



MARITIME AND PORT AUTHORITY OF SINGAPORE

PORT MARINE CIRCULAR
NO. 5 OF 2018

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Shipping Community
Harbour Craft Community

CONTROL OF SMOKE EMISSIONS BY VESSELS IN PORT

1 The Maritime and Port Authority of Singapore (MPA) would like to remind ship masters and owners of vessels to take all necessary measures to prevent their vessels from emitting excessive soot, ash, or dark smoke from engine exhaust and/or ancillary shipboard machineries throughout the duration of vessel stay in port.

2 MPA takes a serious view of vessels emitting excessive smoke as it can adversely affect the air quality in the atmosphere. MPA will take stern action against offenders.

3 MPA would also like to draw the attention of ship masters and owners of craft in the port to Regulation 66 of the Maritime and Port Authority of Singapore (Port) Regulations which states that:

“No person may cause smoke, soot, ash or grit to be emitted from a vessel in such quantity or density as may, in the opinion of the Authority, be a nuisance.”

4 Failure to comply with the said regulation is an offence for which offenders can be prosecuted in Court. If convicted, offenders may be fined up to \$5,000.

5 A list of guidelines to prevent dark smoke emission is set out in **Appendix 1**.

6 For any enquiry, please contact Marine Safety Control Centre at Tel: +65 6325 2488 / 6325 2489.

CAPT KEVIN WONG
PORT MASTER
MARITIME AND PORT AUTHORITY OF SINGAPORE

APPENDIX 1

Definition of Dark Smoke and Prohibition on Emission of Dark Smoke

1. Smoke includes soot, ash, grit and gritty particles emitted in smoke or steam.

Typical Causes of Dark Smoke Emission and Guidelines for Prevention

2. For ships that are en route, i.e. with the main engine running, there should be no reason for dark smoke to be emitted from the main engine funnel if the main engine's fuel, scavenge air and exhaust gas systems and equipment are maintained in good working condition. Regular and proper maintenance of components such as fuel oil heaters, fuel injectors, scavenge air coolers and turbochargers, including frequent washing of exhaust gas economizers (where applicable) go a long way to help reduce the likelihood of dark smoke or excess soot emission from the main engine funnel. Reducing the amount of carbon deposit in the exhaust stream will also help in reducing the amount of dark smoke or soot emission during the initial "kick" when the engine is started.

3. For ships that are at anchorage or at berth, emission of dark smoke can be narrowed down principally to three types of machinery systems, namely generator engines, boilers or inert gas generators.

4. For generator engines, possible causes of dark smoke emission are similar to those mentioned for main engine in paragraph 2, i.e. it is important that the engine's fuel, scavenge air and exhaust gas systems and equipment are maintained in good working condition. Additionally, it is also helpful to ensure that generators are running at optimal load and are not running under excessively low load or over-loaded conditions.

5. For boilers and inert gas generators, control of the correct air-fuel mixture ratio is important to ensure optimum combustion in the furnace to avoid excessive unburnt fuel, carbon deposits and dark smoke emissions. Regular and proper maintenance of the fuel and air systems and components are essential to ensure proper combustion and reduce likelihood of dark smoke emission. Boiler control settings such as purge timings should be set in accordance with manufacturer's recommendation for safety reason and also optimum duration of the purging sequence.

6. Aside from good maintenance of the ship's machinery and systems, ship's crew should also be vigilant and conduct a frequent check on the funnel emission. The funnel of a ship integrates all the exhaust trunking running from main engine, generator engines and boiler inside one enclosure. If dark smoke is seen being emitting for prolonged durations from the funnel, the crew should immediately go to the bridge deck and check from which particular exhaust

trunk the dark smoke is spewing, and change over or stop the defective machinery if possible, before carrying out troubleshooting measures.

7. Pollution of the air from emission of dark smoke from ships is a serious concern. With due care and diligence, emission of dark smoke from ships can be minimized and prevented as elaborated in the preceding paragraphs.