

Uniform Shipping Laws Code 2008

Section 11: Fire Appliances (QLD & SA)

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SECTION 11
Fire Appliances

This Section is divided into Parts as follows:

Part 1 General Provisions

Part 2 Scales of Fire Fighting Equipment

Part 3 Types of Fire Fighting Equipment – Appendices A - L

PART 1-GENERAL PROVISIONS

1. This Section should be read in conjunction with the Introduction, Definitions and General Requirements Section.
2. Fire appliances shall be maintained in good order, kept fully charged and available for immediate use at all times. All moveable fire appliances, other than firemen's outfits, carried in compliance with this Section shall be stowed where they are readily accessible for a space in which they are intended to be used. The portable fire extinguisher intended for use in a space shall be suitable for dealing with the possible fire hazard and may be stowed near the entrance to and outside of the space.
3. Where any non-passenger vessel or fishing vessel to which this Section applies carries prescribed explosives in a compartment, that compartment and the adjoining cargo compartments shall be provided with a fire detection system complying with the requirements of Appendix A of this Section or a smoke detection system. Steam shall not be used for fire smothering purposes in any compartment containing explosives.
4. For the purpose of this Section:
 - 4.1 prescribed explosive means more than nine kilograms of explosives, more than one tonne of distress signals for use in vessels or aircraft, or fireworks that are likely to explode violently; and
 - 4.2 compartment means all spaces contained between two adjacent permanent bulkheads and includes the lower hold and all cargo spaces above it. The whole of any shelter deck space not subdivided by steel bulkheads the openings in which can be closed by steel closing plates shall for the purpose of this clause be considered as a single space. Where steel bulkheads with openings closed by steel closing plates are fitted, the enclosed spaces in the shelter deck shall be considered as part of the compartment or compartments below.
5. This clause shall apply to all vessels other than class 3 vessels of less than 15 metres in length. There shall be provided means for stopping ventilating fans serving machinery, accommodation, service and cargo spaces. For machinery and cargo spaces there shall be provided means for closing all skylights, doorways, ventilators, annular spaces around funnels and other openings to such spaces. Such means shall be capable of being operated from positions outside the said spaces which would not be made inaccessible by a fire within such spaces.
6. Machinery driving forced and induced draught fans, oil fuel, lubricating oil and hydraulic oil pumps and separators shall be fitted with remote controls situated outside the spaces in which such machinery or pumps are situated. Such controls shall be capable of stopping such machinery or pumps in the event of fire in the said spaces.
7. This clause shall apply to all vessels other than vessels which have a length less than 15 metres and which are of class 3B, 3C, 3D or 3E every pipe connected to any oil fuel storage, settling, or daily service tank, not being a double bottom tank, which if damaged would permit discharge of the contents so as to cause a fire hazard shall be fitted with a valve or cock which shall be secured to the tank to which it is connected. The valve or cock shall be capable of being closed from a readily accessible position outside the space in which the tank is situated, provided that in the case of any inlet pipe to such a tank a non-return valve similarly secured to the tank may be substituted. In the case of an oil fuel deep tank traversed by any shaft or pipe tunnel, a valve shall be fitted on the tank but an additional valve or valves may be fitted on the pipe line or lines outside the tunnel or tunnels to enable control to be exercised in the event of fire.
8. In every vessel of Class 1A which is 35 metres and over in length and in every vessel of Class 2A which has a tonnage of 500 tons or over, there shall be permanently exhibited for the guidance of the master and officers of the vessel a fire control plan which complies with Standards Association of Australia specification number AS.1266.

PART 2 – SCALES OF FIRE FIGHTING EQUIPMENT**VESSELS OF CLASS 1A**

<i>Size</i>	<i>Requirements</i>
	Patrol Alarm and Communication System
25 metres and over	<p>An efficient patrol system shall be maintained so that any outbreak of fire may be promptly detected. Manual fire alarms which will enable the fire patrol to give an alarm immediately to the navigating bridge or fire control station shall be fitted throughout the accommodation and service spaces.</p> <p>A special alarm, operated from the navigation bridge or fire control station, shall be fitted to summon the crew. This alarm may be part of the vessel's general alarm system but it shall be capable of being sounded independently of the alarm to the passenger spaces.</p> <p>A public address system or other effective means of communication shall be available throughout the accommodation and service spaces and control stations.</p>
	Fire Detection System
25 metres and over	A system complying with Appendix A to detect an outbreak of fire in any area not accessible to a fire patrol.
	Main Fire Pumps
4000 tons and over	Three fire pumps complying with Appendix B each capable of delivering simultaneously one jet from each of any two fire hydrants.
Less than 4000 tons but 25 metres and over	Two fire pumps complying with Appendix B each capable of delivering simultaneously one jet from each of any two fire hydrants.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
1000 tons and over	<p>The arrangements of the sea connections, pumps and the sources of power for operating them shall be such as will ensure that a fire in any one compartment will not put all the pumps out of action.</p> <p>The arrangement of fire pumps, fire mains and hydrants shall be such that one effective jet of water is immediately available from any one hydrant in an interior location. Arrangements shall also be made to ensure the continuation of the output of water by the automatic starting of a required fire pump</p>
	Emergency Fire Pumps
	Emergency Fire Pumps shall comply with Appendix C and be provided as follows:
Less than 1000 tons and 25 metres and over	If fire in any one compartment could put all the main fire pumps out of action a fixed independently driven power operated emergency fire pump in a position outside that compartment.
Less than 25 metres	A manually operated emergency fire pump in a position outside the machinery space.
	Firemain, Water Service Pipes, Hydrants (other than hydrants in boiler and machinery spaces) and Jets of Water
25 metres and over	Shall be so arranged to comply with Appendix D when all watertight doors and all doors in the fire zone boundary division are closed and provide two jets of water in accordance with subitem 1.3 of that Appendix.
15 metres and over but less than 25 metres	Shall be so arranged as to give one jet of water in accordance with sub-item 1.4 of Appendix D.

VESSELS OF CLASS 1A - continued

<i>Size</i>	<i>Requirements</i>
	Hydrants in Boiler and Machinery Spaces
25 metres and over	Two hydrants in each space containing oil-fired boilers or internal combustion type propelling machinery-one on the port side and one on the starboard side. Where there is access to the space by shaft tunnel one hydrant shall be provided in the end of the tunnel adjacent to that space and supply to the hydrant shall be from a source outside of the space and the supply line shall not pass through the space.
	Hoses
All lengths	One hose with fittings complying with Appendix D for every hydrant fitted.
	Fixed Fire Extinguishing Installations – Cargo Space
All lengths	One installation complying with Appendix E which shall be so arranged as to protect every cargo space.
	Fixed Fire Extinguishing Installations – Machinery Space
All lengths	One installation complying with Appendix E for the protection of any space containing: <ul style="list-style-type: none"> (a) any oil-fired boiler, oil fuel settling tank or oil fuel units; or (b) internal combustion type machinery used for main propulsion, or having in an aggregate a total brake power of not less than 750 kW for auxiliary purposes.
	Non-Portable Foam and CO₂ Extinguishers
25 metres and over	<ul style="list-style-type: none"> (a) Any space containing internal combustion machinery used for main propulsion, or having in the aggregate a total power of not less than 373 kW for auxiliary purposes shall be provided with: <ul style="list-style-type: none"> (1) One set of air-foam equipment complying with Appendix L, and (2) Foam extinguishers of 45 litres capacity, or CO₂ extinguishers of 15 kilograms capacity sufficient in number to enable foam or CO₂ gas to be directed on to any part of the fuel and lubricating oil pressure systems and gearing. (b) There shall be provided in each space containing steam turbines or enclosed steam engines used either for main propulsion or having in the aggregate a total power of not less than 373 kW for auxiliary purposes foam fire extinguishers each of 45 litres capacity, of CO₂ extinguishers each of 15 kilograms capacity. The extinguishers shall be of such number and so positioned as to enable foam or CO₂ to be directed on to any part of the pressure lubrication system and on to any part of the casing enclosing pressure lubricated parts of the turbines, engines or associated gearing if any. Provided that such extinguishers shall not be required if equivalent protection is provided in such spaces by a fixed fire extinguishing installation fitted in compliance with Appendix E. (c) Any space containing an oil-fired boiler shall be provided with: <ul style="list-style-type: none"> (1) One set of air-foam equipment complying with Appendix L, and (2) One foam extinguisher of 135 litres capacity or one CO₂ extinguisher of 45 kilograms capacity, complete with a hose on a reel suitable for reaching any part of the boiler room.
	Portable Fire Extinguishers
	Portable fire extinguishers shall comply with Appendix G and be provided as follows:
25 metres and over	<ul style="list-style-type: none"> (a) Two on each deck for each accommodation and service space between watertight bulkheads and fire zone boundary divisions. In enclosed accommodation and service spaces above the bulkhead deck one shall be available for use on each side of the vessel. (b) One in a galley where the overall deck area is less than 15 square metres and two in larger galleys. (c) One in each control station.

VESSELS OF CLASS 1A - continued

<i>Size</i>	<i>Requirements</i>
	<p>(d) Two suitable for extinguishing oil fires in each firing space in each boiler room and each space containing any part of any oil fuel installation.</p> <p>(e) In each space containing internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 373 kW for auxiliary purposes, a sufficient number of extinguishers so located that an extinguisher is not more than 10 metres walking distance from any point in the space, provided that there shall be 2 such extinguishers in each such space. The extinguishers shall be suitable for extinguishing oil fires.</p> <p>(f) In each space containing steam turbines or enclosed pressure lubricated steam engines used for main propulsion, or having in the aggregate a total brake power not less than 373 kW for auxiliary purposes, a sufficient number of extinguishers so located that an extinguisher is not more than 10 metres walking distance from any point in the space, provided that there shall be 2 such extinguishers in each such space.</p> <p>The extinguishers shall not be required in addition to any provided in compliance with (e) above.</p> <p>The extinguishers shall be suitable for extinguishing oil fires.</p>
Less than 25 metres	<p>(a) One for each passenger space and each crew space on each deck.</p> <p>(b) One in each galley.</p>
20 metres and over but less than 25 metres	Three suitable for extinguishing oil fires for use in each space containing propelling machinery.
15 metres and over but less than 20 metres	Two suitable for extinguishing oil fires for use in each space containing propelling machinery.
Less than 15 metres	One suitable for extinguishing oil fires for use in each space containing propelling machinery.
	Sand
	Each boiler firing space shall be provided with the following:
25 metres and over	<p>(a) 0.25 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or</p> <p>(b) An additional portable fire extinguisher suitable for extinguishing oil fires.</p>
	Fire Smothering Blankets
25 metres and over	One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.
	Firemen's Outfits
	Firemen's Outfits shall comply with Appendix H and be provided as follows:
25 metres and over	Two together with an additional outfit for each 300 metres in length of vessel or part thereof in excess of 60 metres. If in any vessel which carries firemen's outfits containing only breathing apparatus of the air hose type, an air hose exceeding 36 metres in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery spaces, at least two sets of breathing apparatus of the self containing type shall be provided.
	<i>(Amendment dated 15 March 1996)</i>
	International Shore Connection
1000 tons and over	One complying with Appendix J

VESSELS OF CLASS 1B

<i>Size</i>	<i>Requirements</i>
	Patrol Alarm and Communication System
25 metres and over	<p>An efficient patrol system shall be maintained so that any outbreak of fire may be promptly detected. Manual fire alarms which will enable the fire patrol to give an alarm immediately to the navigating bridge or fire control station shall be fitted throughout the accommodation and service spaces.</p> <p>A special alarm, operated from the navigation bridge or fire control station, shall be fitted to summon the crew. This alarm may be part of the vessel's general alarm system but it shall be capable of being sounded independently of the alarm to the passenger spaces.</p> <p>A public address system or other effective means of communication shall be available throughout the accommodation and service spaces and control stations.</p>
	Main Fire Pumps
4000 tons and over	Three fire pumps complying with Appendix B, each capable of delivering simultaneously one jet from each of any two fire hydrants.
Less than 4000 tons but 25 metres and over	Two fire pumps complying with Appendix B, each capable of delivering simultaneously one jet from each of any two fire hydrants.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
1000 tons and over	<p>The arrangements of the sea connections, pumps and the sources of power for operating them shall be such as will ensure that a fire in any one compartment will not put all the pumps out of action.</p> <p>The arrangement of fire pumps, fire mains and hydrants shall be such that one effective jet of water is immediately available from any one hydrant in an interior location. Arrangements shall also be made to ensure the continuation of the output of water by the automatic starting of a required fire pump</p>
	Emergency Fire Pumps
	Emergency Fire Pumps shall comply with Appendix C and be provided as follows:
Less than 1000 tons and 25 metres and over	If fire in any one compartment could put all the main fire pumps out of action a fixed independently driven power operated emergency fire pump in a position outside that compartment.
Less than 25 metres	A manually operated emergency fire pump in a position outside the machinery space.
	Firemain, Water Service Pipes, Hydrants (other than hydrants in boiler and machinery spaces) and Jets of Water
25 metres and over	Shall be so arranged to comply with Appendix D when all watertight doors and all doors in the fire zone boundary division are closed and provide two jets of water in accordance with subitem 1.3 of that Appendix.
15 metres and over but less than 25 metres	Shall be so arranged as to give one jet of water in accordance with sub-item 1.4 of Appendix D.
	Hydrants in Boiler and Machinery Spaces
25 metres and over	<p>Two hydrants in each space containing oil-fired boilers or internal combustion type propelling machinery-one on the port side and one on the starboard side.</p> <p>Where there is access to the space by shaft tunnel one hydrant shall be provided in the end of the tunnel adjacent to that space and supply to the hydrant shall be from a source outside of the space and the supply line shall not pass through the space.</p>
	Hoses
All lengths	One hose with fittings complying with Appendix D for every hydrant fitted.

VESSELS OF CLASS 1B – continued

<i>Size</i>	<i>Requirements</i>
	Fixed Fire Extinguishing Installations – Cargo Space
1000 tons and over	One installation complying with Appendix E which shall be so arranged as to protect every cargo space.
	Fixed Fire Extinguishing Installations – Machinery Space
25 metres and over	One installation complying with Appendix E for the protection of any space containing: <ul style="list-style-type: none"> (a) any oil-fired boiler, oil fuel settling tank or oil fuel units; or (b) internal combustion type machinery used for main propulsion, or having in an aggregate a total brake power of not less than 750 kW for auxiliary purposes.
12.5 metres and over but less than 25 metres	A vessel fitted with oil fired boilers or internal combustion type machinery used for main propulsion and decked in way of the machinery space, a fixed fire extinguishing installation complying with Appendix F.
	Non-Portable Foam and CO₂ Extinguishers
25 metres and over	<ul style="list-style-type: none"> (a) Any space containing internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes shall be provided with: <ul style="list-style-type: none"> One foam extinguisher of 45 litres capacity; or One CO₂ extinguisher of 15 kilograms capacity. (b) Any space containing any oil-fired boiler shall be provided with: <ul style="list-style-type: none"> One foam fire-extinguisher of 135 litres capacity; or One CO₂ extinguisher of 45 kilograms capacity. <p>The extinguisher shall be so sited in the machinery or boiler space as to be readily accessible in the event of fire and shall be capable of directing foam or CO₂ onto any part of the boiler room and spaces containing any part of the oil fuel installations.</p> (c) There shall be provided in each space containing steam turbines or enclosed pressure lubricated steam engines used either for main propulsion or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, foam fire extinguishers each of 45 litres capacity or CO₂ fire extinguishers each of 15 kilograms capacity. The extinguishers shall be of such number and so positioned as to enable foam or CO₂ to be directed on to any part of the pressure lubrication system and on to any part of the casings enclosing pressure lubricated parts of the turbines, engines or associated gearing if any. Provided that such extinguishers shall not be required if equivalent protection is provided in such spaces by a fixed fire extinguishing installation fitted in compliance with Appendix E.
	Portable Fire Extinguishers
	Portable fire extinguishers shall comply with Appendix G and be provided as follows:
25 metres and over	<ul style="list-style-type: none"> (a) Two on each deck for each accommodation and service space between watertight bulkheads and fire zone boundary divisions. In enclosed accommodation and service spaces above the bulkhead deck one shall be available for use on each side of the vessel. (b) One in a galley where the overall deck area is less than 15 square metres and two in larger galleys. (c) One in each control station. (d) Two suitable for extinguishing oil fires in each firing space in each boiler room and each space containing any part of any oil fuel installation. (e) In each space containing internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof.

At least two but no more than six shall be provided in any such space.

The extinguishers shall be suitable for extinguishing oil fires.

