is W, X, Y or Z spillages, contaminated fire and decontamination run-off should be prevented from entering drains and surface and groundwaters. Where the second character of the code is P, R, S or T and there is an immediate threat to people, spillages and decontamination run-off may be washed to drains with large quantities of water. In such cases due care must be exercised to avoid unnecessary pollution of surface and groundwaters and wherever possible control measures such as the sealing of drains should be employed. More detailed advice on pollution control techniques and equipment can be found on the 'Environmental Protection' pages of the Published National Operational Guidance Programme (www.ukfrs.com/guidance).

Note 1: It should be noted that pollution offences within environmental legislation do apply to the Fire & Rescue Service. There maybe a defence available to FRS if pollution results from a discharge they made in an emergency, but this defence will only apply if all the criteria set out in the relevant legislation have been met.

Note 2: In recognition of the practical difficulties at incidents, the liaison between the environment agencies and the Fire and Rescue Service has been formalised. These are in the form of a Protocol in England and Wales and in Scotland and Northern Ireland that set out the roles and responsibilities of both parties together with the arrangements that should be followed when dealing with incidents where pollution may occur. These arrangements are detailed on the 'Environmental Protection' pages of the Published National Operational Guidance Programme (www.ukfrs.com/guidance).

Note 3: Ideally most spillages/run off and decontamination run-off should be contained. However, environment agencies accept that life saving will take precedence over environmental protection activities. Nevertheless, all steps that are reasonably practicable should be taken to contain contaminants and the Fire & Rescue Service should always inform the environment Agencies as soon as possible so that appropriate advice can be given. Specific information on the legal position of the Fire & Rescue Services at incidents can be found on the 'Environmental Protection' pages of the Published National Operational Guidance Programme (www.ukfrs.com/guidance).

Note 4: Potentially polluting substances include even apparently harmless substances such as food and beverages, which can cause serious problems if discharged into a water body: e.g. a spillage of a soft drink or beer above domestic quantities can constitute a pollutant as it can lead to deoxygenation of the water. Firefighting foams are also a potential source of pollution and their entry into a drainage system and or ground and surface waters should be prevented whenever possible.

Note 5: Other helpful guidance on environmental issues is available on the ‘Environmental Protection’ pages of the Published National Operational Guidance Programme (www.ukfrs.com/guidance).

E “Public Safety Hazard”

- 3.1.9** An ‘E’ following the first two characters of an EAC indicates that there may be a public safety hazard outside the immediate area of the incident, and that the following actions should be considered:
- 3.1.10** People should be warned to stay indoors with all doors and windows closed, preferably in rooms upstairs and facing away from the incident. Ignition sources should be eliminated and any ventilation stopped.
- 3.1.11** Effects may spread beyond the immediate vicinity. All non-essential personnel should be instructed to move at least 250 metres away from the incident.
- 3.1.12** Police and Fire and Rescue Service incident commanders should consult each other and with a product expert, or with a source of product expertise.
- 3.1.13** The possible need for subsequent evacuation should be considered, **but it should be remembered that in most cases it will be safer to remain in a building than to evacuate.**

Situations where evacuation may be necessary include the following: