Classification & Identification questions

1. What compatibility group do fireworks belong to?
2. Can carbonyl fluoride be shipped as a compressed gas?
3. Explain the meaning of the classification code 1.1A?
4. An organic powder displayed a burning rate of 2.5 mm/sec in tests performed according to the UN Manual of Tests and criteria and was retarded by the wetted zone for 3.6 minutes. What is the appropriate class and packing group?
5. Can krypton be shipped as a liquefied gas?
6. What explosive division does a firecracker belong to?
7. How many hazard groups exist for aerosols?
8. What criteria are used to decide whether a flammable liquid should be placed in Packing Group II or III?
9. What is the definition of flammable solids according to the ADR?
10. What does the S signify when shown on an explosives label?
11. What is the definition of a gas?
12. The flame took 11 minutes to spread over the whole length of the sample when a new metal alloy was tested according to the UN manual of tests and criteria. Will this material be subject to transport regulations?
13. What packing method can be used with Peroxylauric acid?
14. What is the definition of an organic peroxide?
15. Define infectious genetically modified microorganisms and organisms?
16. What is the class, classification code, UN number and packing group of turpentine substitute? Can it be shipped under the proper shipping name “paint related material”?

17. Exercise (Typical exam type questions)
Determine the class and subsidiary risk (if applicable) of the following

(a) A liquid with
Flash point 15 °C Boiling point 45 °C
LD_{50} oral 4.5 mg/kg
Skin destruction after 90 min exposure and an observation time of 3 days

(b) A pesticide solution
Flashpoint 50 °C
LD_{50} oral 200 mg/kg

18. Challenge exercise (unlikely in an exam)

A new liquid substance had the following properties
Flash point = 58 °C
Saturated vapour concentration at 20 °C = 800 ml/m^3
LD_{50} (oral, rats) = 10 mg/kg
LD_{50} (dermal, rabbits) = 45 mg/kg
LC_{50} (rats, 1 hour inhalation) = 4,500 ml/m^3
LC_{50} (rainbow trout) = 0.05 mg/l
EC_{50} (Daphnia) = 0.25 mg/l
ErC_{50} (Algae) = 1.2 mg/l
Classify the substance

The substance is sold as a product at a concentration of 3% in water. Is this product dangerous for transport and if so what class does it belong to?

19. Exercises
Classify & select an appropriate proper shipping name for the following preparations

60% sodium azide [LD_{50} (O) 27 mg/kg]: 40% sodium chloride?

50% sodium azide [LD_{50} (O) 27 mg/kg]: 50% sodium chloride?

60% sodium azide [LD_{50} (O) 27 mg/kg] in water?

75% resorcinol [LD_{50} (O) 200 mg/kg] in a non-flammable, non-toxic solvent?

50% resorcinol in the same solvent?

20. A standard Formalin product contains 37% formaldehyde with 10 – 15 % methanol as stabilizer. The flash point is 62C. Select an appropriate UN number proper shipping name and class? A 10%Formalin solution is prepared in the lab by diluting the stock 1/10 with water. After use the 10% Formalin solution must be removed by a waste contractor. Is this subject to ADR transport regulations?

21. An R&D chemist is working on a new solution for electropolishing metallic surfaces, which he wishes to ship to a metal fabricator for testing. It is consists of 8% sulphuric acid and 92% ethanol. When tested, the mixture had a flashpoint of 45°C. Classify the mixture and select an appropriate UN number and proper shipping name.

22. When tested, an acidic inorganic solid caused full destruction of healthy skin after 2 minutes exposure and had an estimated LD_{50} oral of 4 mg/kg .

a) Classify the substance

b) Select a suitable UN number and proper shipping name for the substance. The technical name is allulox.

The substance is also shipped as a 1% solution in water. Identify a suitable UN number and proper shipping name for the solution

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