In each space containing steam turbine or enclosed pressure lubricated steam engines used for main propulsion or having in the aggregate a total brake

VESSELS OF CLASS 1B - continued

<i>Size</i>	<i>Requirements</i>
	power not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. At least two but no more than six shall be provided in any such space. The extinguishers shall not be required in addition to any provided in compliance with (e) above. The extinguishers shall be suitable for extinguishing oil fires.
Less than 25 metres	(a) One for each passenger space and each crew space on each deck. (b) One in each galley.
20 metres and over but less than 25 metres	Three suitable for extinguishing oil fires for use in each space containing propelling machinery.
15 metres and over but less than 20 metres	Two suitable for extinguishing oil fires for use in each space containing propelling machinery.
Less than 15 metres	One suitable for extinguishing oil fires for use in each space containing propelling machinery.
	Sand
	Each boiler firing space shall be provided with the following:
25 metres and over	(a) 0.25 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
	Fire Smothering Blankets
25 metres and over	One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.
	Firemen's Outfits
	Firemen's Outfits shall comply with Appendix H and be provided as follows:
50 metres and over	Two together with an additional outfit for each 30 metres in length of vessel or part thereof in excess of 60 metres. If in any vessel which carries firemen's outfits containing only breathing apparatus of the air hose type, an air hose exceeding 36 metres in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery spaces, at least two sets of breathing apparatus of the self contained type shall be provided.
	<i>(Amendment dated 15 March 1996)</i>
	International Shore Connection
1000 tons and over	One complying with Appendix J.
	Firemen's Axe
25 metres and over but less than 50 metres	One.

VESSELS OF CLASS 1C

<i>Size</i>	<i>Requirements</i>
	Main Fire Pumps
1000 tons and over	Two fire pumps, complying with Appendix B, each capable of delivering simultaneously one jet of water from each of any two fire hydrants.
500 tons and over but less than 1000 tons	Two fire pumps, complying with Appendix B, each capable of delivering a jet of water from any fire hydrant.
Less than 500 tons but 25 metres and over	One fire pump, complying with Appendix B, capable of delivering a jet of water from any fire hydrant.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
	Emergency Fire Pumps
	Emergency fire pumps shall comply with Appendix C and be provided as follows:
500 tons and over	If a fire in any one compartment could put all the fire pumps out of action a fixed independently driven power operated emergency fire pump in a position outside that compartment, provided that in any vessel of less than 1000 tons the emergency fire pump may be a portable power driven fire pump.
Less than 500 tons but 15 metres and over	If the main fire pump and its source of power and sea connection are not situated outside the compartment containing oil-fired boilers or internal combustion type propelling machinery a manually operated emergency fire pump in a position outside that compartment.
	Firemain, Water Service Pipes, Hydrants (other than hydrants in boiler and machinery spaces) and Jets of Water
1000 tons and over	Shall comply with Appendix D and provide two jets of water in accordance with sub-item 1.3 of that Appendix.
Less than 1000 tons but 15 metres and over	Shall comply with Appendix D and provide one jet of water in accordance with sub-item 1.4 of that Appendix.
	Hydrants in Boiler and Machinery Spaces
500 tons and over	Two hydrants in each space containing oil-fired boiler or internal combustion type propelling machinery one on the port side and one on the starboard side. Where there is access to the space by shaft tunnel one hydrant shall be provided in the end of the tunnel adjacent to that space and supply to the hydrant shall be from a source outside of the space and the supply line shall not pass through the space.
	Hoses
All lengths	One hose with fittings complying with Appendix D for every hydrant fitted.
	Fixed Fire Extinguishing Installations – Cargo Space
1000 tons and over	One installation complying with Appendix E which shall be so arranged as to protect every cargo space.
	Fixed Fire Extinguishing Installations – Machinery Space
25 metres and over	One installation complying with Appendix E for the protection of any space containing: <ul style="list-style-type: none"> (a) any oil-fired boiler, oil fuel settling tank or oil fuel unit; or (b) internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes.
12.5 metres and over but less than 25 metres	A vessel fitted with oil fired boilers or internal combustion type machinery used for main propulsion and decked in way of the machinery space, a fixed fire extinguishing installation complying with Appendix F.

VESSELS OF CLASS 1C - continued

<i>Size</i>	<i>Requirements</i>
	Non-portable foam and CO₂ Extinguishers
25 metres and over	<p>(a) Any space containing internal combustion type machinery used for main propulsion, or having in the aggregate, a total brake power of not less than 750 kW for auxiliary purposes shall be provided with</p> <p>One foam extinguisher of 45 litres capacity; or</p> <p>One CO₂ Extinguisher of 15 kilograms capacity.</p> <p>(b) Any space containing any oil-fired boiler shall be provided with:</p> <p>One foam extinguisher of 135 litres capacity; or</p> <p>One CO₂ Extinguisher of 45 kilograms capacity.</p> <p>The extinguisher shall be so sited in the machinery or boiler space as to be readily accessible in the event of fire and shall be capable of directing foam or CO₂ onto any part of the boiler room and spaces containing any part of the oil-fuel installations.</p>
	Portable Fire Extinguishers
	Portable fire extinguishers shall comply with Appendix G and be provided as follows:
25 metres and over	<p>(a) Two for each passenger space and each crew space on each deck. An additional extinguisher shall be provided on each deck for every 10 metres in excess of 35 metres length.</p> <p>(b) One in any galley where the overall deck area is less than 15 square metres and two in larger galleys.</p> <p>(c) Two suitable for extinguishing oil fires in each firing space in each boiler room and each space containing any part of any oil-fuel installation.</p> <p>(d) In each space containing internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. At least two but no more than six shall be provided in any such space.</p> <p>The extinguishers shall be suitable for extinguishing oil fires.</p>
20 metres and over but less than 25 metres	Three suitable for extinguishing oil fires for use in each space containing propelling machinery.
Less than 25 metres	<p>(a) One for each passenger space and each crew space on each deck.</p> <p>(b) One in each galley.</p>
15 metres and over but less than 20 metres	Two suitable for extinguishing oil fires for use in each space containing propelling machinery.
Less than 15 metres	One suitable for extinguishing oil fires for use in each space containing propelling machinery.
	Sand
	Each boiler firing space shall be provided with the following:
1000 tons and over	<p>(a) 0.25 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or</p> <p>(b) An additional portable fire extinguisher suitable for extinguishing oil fires.</p>
25 metres and over but less than 1000 tons	<p>(a) 0.15 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or</p> <p>(b) An additional portable fire extinguisher suitable for extinguishing oil fires.</p>
	Fire Smothering Blankets
25 metres and over	One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.

VESSELS OF CLASS 1C - continued

<i>Size</i>	<i>Requirements</i>
	Firemen's Outfits
	Firemen's Outfits shall comply with Appendix H and be provided as follows:
50 metres and over	Two together with an additional outfit for each 30 metres in length of vessel or part thereof in excess of 60 metres. If, in any vessel which carries firemen's outfits containing only breathing apparatus of the air hose type, an air hose exceeding 36 metres in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of accommodation, service, cargo or machinery spaces, at least two sets of breathing apparatus of the self contained type shall be provided. <i>(Amendment dated 15 March 1996)</i>
	International Shore Connection
1000 tons and over	One complying with Appendix J.
	Fire Buckets
Less than 15 metres	Two with lanyards.
	Firemen's Axe
25 metres and over but less than 50 metres	One.

VESSELS OF CLASS 1D

<i>Size</i>	<i>Requirements</i>
	Main Fire Pumps
1000 tons and over	Two fire pumps, complying with Appendix B, each capable of delivering simultaneously one jet of water from each of any two fire hydrants.
500 tons and over but less than 1000 tons	Two fire pumps, complying with Appendix B, each capable of delivering a jet of water from any fire hydrant.
Less than 500 tons but 25 metres and over	One fire pump, complying with Appendix B, capable of delivering a jet of water from any fire hydrant.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
	Emergency Fire Pumps
	Emergency fire pumps shall comply with Appendix C and be provided as follows:
500 tons and over	If a fire in any one compartment could put all the fire pumps out of action a fixed independently driven power operated emergency fire pump, in a position outside that compartment, provided that in any vessel of less than 1000 tons the emergency fire pump may be a portable power driven fire pump.
Less than 500 tons but 15 metres and over	If the main fire pump and its source of power and sea connection are not situated outside the compartment containing oil-fired boilers or internal combustion type propelling machinery a manually operated emergency fire pump in a position outside that compartment.
	Firemain, Water Service Pipes, Hydrants (other than hydrants in boiler and machinery spaces) and Jets of Water
1000 tons and over	Shall comply with Appendix D and provide two jets of water in accordance with sub-item 1.3 of that Appendix.
Less than 1000 tons but 15 metres and over	Shall comply with Appendix D and provide one jet of water in accordance with sub-item 1.4 of that Appendix.
	Hydrants in Boiler and Machinery Spaces
500 tons and over	Two hydrants in each space containing oil-fired boiler or internal combustion type propelling machinery one on the port side and one on the starboard side. Where there is access to the space by shaft tunnel one hydrant shall be provided in the end of the tunnel adjacent to that space and supply to the hydrant shall be from a source outside of the space and the supply line shall not pass through the space.
	Hoses
All lengths	One hose with fittings complying with Appendix D for every hydrant fitted.
	Fixed Fire Extinguishing Installation – Machinery Space
25 metres and over	One installation complying with Appendix E for the protection of any space containing: <ul style="list-style-type: none"> (a) any oil-fired boiler, oil fuel settling tank or oil fuel unit; or (b) internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes.
12.5 metres and over but less than 25 metres	A vessel fitted with oil fired boilers or internal combustion type machinery used for main propulsion and decked in way of the machinery space a fixed fire extinguishing installation complying with Appendix F.

VESSELS OF CLASS 1D - continued

<i>Size</i>	<i>Requirements</i>
	Non-portable foam and CO₂ Extinguishers
25 metres and over	<p>(a) Any space containing internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes shall be provided with:</p> <p>one foam extinguisher of 45 litres capacity; or one CO₂ extinguisher of 15 kilograms capacity.</p> <p>(b) Any space containing any oil-fired boiler shall be provided with:</p> <p>one foam fire extinguisher of 135 litres capacity; or one CO₂ extinguisher of 45 kilograms capacity.</p> <p>The extinguisher shall be so sited in the machinery or boiler space as to be readily accessible in the event of fire and shall be capable of directing foam or CO₂ onto any part of the boiler room and spaces containing any part of the oil-fuel installations.</p>
	Portable Fire Extinguishers
	Portable fire extinguishers shall comply with Appendix G and be provided as follows:
25 metres and over	<p>(a) Two for each passenger space and each crew space on each deck. An additional extinguisher shall be provided on each deck for every 10 metres in excess of 35 metres length.</p> <p>(b) One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.</p> <p>(c) Two suitable for extinguishing oil fires in each firing space in each boiler room and each space containing any part of any oil fuel installation.</p> <p>(d) In each space containing internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. At least two but no more than six shall be provided in any such space.</p> <p>The extinguishers shall be suitable for extinguishing oil fires.</p>
Fully decked 10 metres and over but less than 25 metres	<p>(a) One for each passenger space and each crew space on each deck.</p> <p>(b) One in each galley.</p>
Fully decked less than 10 metres	One suitable for extinguishing oil fires for use in passenger and crew spaces.
Fully decked 20 metres and over but less than 25 metres	Three suitable for extinguishing oil fires for use in each space containing propelling machinery.
Fully decked 15 metres and over but less than 20 metres	Two suitable for extinguishing oil fires for use in each space containing propelling machinery.
Fully decked less than 15 metres	One suitable for extinguishing oil fires for use in each space containing propelling machinery.
Not fully decked 15 metres and over but less than 25 metres	Three suitable for extinguishing oil fires.
Not fully decked 10 metres and over but less than 15 metres	Two suitable for extinguishing oil fires.
Not fully decked less than 10 metres	One suitable for extinguishing oil fires.

Sand

Each boiler firing space shall be provided with the following:

VESSELS OF CLASS 1D – continued

<i>Size</i>	<i>Requirements</i>
1000 tons and over	(a) 0.25 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
25 metres and over but less than 1000 tons	(a) 0.15 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
	Fire Smothering Blanket
25 metres and over	One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.
	Fire Buckets
Less than 15 metres	Two with lanyards.
	Firemen's Axe
25 metres and over	One.

VESSELS OF CLASS IE

<i>Size</i>	<i>Requirements</i>
	Main Fire Pumps
1000 tons and over	Two fire pumps, complying with Appendix B, each capable of delivering simultaneously one jet of water from each of any two fire hydrants.
500 tons and over but less than 1000 tons	Two fire pumps, complying with Appendix B, each capable of delivering a jet of water from any fire hydrant.
Less than 500 tons but 25 metres and over	One fire pump, complying with Appendix B, capable of delivering a jet of water from any fire hydrant.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
	Emergency Fire Pumps
	Emergency fire pumps shall comply with Appendix C and be provided as follows:
500 tons and over	If a fire in any one compartment could put all the fire pumps out of action a fixed independently driven power operated emergency fire pump, in a position outside that compartment, provided that in any vessel of less than 1000 tons the emergency fire pump may be a portable power driven fire pump.
Less than 500 tons but 15 metres and over	If the main fire pump and its source of power and sea connection are not situated outside the compartment containing oil-fired boilers or internal combustion type propelling machinery a manually operated emergency fire pump in a position outside that compartment.
	Firemain, Water Service Pipes, Hydrants (other than hydrants in boiler and machinery spaces) and Jets of Water
1000 tons and over	Shall comply with Appendix D and provide two jets of water in accordance with sub-item 1.3 of that Appendix.
Less than 1000 tons but 15 metres and over	Shall comply with Appendix D and provide one jet of water in accordance with sub-item 1.4 of that Appendix.
	Hydrants in Boiler and Machinery Spaces
500 tons and over	Two hydrants in each space containing oil-fired boiler or internal combustion type propelling machinery one on the port side and one on the starboard side. Where there is access to the space by shaft tunnel one hydrant shall be provided in the end of the tunnel adjacent to that space and supply to the hydrant shall be from a source outside of the space and the supply line shall not pass through the space.
	Hoses
All lengths	One hose with fittings complying with Appendix D for every hydrant fitted.
	Fixed Fire Extinguishing Installation – Machinery Space
25 metres and over	One installation complying with Appendix E for the protection of any space containing: <ul style="list-style-type: none"> (a) any oil-fired boiler, oil fuel settling tank or oil fuel unit; or (b) internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes.
12.5 metres and over but less than 25 metres	A vessel fitted with oil-fired boilers or internal combustion type machinery used for main propulsion and decked in way of the machinery space a fixed fire extinguishing installation complying with Appendix F.

VESSELS OF CLASS 1E - continued

<i>Size</i>	<i>Requirements</i>
	Non-portable Foam and CO₂ Extinguishers
25 metres and over	<p>(a) Any space containing internal combustion type machinery, used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes shall be provided with:</p> <p>One foam extinguisher of 45 litres capacity; or One CO₂ extinguisher of 15 kilograms capacity.</p> <p>(b) Any space containing any oil-fired boiler shall be provided with:</p> <p>One foam fire extinguisher of 135 litres capacity; or One CO₂ extinguisher of 45 kilograms capacity.</p> <p>The extinguisher shall be so sited in the machinery or boiler space as to be readily accessible in the event of fire and shall be capable of directing foam or CO₂ onto any part of the boiler room and spaces containing any part of the oil-fuel installations.</p>
	Portable Fire Extinguishers
	Portable fire extinguishers shall comply with Appendix G and be provided as follows:
25 metres and over	<p>(a) Two for each passenger space and each crew space on each deck. An additional extinguisher shall be provided on each deck for every 10 metres in excess of 35 metres length.</p> <p>(b) One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.</p> <p>(c) Two suitable for extinguishing oil fires in each firing space in each boiler room and each space containing any part of any oil fuel installation.</p> <p>(d) In each space containing internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof.</p> <p>At least two but no more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires.</p>
Fully decked 10 metres and over but less than 25 metres	<p>(a) One for each passenger space and each crew space on each deck.</p> <p>(b) One in each galley.</p>
Fully decked less than 10 metres	One suitable for extinguishing oil fires for use in passenger and crew spaces.
Fully decked 20 metres and over but less than 25 metres	Three suitable for extinguishing oil fires for use in each space containing propelling machinery.
Fully decked 15 metres and over but less than 20 metres	Two suitable for extinguishing oil fires for use in each space containing propelling machinery.
Fully decked less than 15 metres	One suitable for extinguishing oil fires for use in each space containing propelling machinery.
Not fully decked 15 metres and over but less than 25 metres	Three suitable for extinguishing oil fires.
Not fully decked 10 metres and over but less than 15 metres	Two suitable for extinguishing oil fires.
Not fully decked less than 10 metres	One suitable for extinguishing oil fires.

