

# **National Marine Manufacturers Association**

## **Product Compliance Specialist Examination**

### **Exhaust Systems (12/07)**

- 1) The standard P-1 (7/02) is applicable to:
  - a. All craft;
  - b. All craft but powered sailing dinghies;
  - c. All craft with inboard or sterndrive engines except sterndrive installations with integral exhaust;
  - d. All craft with inboard or sterndrive engines.
  
- 2) To minimize the accumulation of hazardous CO gases from gasoline exhaust, the exhaust gas terminus(i) shall be installed in one of the following locations:
  - a. Most suitable place;
  - b. in the proximity of the intersection of the hull side and transom on the side of the boat or in the bottom of the boat, or in the transom positioned as far outboard of the centerline as practicable, or above the highest occupied deck and its weather enclosure/cover;
  - c. in the proximity of the intersection of the hull side and transom on the side of the boat or in the top of the boat, or in the transom positioned as far outboard of the centerline as practicable, or above the highest occupied deck and its weather enclosure/cover;
  - d. in the proximity of the intersection of the hull side and transom on the side of the boat or in the bottom of the boat, or in the transom positioned as far outboard of the centerline, or above the highest occupied deck and its weather enclosure/cover;
  
- 3) In order to minimize the potential for migration of carbon monoxide from machinery compartments containing gasoline engines to adjacent accommodation compartments,
  - a. all penetrations shall be sealed in accordance with the requirements of ABYC H-2;
  - b. bulkhead and deck penetrations shall be sealed in accordance with the requirements of ABYC H-25;
  - c. all penetrations shall be sealed in accordance with the requirements of ABYC H-25;
  - d. Bulkhead and deck penetrations shall be sealed in accordance with the requirements of ABYC H-2.

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- 4) If multiple exhaust systems are onboard, then
- a. A combined exhaust system and terminus shall be provided for each engine and generator installation;
  - b. A separate exhaust system and terminus shall be provided for each engine and generator installation;
  - c. A separate exhaust system and terminus shall be provided for each engine and generator installation per side of the craft;
  - d. A separate exhaust system and terminus shall be provided for each engine and generator installation into the cockpit may drain into the same tube.
- 5) Which is true?
- a. Protective guards, jacketing, or covers shall be provided wherever persons or gear might come in contact for longer than 5 seconds with the exhaust system where the temperature exceeds 200°F;
  - b. Protective guards, jacketing, or covers shall be provided wherever persons or gear might come in contact with the exhaust system where the temperature exceeds 200°F ± 2,5 %;
  - c. Protective guards, jacketing, or covers shall be provided with the exhaust system where the temperature exceeds 200°F;
  - d. Protective guards, jacketing, or covers shall be provided wherever persons or gear might come in contact with the exhaust system where the temperature exceeds 200°F or 93°C.
- 6) The exhaust system shall be designed and installed to prevent
- a. Only rain water from entering the engine through the exhaust system under all normal operating conditions;
  - b. cooling water, rain water, or raw water from entering the engine through the exhaust system under all normal operating conditions;
  - c. only cooling water from entering the engine through the exhaust system under all normal operating conditions;
  - d. Only raw water cooling water from entering the engine through the exhaust system under all normal operating conditions.

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- 7) Additional discharges, other than cooling water
- a. shall not share the exhaust gas passage except rain water, bilge or raw water;
  - b. shall not share the exhaust gas passage except drainage or rain water or raw water;
  - c. shall not share the exhaust gas passage except rain water or spillage or raw water;
  - d. shall not share the exhaust gas passage;
- 8) Exhaust systems shall be designed so that reverse operation
- a. Cannot happen at all;
  - b. cannot force water into the exhaust manifold of a non-operating auxiliary engine such as a generator;
  - c. cannot force water into the exhaust manifold of a operating auxiliary engine such as a generator;
  - d. cannot force water into the exhaust manifold of a non-operating auxiliary engine such as an outboard.
- 9) Provision shall be made for draining all exhaust system components that can trap or retain
- a. Exhaust cooling water, rain water, raw water, or condensation, if the component can be damaged;
  - b. Only exhaust cooling water, if the component can be damaged by freezing of the water or chemical action accelerated by the presence of the water when the system is out of service;
  - c. Exhaust cooling water, rain water, raw water, bilge water, or condensation, if the component can be damaged by freezing of the water or chemical action accelerated by the presence of the water when the system is out of service;
  - d. Exhaust cooling water, rain water, raw water, or condensation, if the component can be damaged by freezing of the water or chemical action accelerated by the presence of the water when the system is out of service.

