

Q 1 A solution of 10% methyl isobutyl ketone and 5% Isopropanol in water had a flash point of 35°C. (7)

a) What is the class, classification code and packing group of this solution?

Based on the flashpoint the mixture meets the criteria of a Class 3, PG III, with the classification code F1 as both flammable ingredients do not have subsidiary hazards

(Note: The two substances are named Class 3 substances in the dangerous goods list without subsidiary hazards. They are both Packing Group II, but the flash point of the mixture takes precedence in determining the Packing Group of the solution)

b) Select an appropriate UN number and proper shipping name for the solution

UN 1993 FLAMMABLE LIQUID, N.O.S. (Contains methyl isobutyl ketone, isopropanol)

(Note: As it is a mixture of a ketone and an alcohol neither the UN 1987 alcohols or UN 1224 ketones collective entries are suitable)

Ref ADR 3.2 Table B, Table A, 2.2.3.1.3, 2.2.3.3, 3.3 SP274, 3.1.2.8

Q2 A shipper wishes to send 12 kg of Thiourea dioxide packed together with 12 L of Thioglycol in a fibreboard box. Thioglycol is an environmentally hazardous substance.

a) Is this possible and if so, what is the minimum number of inner packages required (4)?

Yes.

MP 14 applies to Thiourea dioxide (UN 3341) which permits it to be packed with other classes subject to a limit of 6 kg per inner packaging.

MP 15 applies to Thioglycol (UN 2966) which permits it to be packaged with other classes subject to a limit of 3L per inner packaging.

Require a minimum of $12/6 = 2$ and $12/3 = 4$ giving a total of 6 inner packagings.

b) State one other condition that must be verified in order for the proposed packaging to proceed (1)?

The goods must not react dangerously with each other

c) Considering the quantities involved, what labels and marks must be displayed on the outer box (8)? Justify your answer.

The box must display labels no 4.2 and 6.1

The box must be marked with the UN numbers UN 3341 & UN 2966 and orientation arrows on two opposite sides as the Thioglycol is a liquid (classification code T1).

Even though Thioglycol is environmentally hazardous there is no need to display the environmentally hazardous mark as each receptacle is less than 5L and thus this requirement does not apply.

Ref ADR Table B, Table A columns 3b, 5, 9b, 2.2.61.1.2, 4.1.10.4, 5.2.1.1, 5.2.1.8.1, 5.2.1.10.1, 5.2.2.1.1

Q3 What does the following label signify? (3)



That the package contains lithium batteries of Class 9 miscellaneous dangerous substances and articles

Ref ADR 5.2.2.2.2, 5.2.2.2.1.3

Q4 Selenic acid is to be shipped from Italy to Ireland in inner packagings contained in small fibreboard boxes. Each box only contains 500 g of Selenic acid.

a) Do the fibreboard boxes need to be UN approved? Explain your answer (4)

Yes, Limited quantity or excepted quantity provisions are not applicable to UN 1905 Selenic acid. It must be packed according to P002 which applies all of ADR 4.1. including 4.1.1.3 which requires the packaging to be UN certified

b) The boxes will be placed on pallets and covered with black shrink wrap displaying the UN number. Is this sufficient? Explain your answer as fully as you can, giving any relevant dimensions for any marking of the pallet which you consider necessary (6)

No, the shrink wrap must also bear the Class 8 label and the word overpack in Italian (as the language of the consignor) and one of English French or German (official languages) in characters 12 mm high

Ref ADR 3.2 Table B, Table A columns 1, 5, 7A, 7B, 8. 4.1.4 P002, 4.1.1.3, 5.2.2.1.1, 5.1.2.1 a & b

Q5 (i) Define a radioactive material (1)

A radioactive material means any material containing radionuclides where both the activity concentration and total activity exceed the exemption values shown in table 2.2.7.2.2.1 for individual radionuclides

(ii) What is the activity concentration for an exempt material containing Be-7? (1)

1×10^3 Bq/g

Ref ADR 2.2.7.1.1, Table 2.2.7.2.2.1

Q6 What UN number and proper shipping name apply to a blood sample being sent from a doctor's surgery to a laboratory for testing for possible Hepatitis B infection?

UN 3373 BIOLOGICVAL SUBSTANCE, CATEGORY B

Ref ADR 2.2.62.1.4.2

Q7 A driver is getting ready to deliver a load of dangerous goods (3)

a) A worker coming off shift ask the driver for a lift home as the driver will be passing his home on the way. Is this permitted?

No, passengers are prohibited

- b) Realising that there will be nobody available to assist him unloading the goods, the driver asks his manager for an assistant to accompany him and help with the unloading. Is this possible?

Yes, provided the helper has received relevant training in accordance with ADR 1.3 and use of fire extinguishers

Ref ADR 8.3.1, 8.2.3, 8.3.2

Q8 An HSA inspector find that the appointed DGSA has failed to prepare an Annual Report. What is the fixed penalty that can be issued in lieu of prosecution for such an offence (2)?

A category II penalty of €250 applies to offence No 48

Ref CDGRR Schedule 2 Part 3

Q9 What training is required for personnel who load dangerous goods vehicles (2)?

As a duty holder under ADR 1.4, general awareness safety and function specific training as require by ADR 1.3.1 and detailed in 1.3.2

Ref ADR 1.3.1, 1.3.2, 1.4.3.1