VESSELS OF CLASS 1E - continued

<i>Size</i>	<i>Requirements</i>
	Sand
	Each boiler firing space shall be provided with the following:
1000 tons and over	(a) 0.25 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
25 metres and over but less than 1000 tons	(a) 0.15 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
	Fire Smothering Blankets
25 metres and over	One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.
	Fire Buckets
Less than 15 metres	Two with lanyards.
	Firemen's Axe
25 metres and over	One.

VESSELS OF CLASS 2A

<i>Size</i>	<i>Requirements</i>
	Main Fire Pumps
500 tons and over	Two fire pumps, complying with Appendix B, each capable of delivering simultaneously one jet of water from each of any two fire hydrants.
Less than 500 tons but 25 metres and over	One fire pump, complying with Appendix B, capable of delivering a jet of water from any fire hydrant.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
	Emergency Fire Pumps
Emergency fire pumps shall	comply with Appendix C and be provided as follows:
500 tons and over	If a fire in any one compartment could put all the fire pumps out of action a fixed independently driven power operated emergency fire pump, in a position outside that compartment, and provided that in any vessel of less than 1000 tons the emergency fire pump may be a portable power driven fire pump.
Less than 500 tons but 25 metres and over	If the main fire pump and its source of power and sea connection are not situated outside the compartment containing oil-fired boilers or internal combustion type propelling machinery a manually operated emergency fire pump in a position outside that compartment.
	Firemain, Water Service Pipes, Hydrants (other than hydrants to boiler and machinery spaces) and Jets of Water
500 tons and over	Shall comply with Appendix D and provide two jets of water in accordance with sub-item 1.3 of that Appendix.
Less than 500 tons but 15 metres and over	Shall comply with Appendix D and provide one jet of water in accordance with sub-item 1.4 of that Appendix.
	Hydrants in Boiler and Machinery Spaces
500 tons and over	Two hydrants together with hoses and fittings in each space containing oil-fired boiler or internal combustion type propelling machinery-one on the port side and one on the starboard side. Where there is access to the space by shaft tunnel one hydrant shall be provided in the end of the tunnel adjacent to that space and supply to the hydrant shall be from a source outside of the space and the supply line shall not pass through the space.
	Hoses
Fire hoses together with their fittings shall	comply with Appendix D and be provided as follows:
1000 tons and over	One for each 30 metres length of vessel, but in any case not less than five. The total length of the hoses shall be at least 60 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
Less than 1000 tons but 25 metres and over	Two, the total length of which shall be at least 50 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
15 metres and over but less than 25 metres	One hose.
The hoses required above shall be in addition to any hoses required in the machinery space.	
	Fixed Fire Extinguishing Installation – Cargo Space
2000 tons and over	There shall be provided a fixed fire smothering installation complying with Appendix E which shall be so arranged as to protect every cargo space. Provided that in any tanker, a fixed installation discharging foam externally and through suitable mobile sprayers internally to the liquid cargo tanks complies with Appendix E it may be substituted for the fixed fire smothering installation required by the above.

VESSELS OF CLASS 2A - continued

Size	Requirements
	<p>The Authority may exempt any vessel from the requirement to provide a fixed fire smothering installation in the cargo holds of a vessel, not being the tank of a tanker, if it is satisfied that-</p> <p>The holds are provided with steel hatch covers and effective means of closing all ventilators and other openings to the holds, or</p> <p>The vessel is constructed for, and employed solely in, the carriage of ore, coal, grain or such other cargo as the Authority may consider to be of equivalent low hazard; or</p> <p>To require compliance would be unreasonable on account of the short duration of the voyages on which the vessel is engaged.</p>
25 metres and over	<p>Fixed Fire Extinguishing Installation – Machinery Space</p> <p>There shall be provided for the protection of any space containing:</p> <p>(a) any oil-fired boiler, oil fuel settling tank or oil fuel unit; or</p> <p>(b) internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes.</p> <p>one of the fixed fire extinguishing installations detailed in Appendix E.</p> <p><i>Note:</i> Vessels of 500 tons and over but less than 1000 tons may use steam in lieu of foam, water or gas.</p>
12.5 metres and over but less than 25 metres	<p>A vessel fitted with oil fired boilers or internal combustion type machinery used for main propulsion and decked in the way of the machinery space shall be provided with a fixed fire extinguishing installation complying with Appendix F.</p> <p>There may be substituted for this installation a water spraying system supplied from a hand pump situated outside the machinery space which may be a hand pump otherwise required. The pump shall be connected by a fixed piping to a sufficient number of water spraying nozzles suitably sited in the machinery space and capable of extinguishing oil fires. When such a system is installed means shall also be provided for detecting the products of combustion prior to or resulting from an outbreak of fire in the machinery space.</p>
500 tons and over	<p>Non-portable Foam and CO₂ Extinguishers</p> <p>(a) In each boiler room one foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity if the number of burners therein is five or more. If the number of burners in the boiler room is less than five, there shall be provided for each burner therein one portable fire extinguisher suitable for extinguishing oil fires.</p> <p>However, in the case of a vessel of less than 1000 tons which is provided with a fixed fire steam smothering installation (in accordance with the requirements under Fixed Fire Extinguishing Installation) and steam for the installation is generated by water-tube boilers there shall be provided in each boiler room one foam fire extinguisher of 135 litres capacity or a carbon dioxide fire extinguisher of 45 kilogram capacity.</p> <p>(b) In any space containing internal combustion type machinery used for main propulsion or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes there shall be provided a foam fire extinguisher of 45 litres capacity or a CO₂ fire extinguisher of 15 kilograms capacity.</p> <p>(c) There shall be provided in each space containing steam turbines or enclosed pressure lubricated steam engines used either for main propulsion, or having in the aggregate a total brake power of not less than 750 kilowatts for auxiliary purposes, foam fire extinguishers of 45 litres capacity or carbon dioxide fire extinguishers of 15 kilograms capacity.</p> <p>The extinguishers shall be of such number and so positioned as to enable foam or carbon dioxide to be directed on to any part of the pressure lubrication system and on to any part of the casings enclosing pressure lubricated parts of the turbines, engines or associated gearing if any. Provided that such extinguishers shall not be required if equivalent protection is provided in such</p>

spaces by a fixed fire extinguishing installation fitted in compliance with Appendix E.

VESSELS OF CLASS 2A - continued

<i>Size</i>	<i>Requirements</i>
Portable Fire Extinguishers	
Portable fire extinguishers shall comply with Appendix G and be provided as follows:	
500 tons and over	<p>(a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces. The number of extinguishers shall not be less than five on vessels of 1000 tons and over, and not less than three on vessels of 500 tons and over but less than 1000 tons.</p> <p>(b) One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.</p> <p>(c) One in each control station.</p> <p>(d) In each space containing internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires.</p> <p>(e) In each space containing steam turbines enclosed pressure lubricated steam engines used for main propulsion or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one of each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space.</p> <p>The extinguishers shall be additional to any provided in compliance with (d) above.</p> <p>The extinguishers shall be suitable for extinguishing oil fires.</p> <p>(f) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of any oil fuel installation. These shall be in addition to any furnished in lieu of a non-portable foam or CO₂ extinguisher.</p>
25 metres and over but less than 500 tons	<p>(a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces, but not less than two.</p> <p>(b) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of an oil fuel installation.</p> <p>(c) One in each control space.</p> <p>(d) In each unmanned machinery space which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space.</p> <p>The extinguishers shall be suitable for extinguishing oil fires.</p> <p>(e) In each space which is continually manned at sea and which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, and which is not provided with:</p> <p>(i) a foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity together with two portable fire extinguishers; or</p> <p>(ii) a fixed fire extinguishing installation complying with Appendix E together with two portable fire extinguishers-</p> <p style="padding-left: 40px;">One for each 75 kW brake power or part thereof but not less than two nor more than seven.</p> <p>The extinguishers shall be suitable for extinguishing oil fires.</p>
15 metres and over but less than 25 metres	One readily available for use in the accommodation and service space.
Less than 25 metres	Two, suitable for extinguishing oil fires, for use in each space containing propelling

machinery.

VESSELS OF CLASS 2A -continued

<i>Size</i>	<i>Requirements</i>
	Sand
	Each boiler firing space shall be provided with the following:
1000 tons and over	(a) 0.25 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
25 metres and over but less than 1000 tons	(a) 0.15 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
	Fire Smothering Blankets
25 metres and over	One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.
	Firemen's Outfits
	Firemen's Outfits shall comply with Appendix H and be provided as follows:
4000 tons and over	3 outfits
2500 tons and over but less than 4000 tons	2 outfits
500 tons and over but less than 2500 tons	1 outfit
	If in any vessel which carries firemen's outfits containing only breathing apparatus of the air hose type, an air hose exceeding 36 metres in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery spaces, at least two sets of breathing apparatus of the self contained type shall be provided.
	<i>(Amendment dated 15 March 1996)</i>
	International Shore Connection
1000 tons and over	One complying with Appendix J
	Fire Buckets
Less than 25 metres	2 with lanyards
	Firemen's Axe
Less than 500 tons but 25 metres and over	One.

VESSELS OF CLASS 2B

<i>Size</i>	<i>Requirements</i>
	Main Fire Pumps
1000 tons and over	Two fire pumps, complying with Appendix B, each capable of delivering simultaneously one jet of water from each of any two fire hydrants.
500 tons and over but less than 1000 tons	Two fire pumps, complying with Appendix B, each capable of delivering a jet of water from any fire hydrant.
Less than 500 tons but 25 metres and over	One fire pump, complying with Appendix B, capable of delivering a jet of water from any fire hydrant.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
	Emergency Fire Pumps
	Emergency fire pumps shall comply with Appendix C and be provided as follows:
500 tons and over	If a fire in any one compartment could put all the fire pumps out of action a fixed independently driven power operated emergency fire pump, in a position outside that compartment, and provided that in any vessel of less than 1000 tons the emergency fire pump may be a portable power driven fire pump.
Less than 500 tons but 25 metres and over	If the main fire pump and its source of power and sea connection are not situated outside the compartment containing oil-fired boilers or internal combustion type propelling machinery a manually operated emergency fire pump in a position outside that compartment.
	Firemain, Water Service Pipes, Hydrants (other than hydrants and boiler and machinery spaces) and Jets of Water
1000 tons and over	Shall comply with Appendix D and provide two jets of water in accordance with sub-item 1.3 of that Appendix.
Less than 1000 tons but 15 metres and over	Shall comply with Appendix D and provide one jet of water in accordance with sub-item 1.4 of that Appendix.
	Hydrants in Boiler and Machinery Spaces
500 tons and over	Two hydrants together with hoses and fittings in each space containing oil-fired boiler or internal combustion type propelling machinery-one on the port side and one on the starboard side. Where there is access to the space by shaft tunnel one hydrant shall be provided in the end of the tunnel adjacent to that space and supply to the hydrant shall be from a source outside of the space and the supply line shall not pass through that space.
	Hoses
	Fire hoses together with their fittings shall comply with Appendix D and be provided as follows:
1000 tons and over	One for each 30 metres length of vessel, but in any case not less than five. The total length of the hoses shall be at least 60 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
Less than 1000 tons but 25 metres and over	Two, the total length of which shall be at least 50 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
15 metres and over but less than 25 metres	One hose.
	The hoses required above shall be in addition to any hoses required in the machinery space.
	Fixed Fire Extinguishing Installation – Cargo Space
2000 tons and over	There shall be provided a fixed fire smothering installation complying with Appendix E which shall be so arranged as to protect every cargo space. Provided that in any tanker, a fixed installation discharging foam externally and through suitable mobile sprayers internally to the liquid cargo tanks complies

VESSELS OF CLASS 2B -continued

Size	Requirements
	<p>with Appendix E it may be substituted for the fixed fire smothering gas installation required by the above.</p> <p>The Authority may exempt any vessel from the requirement to provide a fixed fire smothering installation in the cargo holds of a vessel, not being the tank of a tanker, if it is satisfied that-</p> <ul style="list-style-type: none"> The holds are provided with steel hatch covers and effective means of closing all ventilators and other openings to the holds, or The vessel is constructed for, and employed solely in, the carriage of ore, coal, grain or such other cargo as the Authority may consider to be of equivalent low hazard; or <p>To require compliance would be unreasonable on account of the short duration of the voyages on which the vessel is engaged.</p>
25 metres and over	<p>Fixed Fire Extinguishing Installation – Machinery Space</p> <p>There shall be provided for the protection of any space containing:</p> <ul style="list-style-type: none"> (a) any oil-fired boiler, oil fuel settling tank or oil fuel unit; or (b) internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes. <p>one of the fixed fire extinguishing installations detailed in Appendix E.</p> <p><i>Note:</i> Vessels of 500 tons and over but less than 1000 tons may use steam in lieu of foam, water or gas.</p>
12.5 metres and over but less than 25 metres	<p>A vessel fitted with oil fired boilers or internal combustion type machinery used for main propulsion and decked in the way of the machinery space shall be provided with a fixed fire extinguishing installation complying with Appendix F. There may be substituted for this installation a water spraying system supplied from a hand pump situated outside the machinery space which may be a hand pump otherwise required. The pump shall be connected by a fixed piping to a sufficient number of water spraying nozzles suitably sited in the machinery space and capable of extinguishing oil fires. When such a system is installed means shall also be provided for detecting the products of combustion prior to or resulting from an outbreak of fire in the machinery space.</p>
500 tons and over	<p>Non-portable Foam and CO₂ Extinguishers</p> <ul style="list-style-type: none"> (a) In each boiler room one foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity if the number of burners therein is five or more. If the number of burners in the boiler room is less than five, there shall be provided for each burner therein one portable fire extinguisher suitable for extinguishing oil fires. <p>However, in the case of a vessel of less than 1000 tons which is provided with a fixed fire steam smothering installation (in accordance with the requirements under Fixed Fire Extinguishing Installation) and steam for the installation is generated by water-tube boilers there shall be provided in each boiler room one foam fire extinguisher of 135 litres capacity or a carbon dioxide fire extinguisher of 45 kilogram capacity.</p> <ul style="list-style-type: none"> (b) In any space containing internal combustion type machinery used for main propulsion or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes there shall be provided a foam fire extinguisher of 45 litres capacity or a CO₂ fire extinguisher of 15 kilograms capacity. (c) There shall be provided in each space containing steam turbines or enclosed pressure lubricated steam engines used either for main propulsion, or having in the aggregate a total brake power of not less than 750 kilowatts for auxiliary purposes, foam fire extinguishers of 45 litres capacity or carbon dioxide fire extinguishers of 15 kilograms capacity. <p>The extinguishers shall be of such number and so positioned as to enable foam or carbon dioxide to be directed on to any part of the pressure lubrication system and on to any part of the casings enclosing pressure lubricated parts of</p>

the turbines, engines or associated gearing if any. Provided that such extinguishers shall not be required if equivalent protection is provided in such

VESSELS OF CLASS 2B - continued

<i>Size</i>	<i>Requirements</i>
	spaces by a fixed fire extinguishing installation fitted in compliance with Appendix E.
	Portable Fire Extinguishers
	Portable fire extinguishers shall comply with Appendix G and be provided as follows:
500 tons and over	<p>(a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces. The number of extinguishers shall not be less than five on vessels of 1000 tons and over, and not less than three on vessels of 500 tons and over but less than 1000 tons.</p> <p>(b) One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.</p> <p>(c) One in each control station.</p> <p>(d) In each space containing internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires.</p> <p>(e) In each space containing steam turbines or enclosed pressure lubricated steam engines used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space.</p> <p>The extinguishers shall be additional to any provided in compliance with (d) above. The extinguishers shall be suitable for extinguishing oil fires.</p> <p>(f) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of any oil fuel installation. These shall be in addition to any furnished in lieu of a non-portable foam or CO₂ extinguisher.</p>
25 metres and over but less than 500 tons	<p>(a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces, but not less than two.</p> <p>(b) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of an oil fuel installation.</p> <p>(c) One in each control station.</p> <p>(d) In each unmanned machinery space which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space.</p> <p>The extinguishers shall be suitable for extinguishing oil fires.</p> <p>(e) In each space which is continually manned at sea and which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, and which is not provided with:</p> <p>(i) a foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity together with two portable fire extinguishers, or</p> <p>(ii) a fixed fire extinguishing installation complying with Appendix E together with two portable fire extinguishers-</p> <p>one for each 75 kW brake power or part thereof but not less than two nor more than seven.</p> <p>The extinguishers shall be suitable for extinguishing oil fires.</p>

VESSELS OF CLASS 2B - continued

<i>Size</i>	<i>Requirements</i>
15 metres and over but less than 25 metres	One readily available for use in the accommodation and service space.
Less than 25 metres	Two, suitable for extinguishing oil fires for use in each space containing propelling machinery.
	Sand
	Each boiler firing space shall be provided with the following:
1000 tons and over	(a) 0.25 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
25 metres and over but less than 1000 tons	(a) 0.15 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
	Fire Smothering Blankets
25 metres and over	One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.
	Firemen's Outfits
	Firemen's Outfits shall comply with Appendix H and be provided as follows:
4000 tons and over	3 outfits
2500 tons and over but less than 4000 tons	2 outfits
500 tons and over but less than 2500 tons	1 outfit
	If in any vessel which carries firemen's outfits containing only breathing apparatus of the air hose type, an air hose exceeding 36 metres in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery spaces, at least two sets of breathing apparatus of the self contained type shall be provided.
	<i>(Amendment dated 15 March 1996)</i>
	International Shore Connection
1000 tons and over	One complying with Appendix J.
	Fire Buckets
Less than 25 metres	2 with lanyards.
	Firemen's Axe
Less than 500 tons but 25 metres and over	One.