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- 10) Which materials are suitable for wet exhaust pipes for gasoline engines?
- a. Aluminum, aluminized steel, copper-nickel, aluminized steel;
  - b. Aluminum, nickel-iron-chrome, galvanized wrought iron, nickel-iron-chrome, nickel-copper, stainless steel, nickel-iron-chrome, synthetic rubber hose, nickel-iron-chrome, stainless steel;
  - c. Aluminum, brass pipe, copper-nickel, copper tubing, enameled steel, fiber reinforced plastic, galvanized wrought iron, nickel-copper, nickel-iron-chrome, synthetic rubber hose, stainless steel;
  - d. Aluminum, brass pipe, copper-nickel, copper tubing, enameled steel, fiber reinforced plastic, galvanized wrought iron, nickel-copper, nickel-iron-chrome, synthetic rubber hose, carbon steel.
- 11) Which materials are suitable for wet exhaust pipes for Diesel engines?
- a. Copper-nickel, galvanized fiberglass galvanized steel, galvanized wrought iron, nickel-copper, nickel-iron-chrome, stainless steel, synthetic rubber hose;
  - b. Copper-nickel, fiberglass galvanized steel, galvanized wrought iron, nickel-copper, nickel-iron-chrome, stainless steel, synthetic rubber hose;
  - c. Copper-nickel, fiberglass galvanized steel, galvanized iron, nickel-copper, nickel-iron-chrome, stainless steel, synthetic rubber hose;
  - d. Copper-nickel, fiberglass galvanized steel, galvanized wrought iron, nickel-copper, nickel-iron-chrome, stainless steel, non-synthetic rubber hose;
- 12) Which materials are suitable for dry exhaust pipes for Diesel engines?
- a. Aluminized steel, non-carbon steel, nickel-iron-chrome, stainless steel;
  - b. Aluminized steel, carbon steel, fiberglass, stainless steel;
  - c. Aluminized steel, carbon steel, nickel-iron-chrome, all other steel types;
  - d. Aluminized steel, carbon steel, nickel-iron-chrome, stainless steel.
- 13) Which materials are suitable for dry exhaust pipes for gasoline engines?
- a. Aluminized steel, mixed carbon steel, nickel-iron-chrome, stainless steel;
  - b. Aluminized steel, carbon steel, fiberglass, stainless steel;
  - c. Aluminized steel, carbon steel, nickel-iron-chrome, all other steel types;
  - d. Aluminized steel, carbon steel, nickel-iron-chrome, stainless steel.

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- 14) Which materials are suitable for wet exhaust flexible section for gasoline engines?
- a. Copper, copper-nickel, nickel-copper, nickel-iron-chrome, nickel-iron-copper, stainless steel, synthetic rubber;
  - b. Copper, copper-nickel, aluminized nickel-copper, nickel-iron-chrome, nickel iron- copper, stainless steel, synthetic rubber;
  - c. Copper, copper-nickel, nickel-copper, nickel-iron-chrome, nickel-iron-copper, stainless steel, non-synthetic rubber;
  - d. Copper, copper-nickel, nickel-copper, nickel-iron-chrome, nickel-iron-copper, stainless steel, fiberglass.
- 15) Which materials are suitable for dry exhaust flexible section for gasoline engines?
- a. Carbon steel, nickel-iron-chrome, stainless steel, synthetic rubber;
  - b. Non-carbon steel, nickel-iron-chrome, stainless steel; rubber;
  - c. Nickel-iron-chrome, stainless steel, fiberglass;
  - d. Carbon steel, nickel-iron-chrome, stainless steel.
- 16) Which materials are suitable for wet exhaust flexible section for Diesel engines?
- a. Copper-nickel, nickel-copper, nickel-iron-chrome, stainless steel;
  - b. Copper-nickel, nickel-copper, nickel-iron-chrome, carbon steel;
  - c. Copper-nickel, nickel-iron-chrome, nickel-copper, synthetic rubber;
  - d. Copper-nickel, nickel-iron-copper, nickel-iron-chrome, stainless steel.
- 17) Which materials are suitable for dry exhaust flexible section for Diesel engines?
- a. Carbon steel, nickel-iron-copper, stainless steel;
  - b. Carbon steel, nickel-iron-chrome, stainless steel;
  - c. Carbon steel, nickel-iron-chrome, fiberglass;
  - d. Carbon steel, nickel-iron-chrome, synthetic rubber.
- 18) Which combination of materials is the one with the best galvanic compatibility in a diesel exhaust line?
- a. Aluminum alloy and 18-8, 3% mo stainless steel;
  - b. Aluminum alloy and aluminum bronze;
  - c. Aluminum alloy and 18-8, type 304 stainless steel;
  - d. Aluminum alloy and copper.

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- 19) Which material in which size is suitable for clamps?
- Stainless steel with width of 2\* the diameter of the line;
  - Stainless steel with width of 1\* the diameter of the line;
  - Stainless steel with width of 1.5\* the diameter of the line;
  - Stainless steel with width of at least 12 mm.
- 20) The muffler shall withstand
- A rate of 21 kPa/min to a maximum pressure of 690 kPa per 3 minutes;
  - A rate of 21 kPa/sec to a maximum pressure of 69 kPa and maintain this for three minutes;
  - A rate of 21 kPa/sec to a maximum pressure of 690 kPa and maintain this for three minutes;
  - A rate of 21 kPa/min to a maximum pressure of 690 kPa/s and maintain this for three minutes;
- 21) Threaded pipe and fittings for the engine exhaust(s) shall be at least schedule
- 120
  - 40
  - 60
  - 80
- 22) Aluminum pipe installed in a dewatered exhaust system may be located in an accommodation space
- If it is insulated aluminum
  - Never
  - If it is Schedule 40 300 Series
  - If it is Connected and sealed with tapered pipe threads
- 23) Threaded pipe and fittings shall be at least schedule \_\_\_\_ pipe or equivalent
- 140
  - 40
  - Tapered
  - 80

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### **Exhaust Systems (12/07)**

- 24) An exhaust component designed for the purpose of noise attenuation is known as
- a. waterlift
  - b. separator
  - c. flexible section
  - d. silencer
- 25) A section in the exhaust system that uses an elevation to prevent water from flowing back into the engine is known as
- a. waterlift
  - b. water separator
  - c. exhaust riser
  - d. exhaust elbow