VESSELS OF CLASS 2C

<i>Size</i>	<i>Requirements</i>
	Main Fire Pumps
1000 tons and over	Two fire pumps, complying with Appendix B, each capable of delivering simultaneously one jet of water from each of any two fire hydrants.
500 tons and over but less than 1000 tons	Two fire pumps, complying with Appendix B, each capable of delivering a jet of water from any fire hydrant.
less than 500 tons but 25 metres and over	One fire pump, complying with Appendix B, capable of delivering a jet of water from any fire hydrant.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
	Emergency Fire Pumps
	Emergency fire pumps shall comply with Appendix C and be provided as follows:
500 tons and over	If a fire in any one compartment could put all the fire pumps out of action a fixed independently driven power operated emergency fire pump, in a position outside that compartment, and provided that in any vessel of less than 1000 tons the emergency fire pump may be a portable power driven fire pump.
Less than 500 tons but 25 metres and over	If the main fire pump and its source of power and sea connection are not situated outside the compartment containing oil fired boilers or internal combustion type propelling machinery, a manually operated emergency fire pump in a position outside that compartment.
	Firemain, Water Service Pipes, Hydrants (other than hydrants in boiler and machinery spaces) and Jets of Water
1000 tons and over	Shall comply with Appendix D and provide two jets of water in accordance with sub-item 1.3 of that Appendix.
Less than 1000 tons but 15 metres and over	Shall comply with Appendix D and provide one jet of water in accordance with sub-item 1.4 of that Appendix.
	Hydrants in Boiler and Machinery Spaces
500 tons and over	Two hydrants together with hoses and fittings in each space containing oil-fired boiler or internal combustion type propelling machinery-one on the port side and one on the starboard side. Where there is access to the space by shaft tunnel one hydrant shall be provided in the end of the tunnel adjacent to that space and supply to the hydrant shall be from a source outside of the space and the supply line shall not pass through the space.
	Hoses
	Fire hoses together with their fittings shall comply with Appendix D and be provided as follows:
1000 tons and over	One for each 30 metres length of vessel, but in any case not less than five. The total length of the hoses shall be at least 60 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
Less than 1000 tons but 25 metres and over	Two, the total length of which shall be at least 50 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
15 metres and over but less than 25 metres	One hose.
	The hoses required above shall be in addition to any hoses required in the machinery spaces.

VESSELS OF CLASS 2C - continued

<i>Size</i>	<i>Requirement</i>
	<p>Fixed Fire Extinguishing Installation-Cargo Space</p>
2000 tons and over	<p>There shall be provided a fixed fire smothering installation complying with Appendix E which shall be so arranged as to protect every cargo space.</p> <p>Provided that in any tanker, a fixed installation discharging foam externally and through suitable mobile sprayers internally to the liquid cargo tanks complies with Appendix E it may be substituted for the fixed fire smothering gas installation required by the above.</p> <p>The Authority may exempt any vessel from the requirements to provide a fixed fire smothering installation in the cargo holds of a vessel, not being the tank of a tanker, if it is satisfied that--</p> <p style="padding-left: 40px;">The holds are provided with steel hatch covers and effective means of closing all ventilators and other openings to the holds, or</p> <p style="padding-left: 40px;">The vessel is constructed for, and employed solely in, the carriage of ore, coal, grain or such other cargo as the Authority may consider to be of equivalent low hazard; or</p> <p style="padding-left: 40px;">To require compliance would be unreasonable on account of the short duration of the voyages on which the vessel is engaged.</p> <p>Fixed Fire Extinguishing Installation-Machinery Space</p>
25 metres and over	<p>There shall be provided for the protection of any space containing:</p> <p>(a) any oil-fired boiler, oil fuel settling tank or oil fuel unit; or</p> <p>(b) internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes;</p> <p>one of the fixed fire extinguishing installations detailed in Appendix E.</p> <p><i>Note:</i> Vessels of 500 tons and over but less than 1000 tons may use steam in lieu of foam, water or gas.</p>
12.5 metres and over but less than 25 metres	<p>A vessel fitted with oil fired boilers or internal combustion type machinery used for main propulsion and decked in the way of the machinery space shall be provided with a fixed fire extinguishing installation complying with Appendix F. There may be substituted for this installation a water spraying system supplied from a hand pump situated outside the machinery space which may be a hand pump otherwise required. The pump shall be connected by a fixed piping to a sufficient number of water spraying nozzles suitably sited in the machinery space and capable of extinguishing oil fires. When such a system is installed means shall also be provided for detecting the products of combustion prior to or resulting from an outbreak of fire in the machinery space.</p>
	<p>Non-Portable Foam and CO₂ Extinguishers</p>
500 tons and over	<p>(a) In each boiler room one foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity, if the number of burners therein is five or more. If the number of burners in the boiler room is less than five, there shall be provided for each burner therein one portable fire extinguisher suitable for extinguishing oil fires.</p> <p>However, in the case of a vessel of less than 1000 tons which is provided with a fixed fire steam smothering installation (in accordance with the requirements under Fixed Fire Extinguishing Installation) and steam for the installation is generated by water-tube boilers there shall be provided in each boiler room one foam fire extinguisher of 135 litres capacity or a carbon dioxide fire extinguisher of 45 kilograms capacity.</p> <p>(b) In any space containing internal combustion type machinery used for main propulsion or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes there shall be provided a foam fire extinguisher of 45 litres capacity or a CO₂ fire extinguisher of 15 kilograms capacity.</p>

VESSELS OF CLASS 2C – continued

<i>Size</i>	<i>Requirement</i>
Portable Fire Extinguishers	
Portable fire extinguishers shall comply with Appendix G and be provided as follows:	
500 tons and over	<ul style="list-style-type: none"> (a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces. The number of extinguishers shall not be less than five on vessels of 1000 tons and over, and not less than three on vessels of 500 tons and over but less than 1000 tons. (b) One in a galley where the overall deck area is less than 15 square metres and two in larger galleys. (c) In each space containing internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires. (d) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of any oil fuel installation. These shall be in addition to any furnished in lieu of a non-portable foam or CO₂ extinguisher.
25 metres and over but less than 500 tons	<ul style="list-style-type: none"> (a) A sufficient number to ensure that one less than 500 tons will be readily available for use in any part of the accommodation or service spaces, but not less than two. (b) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of an oil fuel installation. (c) In each unmanned machinery space which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires. (d) In each space which is continually manned at sea and which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, and which is not provided with: <ul style="list-style-type: none"> (i) a foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity together with two portable fire extinguishers; or (ii) a fixed fire extinguishing installation complying with Appendix E together with two portable fire extinguishers- one for each 75 kW brake power or part thereof but not less than two nor more than seven. The extinguishers shall be suitable for extinguishing oil fires.
15 metres and over but less than 25 metres	One readily available for use in the accommodation and service space.
Less than 25 metres	Two, suitable for extinguishing oil fires, for use in each space containing propelling machinery.

Sand

Each boiler firing space shall be provided with the following:

- | | |
|--------------------|--|
| 1000 tons and over | <ul style="list-style-type: none"> (a) 0.25 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires. |
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VESSELS OF CLASS 2 C - continued

<i>Size</i>	<i>Requirement</i>
25 metres and over but less than 1000 tons	(a) 0.15 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
	Fire Smothering Blankets
25 metres and over	One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.
	Firemen's Outfits
	Firemen's Outfits shall comply with Appendix H and be provided as follows:
4000 tons and over	3 outfits
2500 tons and over but less than 4000 tons	2 outfits
500 tons and over but less than 2500 tons	1 outfit
	If in any vessel which carries firemen's outfits containing only breathing apparatus of the air hose type, an air hose exceeding 36 metres in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery spaces, at least two sets of breathing apparatus of the self contained type shall be provided.
	<i>(Amendment dated 15 March 1996)</i>
	International Shore Connection
1000 tons and over	One complying with Appendix J.
	Fire Buckets
10 metres and over but less than 25 metres	2 with lanyards.
Less than 10 metre	1 with lanyards.
	Firemen's Axe
Less than 500 tons but 25 metres and over	One.

VESSELS OF CLASS 2D

<i>Size</i>	<i>Requirements</i>
	Main Fire Pumps
1000 tons and over	Two fire pumps, complying with Appendix B, each capable of delivering simultaneously one jet of water from each of any two fire hydrants.
500 tons and over but less than 1000 tons	Two fire pumps, complying with Appendix B, each capable of delivering a jet of water from any fire hydrant.
less than 500 tons but 25 metres and over	One fire pump, complying with Appendix B, capable of delivering a jet of water from any fire hydrant.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
	Emergency Fire Pumps
	Emergency fire pumps shall comply with Appendix C and be provided as follows:
500 tons and over	If a fire in any one compartment could put all the fire pumps out of action a fixed independently driven power operated emergency fire pump, in a position outside that compartment, and provided that in any vessel of less than 1000 tons the emergency fire pump may be a portable power driven fire pump.
Less than 500 tons but 25 metres and over	If the main fire pump and its source of power and sea connection are not situated outside the compartment containing oil fired boilers or internal combustion type propelling machinery, a manually operated emergency fire pump in a position outside that compartment.
	Firemain, Water Service Pipes, Hydrants (other than hydrants in boiler and machinery spaces) and Jets of Water
1000 tons and over	Shall comply with Appendix D and provide two jets of water in accordance with sub-item 1.3 of that Appendix.
Less than 1000 tons but 15 metres and over	Shall comply with Appendix D and provide one jet of water in accordance with sub-item 1.4 of that Appendix.
	Hydrants in Boiler and Machinery Spaces
500 tons and over	Two hydrants together with hoses and fittings in each space containing oil-fired boiler or internal combustion type propelling machinery-one on the port side and one on the starboard side. Where there is access to the space by shaft tunnel one hydrant shall be provided in the end of the tunnel adjacent to that space and supply to the hydrant shall be from a source outside of the space and the supply line shall not pass through the space.
	Hoses
	Fire hoses together with their fittings shall comply with Appendix D and be provided as follows:
1000 tons and over	One for each 30 metres length of vessel, but in any case not less than five. The total length of the hoses shall be at least 60 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
Less than 1000 tons but 25 metres and over	Two, the total length of which shall be at least 50 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
15 metres and over but less than 25 metres	One hose.
	The hoses required above shall be in addition to any hoses required in the machinery spaces.

VESSELS OF CLASS 2D - continued

<i>Size</i>	<i>Requirement</i>
	<p>Fixed Fire Extinguishing Installation-Cargo Space</p>
2000 tons and over	<p>There shall be provided a fixed fire smothering installation complying with Appendix E which shall be so arranged as to protect every cargo space.</p> <p>Provided that in any tanker, a fixed installation discharging foam externally and through suitable mobile sprayers internally to the liquid cargo tanks complies with Appendix E it may be substituted for the fixed fire smothering gas installation required by the above.</p> <p>The Authority may exempt any vessel from the requirements to provide a fixed fire smothering installation in the cargo holds of a vessel, not being the tank of a tanker, if it is satisfied that--</p> <p style="padding-left: 40px;">The holds are provided with steel hatch covers and effective means of closing all ventilators and other openings to the holds, or</p> <p style="padding-left: 40px;">The vessel is constructed for, and employed solely in, the carriage of ore, coal, grain or such other cargo as the Authority may consider to be of equivalent low hazard; or</p> <p style="padding-left: 40px;">To require compliance would be unreasonable on account of the short duration of the voyages on which the vessel is engaged.</p>
	<p>Fixed Fire Extinguishing Installation-Machinery Space</p>
25 metres and over	<p>There shall be provided for the protection of any space containing:</p> <ol style="list-style-type: none"> (a) any oil-fired boiler, oil fuel settling tank or oil fuel unit; or (b) internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes; <p>one of the fixed fire extinguishing installations detailed in Appendix E.</p> <p><i>Note:</i> Vessels of 500 tons and over but less than 1000 tons may use steam in lieu of foam, water or gas.</p>
	<p>Non-Portable Foam and CO₂ Extinguishers</p>
500 tons and over	<ol style="list-style-type: none"> (a) In each boiler room one foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity, if the number of burners therein is five or more. If the number of burners in the boiler room is less than five, there shall be provided for each burner therein one portable fire extinguisher suitable for extinguishing oil fires. <p>However, in the case of a vessel of less than 1000 tons which is provided with a fixed fire steam smothering installation (in accordance with the requirements under Fixed Fire Extinguishing Installation) and steam for the installation is generated by water-tube boilers there shall be provided in each boiler room one foam fire extinguisher of 135 litres capacity or a carbon dioxide fire extinguisher of 45 kilograms capacity.</p> <ol style="list-style-type: none"> (b) In any space containing internal combustion type machinery used for main propulsion or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes there shall be provided a foam fire extinguisher of 45 litres capacity or a CO₂ fire extinguisher of 15 kilograms capacity.
	<p>Portable Fire Extinguishers</p>
	<p>Portable fire extinguishers shall comply with Appendix G and be provided as follows:</p>
500 tons and over	<ol style="list-style-type: none"> (a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces. The number of extinguishers shall not be less than five on vessels of 1000 tons and over, and not less than three on vessels of 500 tons and over but less than 1000 tons. (b) One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.

VESSELS OF CLASS 2D - continued

<i>Size</i>	<i>Requirements</i>
	<p>(c) In each space containing internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires.</p> <p>(d) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of any oil fuel installation. These shall be in addition to any furnished in lieu of a non-portable foam or CO₂ extinguisher.</p>
25 metres and over but less than 500 tons	<p>(a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces, but not less than two.</p> <p>(b) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of an oil fuel installation.</p> <p>(c) In each unmanned machinery space which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires.</p> <p>(d) In each space which is continually manned at sea and which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, and which is not provided with:</p> <p>(i) a foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity together with two portable fire extinguishers; or</p> <p>(ii) a fixed fire extinguishing installation complying with Appendix E together with two portable fire extinguishers- one for each 75 kW brake power or part thereof but not less than two nor more than seven. The extinguishers shall be suitable for extinguishing oil fires.</p>
15 metres and over but less than 25 metres	One readily available for use in the accommodation and service space.
10 metres and over but less than 25 metres	Two, suitable for extinguishing oil fires, for use in each space containing propelling machinery.
Less than 10 metres	One, suitable for extinguishing oil fires, for use in each space containing propelling machinery.
	Sand
	Each boiler firing space shall be provided with the following:
1000 tons and over	<p>(a) 0.25 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or</p> <p>(b) An additional portable fire extinguisher suitable for extinguishing oil fires.</p>
25 metres and over but less than 1000 tons	<p>(a) 0.15 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or</p> <p>(b) An additional portable fire extinguisher suitable for extinguishing oil fires.</p>

VESSELS OF CLASS 2D - continued

<i>Size</i>	<i>Requirements</i>
	Fire Buckets
10 metres and over but less than 25 metres	2 with lanyards
Less than 10 metres	1 with lanyard
	Fireman's Axe
25 metres and over	One.

VESSELS OF CLASS 2E

<i>Size</i>	<i>Requirements</i>
	Main Fire Pumps
1000 tons and over	Two fire pumps, complying with Appendix B, each capable of delivering simultaneously one jet of water from each of any two fire hydrants.
500 tons and over but less than 1000 tons	Two fire pumps, complying with Appendix B, each capable of delivering a jet of water from any fire hydrant.
less than 500 tons but 25 metres and over	One fire pump, complying with Appendix B, capable of delivering a jet of water from any fire hydrant.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
	Emergency Fire Pumps
	Emergency fire pumps shall comply with Appendix C and be provided as follows:
500 tons and over	If a fire in any one compartment could put all the fire pumps out of action a fixed independently driven power operated emergency fire pump, in a position outside that compartment, and provided that in any vessel of less than 1000 tons the emergency fire pump may be a portable power driven fire pump.
Less than 500 tons but 25 metres and over	If the main fire pump and its source of power and sea connection are not situated outside the compartment containing oil fired boilers or internal combustion type propelling machinery, a manually operated emergency fire pump in a position outside that compartment.
	Firemain, Water Service Pipes, Hydrants (other than hydrants in boiler and machinery spaces) and Jets of Water
1000 tons and over	Shall comply with Appendix D and provide two jets of water in accordance with sub-item 1.3 of that Appendix.
Less than 1000 tons but 15 metres and over	Shall comply with Appendix D and provide one jet of water in accordance with sub-item 1.4 of that Appendix.
	Hydrants in Boiler and Machinery Spaces
500 tons and over	Two hydrants together with hoses and fittings in each space containing oil-fired boiler or internal combustion type propelling machinery-one on the port side and one on the starboard side. Where there is access to the space by shaft tunnel one hydrant shall be provided in the end of the tunnel adjacent to that space and supply to the hydrant shall be from a source outside of the space and the supply line shall not pass through the space.
	Hoses
	Fire hoses together with their fittings shall comply with Appendix D and be provided as follows:
1000 tons and over	One for each 30 metres length of vessel, but in any case not less than five. The total length of the hoses shall be at least 60 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
Less than 1000 tons but 25 metres and over	Two, the total length of which shall be at least 50 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
15 metres and over but less than 25 metres	One hose.
	The hoses required above shall be in addition to any hoses required in the machinery spaces.

VESSELS OF CLASS 2E - continued

<i>Size</i>	<i>Requirement</i>
	<p>Fixed Fire Extinguishing Installation-Cargo Space</p>
2000 tons and over	<p>There shall be provided a fixed fire smothering installation complying with Appendix E which shall be so arranged as to protect every cargo space.</p> <p>Provided that in any tanker, a fixed installation discharging foam externally and through suitable mobile sprayers internally to the liquid cargo tanks complies with Appendix E it may be substituted for the fixed fire smothering gas installation required by the above.</p> <p>The Authority may exempt any vessel from the requirements to provide a fixed fire smothering installation in the cargo holds of a vessel, not being the tank of a tanker, if it is satisfied that--</p> <p style="padding-left: 40px;">The holds are provided with steel hatch covers and effective means of closing all ventilators and other openings to the holds, or</p> <p style="padding-left: 40px;">The vessel is constructed for, and employed solely in, the carriage of ore, coal, grain or such other cargo as the Authority may consider to be of equivalent low hazard; or</p> <p style="padding-left: 40px;">To require compliance would be unreasonable on account of the short duration of the voyages on which the vessel is engaged.</p> <p>Fixed Fire Extinguishing Installation-Machinery Space</p>
35 metres and over	<p>There shall be provided for the protection of any space containing:</p> <p>(a) any oil-fired boiler, oil fuel settling tank or oil fuel unit; or</p> <p>(b) internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes;</p> <p>one of the fixed fire extinguishing installations detailed in Appendix E.</p> <p><i>Note:</i> Vessels of 500 tons and over but less than 1000 tons may use steam in lieu of foam, water or gas.</p>
	<p>Non-Portable Foam and CO₂ Extinguishers</p>
500 tons and over	<p>(a) In each boiler room one foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity, if the number of burners therein is five or more. If the number of burners in the boiler room is less than five, there shall be provided for each burner therein one portable fire extinguisher suitable for extinguishing oil fires.</p> <p>However, in the case of a vessel of less than 1000 tons which is provided with a fixed fire steam smothering installation (in accordance with the requirements under Fixed Fire Extinguishing Installation) and steam for the installation is generated by water-tube boilers there shall be provided in each boiler room one foam fire extinguisher of 135 litres capacity or a carbon dioxide fire extinguisher of 45 kilograms capacity.</p> <p>(b) In any space containing internal combustion type machinery used for main propulsion or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes there shall be provided a foam fire extinguisher of 45 litres capacity or a CO₂ fire extinguisher of 15 kilograms capacity.</p>
	<p>Portable Fire Extinguishers</p>
	<p>Portable fire extinguishers shall comply with Appendix G and be provided as follows:</p>
500 tons and over	<p>(a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces. The number of extinguishers shall not be less than five on vessels of 1000 tons and over, and not less than three on vessels of 500 tons and over but less than 1000 tons.</p> <p>(b) One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.</p>

VESSELS OF CLASS 2E - continued

<i>Size</i>	<i>Requirements</i>
	<p>(c) In each space containing internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires.</p> <p>(d) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of any oil fuel installation. These shall be in addition to any furnished in lieu of a non-portable foam or CO₂ extinguisher.</p>
25 metres and over but less than 500 tons	<p>(a) A sufficient number to ensure that one less than 500 tons will be readily available for use in any part of the accommodation or service spaces, but not less than two.</p> <p>(b) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of an oil fuel installation.</p> <p>(c) In each unmanned machinery space which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires</p> <p>(d) In each space which is continually manned at sea and which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, and which is not provided with:</p> <p>(i) a foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity together with two portable fire extinguishers; or</p> <p>(ii) a fixed fire extinguishing installation complying with Appendix E together with two portable fire extinguishers- one for each 75 kW brake power or part thereof but not less than two nor more than seven. The extinguishers shall be suitable for extinguishing oil fires.</p>
15 metres and over but less than 25 metres	One readily available for use in the accommodation and service space.
10 metres and over but less than 25 metres	Two, suitable for extinguishing oil fires, for use in each space containing propelling machinery.
Less than 10 metres	One, suitable for extinguishing oil fires, for use in each space containing propelling machinery.
	Sand
	Each boiler firing space shall be provided with the following:
1000 tons and over	<p>(a) 0.25 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or</p> <p>(b) An additional portable fire extinguisher suitable for extinguishing oil fires.</p>
25 metres and over but less than 1000 tons	<p>(a) 0.15 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or</p> <p>(b) An additional portable fire extinguisher suitable for extinguishing oil fires.</p>

VESSELS OF CLASS 2E - continued

<i>Size</i>	<i>Requirements</i>
	Fire Buckets
10 metres and over but less than 25 metres	2 with lanyards
Less than 10 metres	1 with lanyard
	Firemen's Axe
25 metres and over	One.

VESSELS OF CLASS 3A

<i>Size</i>	<i>Requirements</i>
	Main Fire Pumps
1000 tons and over	Two fire pumps, complying with Appendix B, each capable of delivering simultaneously one jet of water from each of any two fire hydrants.
500 tons and over but less than 1000 tons	Two fire pumps, complying with Appendix B, each capable of delivering a jet of water from any fire hydrant.
less than 500 tons but 25 metres and over	One fire pump, complying with Appendix B, capable of delivering a jet of water from any fire hydrant.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
	Emergency Fire Pumps
	Emergency fire pumps shall comply with Appendix C and be provided as follows:
500 tons and over	If a fire in any one compartment could put all the fire pumps out of action a fixed independently driven power operated emergency fire pump, in a position outside that compartment, and provided that in any vessel of less than 1000 tons the emergency fire pump may be a portable power driven fire pump.
Less than 500 tons but 25 metres and over	If the main fire pump and its source of power and sea connection are not situated outside the compartment containing oil fired boilers or internal combustion type propelling machinery, a manually operated emergency fire pump in a position outside that compartment.
	Firemain, Water Service Pipes, Hydrants (other than hydrants in boiler and machinery spaces) and Jets of Water
1000 tons and over	Shall comply with Appendix D and provide two jets of water in accordance with sub-item 1.3 of that Appendix.
Less than 1000 tons but 15 metres and over	Shall comply with Appendix D and provide one jet of water in accordance with sub-item 1.4 of that Appendix.
	Hydrants in Boiler and Machinery Spaces
500 tons and over	Two hydrants together with hoses and fittings in each space containing oil-fired boiler or internal combustion type propelling machinery-one on the port side and one on the starboard side. Where there is access to the space by shaft tunnel one hydrant shall be provided in the end of the tunnel adjacent to that space and supply to the hydrant shall be from a source outside of the space and the supply line shall not pass through the space.
	Hoses
	Fire hoses together with their fittings shall comply with Appendix D and be provided as follows:
1000 tons and over	One for each 30 metres length of vessel, but in any case not less than five. The total length of the hoses shall be at least 60 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
Less than 1000 tons but 25 metres and over	Two, the total length of which shall be at least 50 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
15 metres and over but less than 25 metres	One hose.
	The hoses required above shall be in addition to any hoses required in the machinery spaces.

VESSELS OF CLASS 3A - continued

<i>Size</i>	<i>Requirement</i>
25 metres and over	Fixed Fire Extinguishing Installation-Machinery Space
	<p>There shall be provided for the protection of any space containing:</p> <ul style="list-style-type: none"> (a) any oil-fired boiler, oil fuel settling tank or oil fuel unit; or (b) internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes; <p>one of the fixed fire extinguishing installations detailed in Appendix E.</p> <p><i>Note:</i> Vessels of 500 tons and over but less than 1000 tons may use steam in lieu of foam, water or gas.</p>
12.5 metres and over but less than 25 metres	<p>A vessel fitted with oil fired boilers or internal combustion type machinery used for main propulsion and decked in the way of the machinery space shall be provided with a fixed fire extinguishing installation complying with Appendix F.</p> <p>There may be substituted for this installation a water spraying system supplied from a hand pump situated outside the machinery space which may be a hand pump otherwise required. The pump shall be connected by a fixed piping to a sufficient number of water spraying nozzles suitably sited in the machinery space and capable of extinguishing oil fires. When such a system is installed means shall also be provided for detecting the products of combustion prior to or resulting from an outbreak of fire in the machinery space.</p>
500 tons and over	Non-Portable Foam and CO₂ Extinguishers
	<ul style="list-style-type: none"> (a) In each boiler room one foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity, if the number of burners therein is five or more. If the number of burners in the boiler room is less than five, there shall be provided for each burner therein one portable fire extinguisher suitable for extinguishing oil fires. <ul style="list-style-type: none"> However, in the case of a vessel of less than 1000 tons which is provided with a fixed fire steam smothering installation (in accordance with the requirements under Fixed Fire Extinguishing Installation) and steam for the installation is generated by water-tube boilers there shall be provided in each boiler room one foam fire extinguisher of 135 litres capacity or a carbon dioxide fire extinguisher of 45 kilograms capacity. (b) In any space containing internal combustion type machinery used for main propulsion or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes there shall be provided a foam fire extinguisher of 45 litres capacity or a CO₂ fire extinguisher of 15 kilograms capacity. (c) There shall be provided in each space containing steam turbines or enclosed pressure lubricated steam engines used either for main propulsion, or having in the aggregate a total brake power of not less than 750kW for auxiliary purposes, foam fire extinguishers of 45 litres capacity or carbon dioxide fire extinguishers of 15 kilograms capacity. The extinguishers shall be of such number and so positioned as to enable foam or carbon dioxide to be directed on to any part of the pressure lubrication system and on to any part of the casings enclosing pressure lubricated parts of the turbines, engines or associated gearing if any. Provided that such extinguishers shall not be required if equivalent protection is provided in such spaces by a fixed fire extinguishing installation fitted in compliance with Appendix E.

VESSELS OF CLASS 3A - continued

<i>Size</i>	<i>Requirements</i>
Portable Fire Extinguishers	
Portable fire extinguishers shall comply with Appendix G and be provided as follows:	
500 tons and over	<p>(a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces. The number of extinguishers shall not be less than five on vessels of 1000 tons and over, and not less than three on vessels of 500 tons and over but less than 1000 tons.</p> <p>(b) One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.</p> <p>(c) In each space containing internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires.</p> <p>(d) In each space containing steam turbines or enclosed pressure lubricated steam engines used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space.</p> <p>The extinguishers shall be additional to any provided in compliance with (c) above. The extinguishers shall be suitable for extinguishing oil fires.</p> <p>(e) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of any oil fuel installation. These shall be in addition to any furnished in lieu of a non-portable foam or CO₂ extinguisher.</p>
25 metres and over but less than 500 tons	<p>(a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces, but not less than two.</p> <p>(b) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of an oil fuel installation.</p> <p>(c) In each unmanned machinery space which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space.</p> <p>The extinguishers shall be suitable for extinguishing oil fires.</p> <p>(d) In each space which is continually manned at sea and which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, and which is not provided with:</p> <p>(i) a foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity together with two portable fire extinguishers; or</p> <p>(ii) a fixed fire extinguishing installation complying with Appendix E together with two portable fire extinguishers-</p> <p>one for each 75 kW brake power or part thereof but not less than two nor more than seven.</p> <p>The extinguishers shall be suitable for extinguishing oil fires.</p>
15 metres and over but less than 25 metres	One readily available for use in the accommodation and service space.
Less than 25 metres	Two, suitable for extinguishing oil fires, for use in each space containing propelling machinery.

Sand

Each boiler firing space shall be provided with the following:

VESSELS OF CLASS 3A - continued

<i>Size</i>	<i>Requirements</i>
1000 tons and over	(a) 0.25 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
25 metres and over but less than 1000 tons	(a) 0.15 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
	Fire Smothering Blankets
25 metres and over	One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.
	Firemen's Outfits
	Firemen's Outfits shall comply with Appendix H and be provided as follows:
4000 tons and over	3 outfits
2500 tons and over but less than 4000 tons	2 outfits
500 tons and over but less than 2500 tons	1 outfit
	At least one outfit to include a breathing apparatus of the air hose type. If in any vessel which carries firemen's outfits containing only breathing apparatus of the air hose type, an air hose exceeding 35 metres in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery space, at least one breathing apparatus of the self-contained type shall be provided in addition.
	International Shore Connection
1000 tons and over	One complying with Appendix J
	Fire Buckets
Less than 25 metres	2 with lanyards
	Firemen's Axe
Less than 500 tons but 35 metres and over	One.

VESSELS OF CLASS 3B

<i>Size</i>	<i>Requirements</i>
	Main Fire Pumps
1000 tons and over	Two fire pumps, complying with Appendix B, each capable of delivering simultaneously one jet of water from each of any two fire hydrants.
500 tons and over but less than 1000 tons	Two fire pumps, complying with Appendix B, each capable of delivering a jet of water from any fire hydrant.
less than 500 tons but 25 metres and over	One fire pump, complying with Appendix B, capable of delivering a jet of water from any fire hydrant.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
	Emergency Fire Pumps
	Emergency fire pumps shall comply with Appendix C and be provided as follows:
500 tons and over	If a fire in any one compartment could put all the fire pumps out of action a fixed independently driven power operated emergency fire pump, in a position outside that compartment, and provided that in any vessel of less than 1000 tons the emergency fire pump may be a portable power driven fire pump.
Less than 500 tons but 25 metres and over	If the main fire pump and its source of power and sea connection are not situated outside the compartment containing oil fired boilers or internal combustion type propelling machinery, a manually operated emergency fire pump in a position outside that compartment.
	Firemain, Water Service Pipes, Hydrants (other than hydrants in boiler and machinery spaces) and Jets of Water
1000 tons and over	Shall comply with Appendix D and provide two jets of water in accordance with sub-item 1.3 of that Appendix.
Less than 1000 tons but 15 metres and over	Shall comply with Appendix D and provide one jet of water in accordance with sub-item 1.4 of that Appendix.
	Hydrants in Boiler and Machinery Spaces
500 tons and over	Two hydrants together with hoses and fittings in each space containing oil-fired boiler or internal combustion type propelling machinery-one on the port side and one on the starboard side. Where there is access to the space by shaft tunnel one hydrant shall be provided in the end of the tunnel adjacent to that space and supply to the hydrant shall be from a source outside of the space and the supply line shall not pass through the space.
	Hoses
	Fire hoses together with their fittings shall comply with Appendix D and be provided as follows:
1000 tons and over	One for each 30 metres length of vessel, but in any case not less than five. The total length of the hoses shall be at least 60 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
Less than 1000 tons but 25 metres and over	Two, the total length of which shall be at least 50 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
15 metres and over but less than 25 metres	One hose.
	The hoses required above shall be in addition to any hoses required in the machinery spaces.

VESSELS OF CLASS 3 B – continued

<i>Size</i>	<i>Requirement</i>
	Fixed Fire Extinguishing Installation-Machinery Space
25 metres and over	<p>There shall be provided for the protection of any space containing:</p> <ul style="list-style-type: none"> (a) any oil-fired boiler, oil fuel settling tank or oil fuel unit; or (b) internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes; <p>one of the fixed fire extinguishing installations detailed in Appendix E.</p> <p><i>Note:</i> Vessels of 500 tons and over but less than 1000 tons may use steam in lieu of foam, water or gas.</p>
12.5 metres and over but less than 25 metres	<p>A vessel fitted with oil fired boilers or internal combustion type machinery used for main propulsion and decked in the way of the machinery space shall be provided with a fixed fire extinguishing installation complying with Appendix F.</p> <p>There may be substituted for this installation a water spraying system supplied from a hand pump situated outside the machinery space which may be a hand pump otherwise required. The pump shall be connected by a fixed piping to a sufficient number of water spraying nozzles suitably sited in the machinery space and capable of extinguishing oil fires. When such a system is installed means shall also be provided for detecting the products of combustion prior to or resulting from an outbreak of fire in the machinery space.</p>
	Non-Portable Foam and CO₂ Extinguishers
500 tons and over	<ul style="list-style-type: none"> (a) In each boiler room one foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity, if the number of burners therein is five or more. If the number of burners in the boiler room is less than five, there shall be provided for each burner therein one portable fire extinguisher suitable for extinguishing oil fires. <ul style="list-style-type: none"> However, in the case of a vessel of less than 1000 tons which is provided with a fixed fire steam smothering installation (in accordance with the requirements under Fixed Fire Extinguishing Installation) and steam for the installation is generated by water-tube boilers there shall be provided in each boiler room one foam fire extinguisher of 135 litres capacity or a carbon dioxide fire extinguisher of 45 kilograms capacity. (b) In any space containing internal combustion type machinery used for main propulsion or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes there shall be provided a foam fire extinguisher of 45 litres capacity or a CO₂ fire extinguisher of 15 kilograms capacity. (c) There shall be provided in each space containing steam turbines or enclosed pressure lubricated steam engines used either for main propulsion, or having in the aggregate a total brake power of not less than 750kW for auxiliary purposes, foam fire extinguishers of 45 litres capacity or carbon dioxide fire extinguishers of 15 kilograms capacity. The extinguishers shall be of such number and so positioned as to enable foam or carbon dioxide to be directed on to any part of the pressure lubrication system and on to any part of the casings enclosing pressure lubricated parts of the turbines, engines or associated gearing if any. Provided that such extinguishers shall not be required if equivalent protection is provided in such spaces by a fixed fire extinguishing installation fitted in compliance with Appendix E.

VESSELS OF CLASS 3B – continued

<i>Size</i>	<i>Requirements</i>
Portable Fire Extinguishers	
Portable fire extinguishers shall comply with Appendix G and be provided as follows:	
500 tons and over	<ul style="list-style-type: none"> (a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces. The number of extinguishers shall not be less than five on vessels of 1000 tons and over, and not less than three on vessels of 500 tons and over but less than 1000 tons. (b) One in a galley where the overall deck area is less than 15 square metres and two in larger galleys. (c) In each space containing internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires. (d) In each space containing steam turbines or enclosed pressure lubricated steam engines used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be additional to any provided in compliance with (c) above. The extinguishers shall be suitable for extinguishing oil fires. (e) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of any oil fuel installation. These shall be in addition to any furnished in lieu of a non-portable foam or CO₂ extinguisher.
25 metres and over but less than 500 tons	<ul style="list-style-type: none"> (a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces, but not less than two. (b) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of an oil fuel installation. (c) In each unmanned machinery space which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires. (d) In each space which is continually manned at sea and which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, and which is not provided with: <ul style="list-style-type: none"> (i) a foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity together with two portable fire extinguishers; or (ii) a fixed fire extinguishing installation complying with Appendix E together with two portable fire extinguishers- <p>one for each 75 kW brake power or part thereof but not less than two nor more than seven.</p> <p>The extinguishers shall be suitable for extinguishing oil fires.</p>
15 metres and over but less than 25 metres	One readily available for use in the accommodation and service space.
Less than 25 metres	Two, suitable for extinguishing oil fires, for use in each space containing propelling machinery.

Sand

Each boiler firing space shall be provided with the following:

VESSELS OF CLASS 3B – continued

<i>Size</i>	<i>Requirements</i>
1000 tons and over	(a) 0.25 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
25 metres and over but less than 1000 tons	(a) 0.15 cubic metres of sand or other dry material suitable for quenching oil fires. A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
	Fire Smothering Blankets
25 metres and over	One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.
	Firemen's Outfits
	Firemen's Outfits shall comply with Appendix H and be provided as follows:
4000 tons and over	3 outfits
2500 tons and over but less than 4000 tons	2 outfits
500 tons and over but less than 2500 tons	1 outfit
	At least one of the outfits shall include a breathing apparatus of the air hose type. If, in any vessel which carries firemen's outfits containing only breathing apparatus of the air hose type, an air hose exceeding 35 metres in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery space, at least one breathing apparatus of the self-contained type shall be provided in addition.
	International Shore Connection
1000 tons and over	One complying with Appendix J
	Fire Buckets
Less than 25 metres	2 with lanyards
	Firemen's Axe
Less than 500 tons but 35 metres and over	One.

VESSELS OF CLASS 3C

<i>Size</i>	<i>Requirements</i>
	Main Fire Pumps
25 metres and over	One fire pump, complying with Appendix B, capable of delivering a jet of water from any fire hydrant.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
	Emergency Fire Pumps
25 metres and over	If the main fire pump and its source of power and sea connection are not situated outside the compartment containing oil fired boilers or internal combustion type propelling machinery there shall be provided in a position outside that compartment a manually operated emergency fire pump complying with Appendix C.
	Firemain, Water Service Pipes, Hydrants (other than hydrants in boiler and machinery spaces) and Jets of Water
15 metres and over	Shall comply with Appendix D and provide one jet of water in accordance with sub-item 1.4 of that Appendix.
	Hoses
	Fire hoses together with their fittings shall comply with Appendix D and be provided as follows:
25 metres and over	Two, the total length of which shall be at least 50 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
15 metres and over but less than 25 metres	One hose.
	Fixed Fire Extinguishing Installations-Machinery Space
25 metres and over	There shall be provided for the protection of any space containing: <ul style="list-style-type: none"> (a) any oil-fired boiler, oil fuel settling tank or oil fuel unit; or (b) internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power of not less than 750 kW for auxiliary purposes; one of the fixed fire extinguishing installations detailed in Appendix E. <i>Note:</i> Vessels of 500 tons and over but less than 1000 tons may use steam in lieu of foam, water or gas.
12.5 metres and over but less than 25 metres	A vessel fitted with oil fired boilers or internal combustion type machinery used for main propulsion and decked in the way of the machinery space shall be provided with a fixed fire extinguishing installation complying with Appendix F. There may be substituted for this installation a water spraying system supplied from a hand pump situated outside the machinery space which may be a hand pump otherwise required. The pump shall be connected by a fixed piping to a sufficient number of water spraying nozzles suitably sited in the machinery space and capable of extinguishing oil fires. When such a system is installed means shall also be provided for detecting the products of combustion prior to or resulting from an outbreak of fire in the machinery space.

VESSELS OF CLASS 3C – continued

<i>Size</i>	<i>Requirements</i>
Portable Fire Extinguishers	
Portable fire extinguishers shall comply with Appendix G and be provided as follows:	
25 metres and over	<ul style="list-style-type: none"> (a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces, but not less than two. (b) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of an oil fuel installation. (c) In each unmanned machinery space which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires. (d) In each space which is continually manned at sea and which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, and which is not provided with: <ul style="list-style-type: none"> (i) a foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity together with two portable fire extinguishers; or (ii) a fixed fire extinguishing installation complying with Appendix E together with two portable fire extinguishers- one for each 75 kW brake power or part thereof but not less than two nor more than seven. <p style="margin-left: 40px;">The extinguishers shall be suitable for extinguishing oil fires.</p>
15 metres and over but less than 25 metres	One readily available for use in the accommodation and service space.
10 metres and over but less than 25 metres	Two, suitable for extinguishing oil fires, for use in each space containing propelling machinery.
Less than 10 metres	One, suitable for extinguishing oil fires, for use in each space containing propelling machinery.
Sand	
Each boiler firing space shall be provided with the following:	
25 metres and over	<ul style="list-style-type: none"> (a) 0.15 cubic metres of sand or other dry material suitable for quenching oil fires A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
Fire Smothering Blankets	
25 metres and over	One in a galley where the overall deck area is less than 15 square metres and two in larger galleys.
Fire Buckets	
10 metres and over but less than 25 metres	2 with lanyards
Less than 10 metres	1 with lanyard
Firemen's Axe	
35 metres and over	One.

VESSELS OF CLASS 3D

<i>Size</i>	<i>Requirements</i>
	Main Fire Pumps
25 metres and over	One fire pump, complying with Appendix B, capable of delivering a jet of water from any fire hydrant.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
	Emergency Fire Pumps
25 metres and over	If the main fire pump and its source of power and sea connection are not situated outside the compartment containing oil fired boilers or internal combustion type propelling machinery there shall be provided in a position outside that compartment a manually operated emergency fire pump complying with Appendix C.
	Firemain, Water Service Pipes, Hydrants (other than hydrants in boiler and machinery spaces) and Jets of Water
15 metres and over	Shall comply with Appendix D and provide one jet of water in accordance with sub-item 1.4 of that Appendix.
	Hoses
	Fire hoses together with their fittings shall comply with Appendix D and be provided as follows:
25 metres and over	Two, the total length of which shall be at least 50 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
15 metres and over but less than 25 metres	One hose.
	Fixed Fire Extinguishing Installations-Machinery Space
25 metres and over	A vessel fitted with oil fired boilers or internal combustion type machinery used for main propulsion and decked in the way of the machinery space shall be provided with a fixed fire extinguishing installation complying with Appendix F. There may be substituted for this installation a water spraying system supplied from a hand pump situated outside the machinery space which may be a hand pump otherwise required. The pump shall be connected by a fixed piping to a sufficient number of water spraying nozzles suitably sited in the machinery space and capable of extinguishing oil fires. When such a system is installed means shall also be provided for detecting the products of combustion prior to or resulting from an outbreak of fire in the machinery space.
	Portable Fire Extinguishers
	Portable fire extinguishers shall comply with Appendix G and be provided as follows:
25 metres and over	<ul style="list-style-type: none"> (a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces, but not less than two. (b) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of an oil fuel installation. (c) In each unmanned machinery space which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires. (d) In each space which is continually manned at sea and which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, and which is not provided with: <ul style="list-style-type: none"> (i) a foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity together with two portable fire extinguishers; or

VESSELS OF CLASS 3D - continued

<i>Size</i>	<i>Requirements</i>
	(ii) a fixed fire extinguishing installation complying with Appendix E together with two portable fire extinguishers- one for each 75 kW brake power or part thereof but not less than two nor more than seven. The extinguishers shall be suitable for extinguishing oil fires.
15 metres and over but less than 25 metres	One readily available for use in the accommodation and service space.
10 metres and over but less than 25 metres	Two, suitable for extinguishing oil fires, for use in each space containing propelling machinery.
Less than 10 metres	One, suitable for extinguishing oil fires, for use in each space containing propelling machinery.
	Sand
	Each boiler firing space shall be provided with the following:
25 metres and over	(a) 0.15 cubic metres of sand or other dry material suitable for quenching oil fires A scoop shall be provided for distribution; or (b) An additional portable fire extinguisher suitable for extinguishing oil fires.
	Fire Buckets
10 metres and over but less than 25 metres	2 with lanyards
Less than 10 metres	1 with lanyard
	Firemen's Axe
35 metres and over	One.

VESSELS OF CLASS 3E

<i>Size</i>	<i>Requirements</i>
	Main Fire Pumps
25 metres and over	One fire pump, complying with Appendix B, capable of delivering a jet of water from any fire hydrant.
15 metres and over but less than 25 metres	One power driven fire pump capable of delivering one jet of water from any hydrant, hose or nozzle with which the vessel is supplied in compliance with this Section whilst maintaining a pressure of 150 kilopascals.
	Emergency Fire Pumps
25 metres and over	If the main fire pump and its source of power and sea connection are not situated outside the compartment containing oil fired boilers or internal combustion type propelling machinery there shall be provided in a position outside that compartment a manually operated emergency fire pump complying with Appendix C.
	Firemain, Water Service Pipes, Hydrants (other than hydrants in boiler and machinery spaces) and Jets of Water
15 metres and over	Shall comply with Appendix D and provide one jet of water in accordance with sub-item 1.4 of that Appendix.
	Hoses
	Fire hoses together with their fittings shall comply with Appendix D and be provided as follows:
25 metres and over	Two, the total length of which shall be at least 50 per cent of the length of the vessel. A spare hose shall be provided in addition to such hoses.
15 metres and over but less than 25 metres	One hose.
	Portable Fire Extinguishers
	Portable fire extinguishers shall comply with Appendix G and be provided as follows:
25 metres and over	<ul style="list-style-type: none"> (a) A sufficient number to ensure that one will be readily available for use in any part of the accommodation or service spaces, but not less than two. (b) Two, suitable for extinguishing oil fires, in each firing space and each space containing any part of an oil fuel installation. (c) In each unmanned machinery space which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, one for each 750 kW brake power or part thereof. Two but not more than six shall be provided in any such space. The extinguishers shall be suitable for extinguishing oil fires. (d) In each space which is continually manned at sea and which contains internal combustion type machinery used for main propulsion, or having in the aggregate a total brake power not less than 750 kW for auxiliary purposes, and which is not provided with: <ul style="list-style-type: none"> (i) a foam fire extinguisher of 45 litres capacity or a carbon dioxide fire extinguisher of 15 kilograms capacity together with two portable fire extinguishers; or (ii) a fixed fire extinguishing installation complying with Appendix E together with two portable fire extinguishers- one for each 75 kW brake power or part thereof but not less than two nor more than seven. <p>The extinguishers shall be suitable for extinguishing oil fires.</p>
15 metres and over but less than 25 metres	One readily available for use in the accommodation and service space.
10 metres and over but less than 25 metres	Two, suitable for extinguishing oil fires, for use in each space containing propelling machinery.

VESSELS OF CLASS 3E - continued

<i>Size</i>	<i>Requirements</i>
Less than 10 metres	One, suitable for extinguishing oil fires, for use in each space containing propelling machinery.
	Sand
	Each boiler firing space shall be provided with the following:
25 metres and over	(a) 0.15 cubic metres of sand or other dry material suitable for quenching oil fires A scoop shall be provided for distribution; or
	(b) An additional portable fire extinguisher suitable for extinguishing oil fires.
	Fire Buckets
10 metres and over but less than 25 metres	2 with lanyards
Less than 10 metres	1 with lanyard
	Firemen's Axe
35 metres and over	One.

PART 3 – TYPES PF FIRE FIGHTING EQUIPMENT

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APPENDIX A**FIRE DETECTION SYSTEM**

1. Every fire detection system fitted in compliance with this Section shall be capable of automatically indicating the presence of smoke or fire and its location. The indicators shall be centralised either on the navigating bridge or at other control stations which are provided with direct communication with the navigating bridge, provided that the Authority may in any vessel permit the indicators to be distributed among several stations if they are satisfied that such arrangements are at least as effective as if the indicators were so centralised.
2. In any passenger vessel, electrical equipment used in the operation of any fire detection system fitted in compliance with this Section shall be capable of being supplied from two sources of electric power, one of which shall be an emergency source of power.
3. The indicating system of any fire detection system fitted in compliance with this Section shall operate both audible and visible alarms at the stations referred to in item 1.
4. Exemptions: The Authority may exempt any vessel from the requirements of this Appendix if they are satisfied that to require compliance therewith would be unreasonable on account of the short duration of the voyages on which the vessel is engaged.

APPENDIX B**POWER OPERATED FIRE PUMPS**

1. Each pump required under this Section shall be capable of delivering at least one jet simultaneously from each of any two hydrants, or one jet from any hydrant, whichever the case may be, through the hoses and nozzles provided in the vessel and shall comply with the requirements of items 2 and 3 of this Appendix.
2. In a passenger vessel to which this Section applies which is required by this Section to be provided with fire pumps operated by power, such fire pumps (other than any emergency fire pump) shall together be capable of delivering for fire fighting purposes a quantity of water, under the conditions and at the pressure, specified in Appendix D of this Section of not less than two thirds of the quantity required to be dealt with by the bilge pumps.
3. In a vessel, other than a passenger vessel, to which this Section applies which is required by this Section to be provided with fire pumps operated by power, such fire pumps (other than any

emergency fire pump) shall together be capable of delivering for fire fighting purposes a quantity of water under the conditions and at the pressure specified in Appendix D which shall not be less than the quantity obtained from the following formula:

$$\text{Quantity of water in tonnes per hour} = Cd^2$$

Where:

- (a) $C = 7.66 \times 10.3$ for vessels required to be provided with more than one fire pump (excluding any emergency fire pump) and $C = 3.83 \times 10.3$ for vessels required to be provided with only one fire pump, and
- (b) $d = 25 + 1.68 \sqrt{L(B + D)}$ to the nearest millimetre where:
 - L = length of the vessel in metres
 - B = greatest moulded breadth of the vessel in metres
 - D = moulded depth of vessel to bulkhead deck in metres.

Provided that in no cargo vessel need the total required capacity of the fire pumps exceed 140 cubic metres per hour.

- 4. Every fire pump required by this Section to be operated by power shall, except as expressly provided otherwise, be operated by a means other than the vessel's main engines. Fire pumps complying with this Appendix may be sanitary, ballast, bilge or general service pumps provided that they are not normally used for pumping oil and that if they are subject to occasional duty for the transfer or pumping of oil, suitable change-over arrangements are fitted and operating instructions are conspicuously displayed at the change-over position.
- 4.1 In a vessel to which this Section applies which is required to be provided with more than one fire pump operated by power (other than any emergency pump), every such fire pump shall have a capacity of not less than 80 per cent of the total capacity of the fire pumps required by items 2 and 3 divided by the number of fire pumps required by this Section provided that when more fire pumps operated by power than are required by this Section are provided in any vessel, the Authority may permit the capacity of any such additional fire pumps to be less than 80 per cent.
- 4.2 Every fire pump required by this Section which is operated by power shall be capable of producing from any fire hydrant or hydrants in the vessel at least the minimum number of jets of water as appropriate to the size and class of vessel, while maintaining the pressure required by Appendix D.
- 5. Relief valves shall be provided in conjunction with all fire pumps if the pumps are capable of developing a pressure exceeding the design pressure of the fire main, water service pipes, hydrants and hoses. Such valves shall be so placed and adjusted as to prevent excessive pressure in any part of the firemain system.
- 6. Every centrifugal pump which is connected to the firemain shall be fitted with a non-return valve.

APPENDIX C

EMERGENCY FIRE PUMPS

- 1. **A Fixed Independently Driven Power Operated Emergency Fire Pump provided in compliance with this Section for:**
 - (a) Class 1A vessels of 25 metres in length and over;
 - (b) Class 1B vessels of 25 metres in length and over;
 - (c) Class 2 vessels of 1000 tons and over;
 - (d) Class 3A vessels of 1000 tons and over; and
 - (e) Class 3B vessels of 1000 tons and over

shall comply with the following:

 - 1.1 In every vessel of Class 1A or 1B the pump shall be situated in a position abaft the collision bulkhead.
 - 1.2 The pump, its source of power and controls shall not be rendered inoperative, or inaccessible by a fire in the machinery space. If installed on deck, the pump shall be protected against damage and deterioration from the weather. The sea suction valve, suction pipeline and delivery pipeline shall not be located in or pass through the machinery space housing the main fire pumps.

The pump shall be capable of producing at least two jets of water from any two hydrants and hoses through nozzles which shall comply with Appendix D of this Section, while simultaneously maintaining a pressure of at least 200 kilopascals at any hydrant in the vessel.

2. Emergency Fire Pumps for vessels other than those referred to in item 1 of this Appendix.

2.1 The emergency fire pump shall be:

2.1.1 a fixed independently driven power operated pump. The sea suction valve, suction pipeline, and delivery pipeline shall not be located in or pass through the machinery space housing the main fire pump. The pump shall be capable of producing at least one jet of water from any hydrant, hose and nozzle with which the vessel is supplied in compliance with this Section while maintaining a pressure of at least 200 kilopascals at any hydrant in the vessel;

2.1.2 a portable independently driven power operated pump. The sea suction shall be by means of a portable hose of such length and so fitted and weighted that under all conditions of loading and trim of the vessel, and under weather conditions liable to be encountered in service, the suction end of the hose will remain submerged. The material of the suction hose shall be suitable for use in a sea water environment and the construction shall be such that the hose will not collapse under the effect of the pump suction. The suction hose and its connections shall be of sufficient strength to withstand any forces imposed when the pump is operating under any conditions likely to be encountered in service. The unit shall be of robust construction, designed for pumping sea water and for operation in a marine environment. The prime mover shall be a compression ignition engine and the fuel tank shall have a capacity sufficient for a minimum of 3 hours operation at full load. The complete unit shall be portable and be capable of being handled by two persons. The pump shall be self priming and the strength of construction and fitting shall be sufficient to withstand any forces which may be imposed when the pump is operating. The pump shall be stowed in a position where it is readily available for use. The pump shall be capable of producing at least one jet of water from any hose and nozzle with which the vessel is supplied, in compliance with this Section while maintaining a pressure of at least 200 kilopascals at the pump outlet;

2.1.3 a fixed manually operated pump with a fixed sea suction line. The sea suction valve, suction pipeline and delivery pipeline shall not be located in or pass through the machinery space housing the main fire pumps. The unit shall be of robust construction, designed for pumping sea water and for operation in a marine environment. It shall be full rotary, horizontal reciprocating or diaphragm type and shall be capable of delivering the required jet of water when operating at not more than 60 turns per minute in the case of a rotary pump, 80 single strokes per minute in the case of a double acting horizontal reciprocating or diaphragm pump, or 60 double strokes per minute in the case of a single acting horizontal reciprocating or diaphragm pump. When fitted in the vessel, the pump shall be capable of delivering the required jet of water from any fire hose and nozzle with which the vessel is furnished, when the hose and nozzle are coupled to any deck fire hydrant which may discharge water delivered by that pump; or

2.1.4 a fixed or portable manually operated pump with a portable sea suction line. The sea suction shall be by means of a portable hose of such length and so fitted and weighted that under all conditions of loading and trim of the vessel, and under weather conditions liable to be encountered in service the suction end of the hose will remain submerged. The material of the suction hose shall be suitable for use in a sea water environment and the construction shall be such that the hose will not be collapsed under the effect of the pump suction. The suction hose and its connections shall be of sufficient strength to withstand any forces imposed when the pump is operating under any conditions likely to be encountered in service. The unit shall be of robust construction, designed for pumping sea water and for operation in a marine environment. It shall be full rotary, horizontal reciprocating or diaphragm type and shall be capable of delivering the required jet of water when operating at not more than 60 turns per minute in the case of a rotary pump, 80 single strokes per minute in the case of double acting horizontal reciprocating or diaphragm pump, or 60 double strokes per minute in the case of a single acting horizontal reciprocating or diaphragm pump. When fitted in the vessel the pump shall be capable of delivering the required jet of water from any fire hose and nozzle with which the vessel is furnished, when the hose and nozzle are coupled to any deck fire hydrant which may discharge water delivered by that pump, provided that the nozzle of any hose for use with a manually operated pump shall have a diameter of 9.5 millimetres and reference to a required jet of water in paragraph 2.1.3 and this paragraph shall mean a jet delivered from the 9.5 millimetre diameter nozzle held horizontally three feet above the deck, the discharged water striking the deck at a distance of not less than 6 metres from the nozzle.

APPENDIX D**FIREMAINS, WATER SERVICE PIPES, HYDRANTS, HOSES AND NOZZLES****1. Firemains, water service pipes and hydrants.**

1.1 In every vessel which is required by this Section to be provided with fire pumps operated by power, the diameter of the firemain and of the water service pipes connecting the hydrants hereto shall be sufficient for the effective distribution of the maximum discharge required by this Section from-

1.1.1 where only one pump is required that pump;

1.1.2 where two such pumps are so required, both pumps operating simultaneously; or

1.1.3 where more than two such pumps are so required, the two largest of such pumps operating simultaneously,

provided that in any vessel other than a passenger vessel the diameter of the firemain and of the water service pipes shall be required to be sufficient only for the discharge of 140 cubic metres per hour.

1.2 Where the fire pumps required by this Section are discharging the quantity of water required by sub-item 1.1 through adjacent fire hydrants in any part of the vessel to which are coupled fire hoses fitted with nozzles of sizes specified in item 2 of this Appendix the following minimum pressure shall be capable of being maintained at any hydrant;

1.2.1 in any passenger vessel

(a) of 4000 tons and over - 310 kilopascals; or

(b) of 1000 tons and over but less than 4000 tons - 275 kilopascals; or

(c) of less than 1000 tons-200 kilopascals.

1.2.2 in any vessel other than a passenger vessel

(a) of 6000 tons and over-275 kilopascals; or

(b) of 1000 tons and over but less than 6000 tons-255 kilopascals; or

(c) of less than 1000 tons-200 kilopascals.

1.3 Where any vessel is required by this Section to provide two jets of water under the conditions required by this Section, hydrants sufficient in number shall be so positioned as to enable at least two jets of water not emanating from the same hydrant, one of which shall be from a single length of hose, to reach any part of the vessel normally accessible to the passengers or crew while the vessel is being navigated, and to any store room and any part of any cargo space when empty.

1.4 Where any vessel is required by this Section to provide one jet of water under the conditions required by this Section, hydrants sufficient in number shall be so positioned as to enable one jet of water from a single length of hose to reach any part of the vessel normally accessible to the passengers or crew while the vessel is being navigated, and any store room and any part of any cargo space when empty.

1.5 The firemain shall have no connections other than those necessary for fire-fighting and washing down.

1.6 Materials readily rendered ineffective by heat shall not be used for firemains unless adequately protected. The pipes and fire hydrants shall be so placed that the fire hoses may be easily coupled to them. In vessels which may carry deck cargo, the fire hydrants shall be so placed that they are always readily accessible and the pipes shall be so arranged as far as practicable to avoid risk of damage by such cargo. Unless there is provided one fire hose and nozzle for each fire hydrant in the vessel there shall be complete interchangeability of fire hose couplings and nozzles.

1.7 Valves of the screw lift type or cocks shall be fitted in such positions on the pipes that any of the fire hoses may be removed while the fire pumps are at work.

1.8 The waterpipes shall not be made of cast iron and if made of iron or steel shall be galvanised.

1.9 Where wash deck lines are not self draining, suitable drain cocks shall be fitted to avoid damage by frost.

1.10 When a fire pump required by this Section is delivering water through one of the hoses and nozzles provided the pressure at any hydrant in the vessel shall not exceed 690 kilopascals.

2. Hoses and nozzles

- 2.1 Fire hoses provided in compliance with this Section shall not exceed 18 metres in length except that in vessels having a breadth of 27 metres or more the length of the fire hoses for exterior locations and for cargo spaces shall not exceed 27 metres in length. The fire hoses shall be provided with couplings, branch pipes, plain nozzles and other necessary fittings. Fire hoses furnished in boiler and machinery spaces shall in addition be provided with a spray nozzle.
- 2.2 Fire hoses provided to a Class 1 vessel of 25 metres and over; a Class 2 vessel of 25 metres and over and a Class 3 vessel of 35 metres and over shall be made of closely woven flax, canvas or other suitable material.
- 2.3 Fire hoses provided to a Class 1 vessel of less than 25 metres, a Class 2 vessel of less than 25 metres and a Class 3 vessel of less than 35 metres shall have a minimum internal diameter of 19 mm which is suitable for a working pressure up to and including 1035 kilopascals.
- 2.4 Every fire hose provided in compliance with this Section, together with the tools and fittings necessary for its use, shall be kept in a conspicuous position near the hydrants or connections with which it is intended to be used.
- 2.5 Except in vessels of Classes 1C, 1D, 1E, 2C, 2D, 2E, 3A, 3B, 3C, 3D and 3E, fire hoses provided in compliance with this Section shall not be used for any purpose other than extinguishing fire or testing with fire appliances.
 - 2.5.1 Every vessel which is required by this Section to be provided with fire pumps operated by power shall be provided with nozzles of 12 mm, 16 mm or 19 mm in diameter or as near thereto in diameter as possible.
 - 2.5.2 For machinery spaces and exterior locations, the diameter of the nozzles shall be such as to obtain the maximum possible discharge from the minimum number of jets of water and at the pressure required by this Appendix from the smallest fire pump permitted by sub-item 1.3 of this Appendix; provided that the diameter of the nozzles shall not be required to be greater than 19 mm.
 - 2.5.3 For accommodation and service spaces the diameter of the nozzles shall not be required to be greater than 12 mm.
 - 2.5.4 Every spray nozzle provided in compliance with this Section shall be capable of producing a water spray suitable for extinguishing oil fires and shall be provided in addition to any plain nozzle required by sub-item 2.1; provided that a dual-purpose nozzle capable of producing alternately such a spray and a plain water jet may be provided in substitution. Every spray nozzle provided shall be capable of being fitted to every hose.

APPENDIX E

FIXED FIRE EXTINGUISHING INSTALLATIONS

This Appendix applies to every fixed fire extinguishing installation fitted in compliance with this Section. An Authority may accept the design of a fixed fire extinguishing system which has been approved by a classification society or a government authority as a system complying with this Appendix.

(Amendment dated 15 August 1995)

1. General

- 1.1 Where an unmanned machinery space is required by this Section to be fitted with a fixed fire extinguishing installation complying with this Appendix, the space shall be fitted with means for detecting the products of combustion prior to or resulting from an outbreak of fire in the space.
- 1.2 No part of the control, storage or generating arrangement of any fixed fire extinguishing installation shall be fitted forward of the collision bulkhead in any passenger vessel.
- 1.3 Every fixed fire extinguishing installation shall be so arranged that a fire in any of the spaces it protects will not render the controls inaccessible or put the installation out of action.
- 1.4 If the engine and boiler rooms are not entirely separated from each other by a bulkhead, or if the fuel oil can drain from the boiler room into the engine room, the combined engine and boiler rooms shall for the purpose of this Appendix be regarded as a single space.
- 1.5 Operating instructions in clear and permanent lettering shall be affixed to every fixed fire extinguishing installation or in a position adjacent thereto.
- 1.6 Automatic means shall be provided for giving audible warning to persons within the space when fire smothering gas of a manually operated system is about to be released into any working space. Where

an emergency power system is required to be fitted then the audible alarm shall be connected to both power systems.

2. Fixed Fire Smothering Gas or Steam Smothering Installations

2.1 General

2.1.1 In every such installation provided for the injection of gas or steam into machinery or cargo spaces for fire extinguishing purposes, the pipes for conveying the gas or steam shall be provided with control valves or cocks, which shall be so placed that they will be easily accessible and not readily cut off from use by an outbreak of fire. Such control valves or cocks shall be permanently marked to indicate clearly the compartments to which the pipes are led. Suitable provision shall be made to prevent inadvertent admission of the gas or steam to any compartment. Where cargo spaces fitted with a gas or steam smothering system for fire protection are used as passenger spaces, the smothering gas or steam pipe connection shall be blanked during service as a passenger space.

2.1.2 The piping shall be so arranged as to provide effective distribution of fire smothering gas or steam. Where steam is used in any hold exceeding 18 metres in length there shall be at least two pipes, one of which shall be fitted in the forward part and one in the after part of the hold. Except in tankers and vessels used for the conveyance of coal, pipes for conveying steam shall be fitted with outlets as low as practicable in the space which they serve and as nearly as possible to the centre line of the space.

2.1.3 In tankers the piping shall be so arranged that the steam or fire smothering gas will be distributed over the surface of the cargo.

2.1.4 Gas cylinder storage rooms shall be situated in safe positions where there will be no risk to anyone from leakage and otherwise be to the satisfaction of the Authority. Readily accessible means to rooms shall be provided - where practicable these shall be from the open deck and in any case be independent of the protected space. Access doors shall be gas tight and bulkheads and decks which form the boundaries of such rooms shall be gas tight and adequately insulated. The rooms shall be dry, well lighted and effectively ventilated.

The gas cylinders shall be accessible, effectively secured and must not be exposed to corrosion or subjected to a temperature exceeding 60°C.

2.2 Carbon Dioxide

2.2.1 When carbon dioxide is used as the extinguishing medium in cargo spaces, the quantity of gas available shall be sufficient to give a minimum volume of free gas equal to 30 per cent of the gross volume of the largest cargo compartment in the vessel which is capable of being sealed.

When carbon dioxide is used as an extinguishing medium for spaces containing boilers or machinery, the quantity of gas carried shall be sufficient to give a minimum quantity of free gas equal to the larger of the following quantities, either:

2.2.1.1 40 per cent of the gross volume of the largest space containing boilers or machinery, such volume being measured up to the level at which the horizontal area of the casing is 40 per cent or less of the gross area of such space; or

2.2.1.2 35 per cent of the gross volume of the largest space containing boilers or machinery, including the casing, provided that the aforesaid percentages may be reduced to 35 per cent and 30 per cent respectively for vessels of less than 2000 tons, not being passenger vessels and provided that if two or more spaces containing boilers or machinery are not entirely separate they shall for the purposes of this sub-item be considered as forming one compartment.

2.2.1.3 In calculating the gross volume of a machinery space in a motor vessel in which a main engine starting air tank is fitted there should be added to the volume of the space a volume equivalent to the volume of air at atmospheric pressure which may be released into the machinery space from a relief valve of fusible plug on that tank.

2.2.1.4 When carbon dioxide is used as the extinguishing medium both for cargo spaces and for spaces containing boilers or machinery, the quantity of gas shall not be required to be more than the maximum required either for the largest cargo compartment or machinery space.

2.2.1.5 For the purpose of this sub-item the volume of gas shall be calculated at 0.56 cubic metres to the kilogram.

2.2.1.6 When carbon dioxide is used as the extinguishing medium for any space containing boilers or machinery, the fixed piping system shall be such that 85 per cent of the gas required to provide the concentration referred to in sub-paragraphs 2.2.1.1 and 2.2.1.2 when applied to the space concerned, can be discharged into that space within two minutes.

- 2.3 Bromochlorodifluoromethane (Halon 1211) or Bromotrifluoromethane (Halon 1301)
- 2.3.1 When these gases are used as an extinguishing medium for fixed installations in spaces containing boilers or machinery, the quantity of gas carried shall be sufficient to give a minimum quantity of free gas equal to 5.5 percent of the gross volume of the largest space containing machinery including the casing.
- 2.3.2 For the purpose of this sub-item the volume of Halon 1211 shall be calculated at 0.14 cubic metres to the kilogram and Halon 1301 at 0.16 cubic metres to the kilogram.
- 2.3.3 When these gases are used as the extinguishing media for any space containing boilers or machinery, the fixed piping system shall be such that the gas required to provide the concentration referred to in paragraph 2.3.1 when applied to the space concerned, can be discharged into that space within ten seconds.
- 2.4 Steam
- When steam is used as the extinguishing medium in cargo spaces, the boiler or boilers available for supplying steam shall have an evaporation of at least 1 kilogram for each 0.75 cubic metres of the gross volume of the largest cargo compartment. The arrangement shall be such that steam will be available immediately and will not be dependent on the lighting of boilers and that it can be supplied continuously until the end of the voyage in the quantity required by this sub-item, in addition to any steam necessary for the normal requirements of the vessel including propulsion and that provision is made for extra feed water necessary to meet this requirement.
- 2.5 Inert Gas
- When a system producing inert gas is used to provide smothering gas in a fixed fire smothering installation for cargo spaces, it shall be capable of producing hourly a volume of free gas at least equal to 25% of the gross volume of the largest compartment protected in this way for a period of 72 hours.

3. Fixed Foam Fire Extinguishing Installation

- 3.1 Every fixed foam fire extinguishing installation fitted in compliance with this Section shall be capable of discharging through fixed discharge outlets in not more than 5 minutes, a quantity of foam sufficient to cover to a depth of 150 millimetres the largest single area over which oil fuel is liable to spread. Such installation shall be capable of generating foam suitable for extinguishing oil fires and means shall be provided for the effective distribution of the foam through a permanent system of piping and control valves or cocks to discharge outlets, and for the foam to be effectively directed by fixed sprayers on other main oil fire hazards in the protected space either simultaneously or separately. Such installation shall include mobile sprayers ready for immediate use in the firing area of the boiler and in the vicinity of the oil fuel unit.
- 3.2 Every fixed foam fire extinguishing installation fitted in lieu of a fixed fire smothering gas installation required in this Section to be provided in the oil cargo spaces of any tanker shall be capable of distributing on the decks over the oil cargo tanks through fixed discharge outlets in not more than 15 minutes a quantity of foam sufficient to cover to a depth of at least 50 millimetres the whole of the tank deck area. Such installation shall be capable of generating foam suitable for extinguishing oil fires and means shall be provided for the effective distribution of the foam through a permanent system of piping and control valves or cocks to discharge outlets. There shall be sufficient mobile foam sprayers capable of being connected to the installation whereby foam can be directed into any tank.
- For the purpose of this sub-item 'tank deck area' means an area equivalent to the extreme length of the cargo tanks multiplied by the breadth of the vessel.

4. Fixed Pressure Water Spraying System

- 4.1 Every fixed pressure water spraying system fitted in compliance with this Section shall be provided with a pump, piping system, control valves and spraying nozzles. On the discharge side of the control valves the distribution system shall be of the dry pipe type.
- 4.2 The spraying nozzles shall be of such a type, sufficient in number and so arranged as to ensure distribution of water spraying such as will effectively extinguish oil on fire in the spaces protected thereby. Spraying nozzles shall be fitted above bilges, tank tops and other areas over which oil fuel is liable to spread and above other main fire hazards in the spaces to be protected.

Application rates for particular fire risks are listed in Table 4.2

Table 4.2

Fire risk	Minimum application rate in litres per metre ² per minute
Boiler fronts or roof firing areas oil fuel units, centrifugal separators oil fuel purifiers and clarifiers	20
Hot oil fuel pipes near exhaust pipes or similar heated surfaces on main or auxiliary diesel engines	10
Tank top area, oil tanks not forming part of the vessel's structure	5

- 4.3 The water spraying system may be divided into sections and shall be controlled from distribution manifolds, the valves of which shall be capable of being operated from easily accessible positions outside the spaces to be protected and which will not be readily cut off by an outbreak of fire.
- 4.4 The water spraying system shall:
- (a) be kept charged up to the distribution manifold at the necessary pressure and the pump supplying water for the system shall be automatically put into action by a pressure drop in the system; or
 - (b) be arranged such that the pump supplying water for the system is capable of being started at each distribution control valve operating position.
- 4.5 The pump shall be capable of supplying water at the necessary pressure simultaneously to all sections of the water spraying system in any one compartment to be protected.
- Where a vessel is provided with a fixed water spray system for the protection of more than one space with supply from a single pump the pump capacity need only be sufficient for the largest single duty.
- 4.6 The pump supplying water for the system shall be provided exclusively for the purpose. The pump and its controls shall be installed outside the space or spaces to be protected.
- The sea inlet to the pump shall be in the space containing the pump and shall be so arranged that when the vessel is afloat it will not be necessary to shut off the supply of sea water to the pump for any purpose other than the inspection or repair of the pump. Pump suction chambers shall be flooded at all times when the vessel is in service.
- 4.7 Means shall be provided to prevent the pump, piping, nozzles and valves becoming clogged by impurities in the water or by corrosion.
- A strainer shall be fitted on the suction side of the pump.
- 4.8 The piping system shall be of a corrosion resistant material, for example galvanised steel, and as the 'dry pipe' principle is involved due regard shall be paid to heat resistance of material used and the possibility of it being subject to very high temperatures prior to the introduction of water.
- 4.9 The water spraying system shall include mobile sprayers ready for immediate use in the firing area of the boiler or in the vicinity of the oil unit.
- 4.10 The system shall be so arranged that it shall not be possible for a fire in the space or spaces protected to put the system out of action.
- 4.11 No part of the water spraying system shall be situated forward of the collision bulkhead in any passenger vessel.

APPENDIX F

FIXED FIRE INSTALLATION SYSTEMS

An Authority may accept the design of a fixed fire extinguishing system which has been approved by a classification society or a government authority, as a system complying with this Appendix.

(Amendment dated 15 August 1995)

1. A fixed fire extinguisher may be fitted inside or outside the machinery space it is to protect but must be capable of discharging into that space. If the extinguisher is not fitted with means for rapidly injecting fire smothering gas into the space automatically on a predetermined rise of temperature within the space means shall be provided.
 - (1) for actuating the extinguisher from outside the space; and

- (2) for detecting the products of combustion prior to or resulting from an outbreak of fire in the machinery space.
2. In a fixed automatically operated fire extinguishing installation.
- (1) the extinguishing medium shall be bromochloro- difluoromethane, or bromotrifluoromethane; and
- (2) the automatic thermally operated discharge head shall be adequately protected to prevent mechanical damage.
3. The extinguishing medium for a manually operated fixed fire extinguishing installation shall be bromochloro- difluoromethane, bromotrifluoromethane or carbon dioxide.
4. The extinguisher shall be capable of rapidly injecting into the space:
- 4.1 where the vessel is mainly or wholly constructed of wood – 1.5 times the quantity of fire smothering gas required by Appendix E, and
- (Amendment dated 23 August 1996)*
- 4.2 when the vessel is constructed of steel or a material of an equivalent fire rating, or when the vessel is not mainly constructed of steel or material of an equivalent fire rating but the machinery space is bounded by steel or material of an equivalent fire rating, the quantity of gas required by Appendix E.
5. Fire extinguishers provided in compliance with this Appendix, other than a carbon dioxide fire extinguisher, shall be tested by hydraulic pressure to within 345 kilopascals of the pressure to which it was tested at the time of its manufacture, and recharged, at intervals not exceeding the intervals specified in the following table:

<i>Type of extinguisher</i>	<i>Recharge interval in years</i>	<i>Test interval in years</i>
Halogenated hydrocarbon	5	5
Gas container		
Stored pressure	5	5

APPENDIX G

FIRE EXTINGUISHERS

1. **General provisions.**
- 1.1 Fire extinguishers containing an extinguishing medium which, in the opinion of the Authority, either by itself or under expected conditions of use gives off toxic gases in such quantities as to endanger persons shall not be permitted.
- 1.2 For the purpose of this Section the capacity of any fire extinguisher other than a carbon dioxide fire extinguisher shall be taken to be the greatest volume or weight of extinguishing medium which it can contain when sufficient space is left to ensure the proper operation of the extinguisher.
- 1.3 For the purpose of this Section the capacity of a carbon dioxide fire extinguisher shall be taken to be the greatest weight of carbon dioxide which it can safely contain in a tropical climate.
- 1.4 Every fire extinguisher provided in compliance with this Section shall be kept fully charged at all times.
- 1.5 Fire extinguishers provided in compliance with this Section, other than a carbon dioxide fire extinguisher, shall be tested by hydraulic pressure to within 345 kilopascals of the pressure to which it was tested at the time of its manufacture, and recharged at intervals not exceeding the intervals specified in the following table:

<i>Type of extinguisher</i>	<i>Recharge interval in years</i>	<i>Test interval in years</i>
Water		
Soda acid	1	5
Gas container	5	5
Stored pressure	5	5
Foam		
Chemical	1	5

Gas container:		
Premixed foam liquid type	5	5
Sealed foam liquid container type	5	5
Dry Chemical		
Stored pressure	5	5
Halogenated hydrocarbon		
Stored pressure	5	5

- 1.6 Every portable and non-portable carbon dioxide fire extinguisher provided in compliance with this Section shall be tested in accordance with the requirements of AS 2030, SAA Gas Cylinders Code, except that the interval between tests shall not exceed 10 years for the first and second tests and the interval between all subsequent tests shall not exceed 5 years. If the extinguisher has been discharged at a time exceeding 2 years after its previous test, it shall be pressure tested prior to recharging and the interval between subsequent tests shall not exceed 5 years.

2. Portable fire extinguishers

- 2.1 Reference to a portable fire extinguisher in this Section means a fire extinguisher which does not exceed 25 kilograms in weight in the fully charged condition and that:
- 2.1.1 in the case of a fire extinguisher in which the fire extinguishing medium is liquid, has a capacity of not more than 13 ½ litres and not less than 9 litres of liquid;
- 2.1.2 in the case of a fire extinguisher in which the fire extinguishing medium is carbon dioxide, has a capacity of not less than 3 kilograms of carbon dioxide, provided that, in the case of a vessel less than 5 metres in length, the Authority may allow a capacity of not less than one kilogram of carbon dioxide; or
- 2.1.3 in the case of a fire extinguisher in which the fire extinguishing medium is dry powder, has a capacity of not less than 4.5 kilograms of dry powder, provided that in the case of a vessel less than 5 metres in length, the Authority may allow a capacity of not less than 0.9 kilograms of dry powder.
- 2.2 Portable fire extinguishers provided in compliance with this Section for use in accommodation or service spaces of any vessel shall so far as practicable have a uniform method of operation.
- 2.3 Portable fire extinguishers provided in compliance with this Section shall, subject to the limitation of sub-item 2.2 be constructed in accordance with the following specification of the Standards Association of Australia:

<i>Type of Extinguisher</i>	<i>Specification number</i>
Water (Splash-proof type)	AS 1840 to 1842
Foam (Slash-proof type)	AS 1843 to 1845
Dry Chemical	AS 1846
Carbon Dioxide	AS 1847

and shall bear the Standards Association of Australia mark together with their licence number.

- 2.4 Where portable dry powder fire extinguishers are provided in compliance with this Section, in either accommodation and service spaces or in machinery spaces, their number shall not exceed one half of the total number of extinguishers provided in either of those spaces. Where only one extinguisher is required in a space, it may be of the dry powder type.
- 2.5 In the case of vessels of Classes 1A, 2A, and 3A which have a length of 25 metres or over, a spare charge shall be provided for every portable fire extinguisher provided in compliance with this Section, except that for each such fire extinguisher which is of a type that cannot readily be recharged while the vessel is at sea, an additional portable fire extinguisher of the same type, or its equivalent, shall be provided in lieu of a spare charge.

3. Non-portable foam fire extinguishers.

- 3.1 In this item 'foam fire extinguisher' does not include a portable fire extinguisher.
- 3.2 An extinguisher shall be of the antisplash type and so designed and constructed that the interior of the extinguisher can be examined.
- 3.3 The body of an extinguisher shall be cylindrical with ends dished outwards, without reverse flanging, to a radius not exceeding the diameter of the body.

- 3.4 The body and ends of an extinguisher shall be tinned or lead-coated internally and every part of the extinguisher shall, where necessary, be protected against corrosion.
- 3.5 The body of an extinguisher shall be welded or riveted and all riveted joints shall be soldered.
- 3.6 The body of an extinguisher shall be provided with an opening for the introduction of an inner container.

(Amendment dated 15 March 1996)

- 3.7 The opening shall be-
 - 3.7.1 fitted with a screw cap of gun-metal or other suitable material; and
 - 3.7.2 screwed with a continuous thread through the side of which safety holes or slots are provided so that when the cap is being removed any pressure of gas remaining in the container will be released gradually should the discharge opening be choked.
- 3.8 The cap joint shall be made with acid resisting rubber, greased leather or other suitable material.
- 3.9 If the extinguisher is provided with an inner container, the container shall be adequately supported.
- 3.10 A reinforced discharge hose of suitable length together with a nozzle, shall be provided for an extinguisher.
- 3.11 The area of the nozzle shall be such that, when the extinguisher is operated the foam is projected;
 - 3.11.1 in the case of an extinguisher of 135 litres or more-for a distance of not less than 14 metres for a period of not less than one hundred seconds; or
 - 3.11.2 in any other case-for a distance of not less than 10.5 metres for a period of not less than ninety seconds.
- 3.12 The charge and the air space above the level of the liquid in the body of an extinguisher shall be so regulated that the maximum pressure in the extinguisher when put into action with all outlets closed does not exceed two megapascals at a temperature of thirty-eight degrees Celsius.
- 3.13 An extinguisher shall be capable of withstanding for a period of five minutes an internal pressure equal to-
 - 3.13.1 a pressure greater by one-half than the maximum pressure in the extinguisher when put into action with all outlets closed; or
 - 3.13.2 a pressure of 2.5 megapascalswhichever is the greater.
- 3.14 The outside of an extinguisher shall be clearly and permanently marked with-
 - 3.14.1 a mark showing the level of the liquid when the extinguisher is filled to its working capacity, and
 - 3.14.2 A statement setting out-
 - the name of the maker or vendor of the extinguisher;
 - the capacity of the extinguisher;
 - the pressure under which the extinguisher was tested;
 - instructions for operating the extinguisher; and
 - the year in which the extinguisher was manufactured.

4. Non-portable Carbon Dioxide fire extinguishers.

- 4.1 A carbon dioxide fire extinguisher, other than a portable fire extinguisher shall be provided with cylinders constructed in accordance with approved standards.
- 4.2 Each cylinder shall be provided with an internal discharge tube and a valve to release the gas.
- 4.3 An extinguisher shall be provided with a discharge hose of suitable length reinforced so as to withstand a pressure of 12.4 megapascals when the necessary couplings are fitted.
- 4.4 The bore of the discharge hose shall not be less than 12.5 mm.
- 4.5 The discharge hose shall be provided with a horn that is insulated and of a design which will reduce the velocity of the gas discharged.

- 4.6 At any temperature between 10 degrees Celsius and 21 degrees Celsius inclusive, the extinguisher shall be capable of discharging gas at such a rate that carbon dioxide equal in weight to three-quarters of the capacity of the container will be discharged in 70 seconds.
- 4.7 The outside of the extinguisher shall be clearly and permanently marked with a statement setting out:
 - the name of the maker or vendor of the extinguisher;
 - the weight of the extinguisher when empty and the weight when filled to its working capacity;
 - instructions for operating the extinguisher; and
 - the year in which the extinguisher was manufactured.

APPENDIX H

FIREMEN'S OUTFITS

- 1. Every firemen's outfit carried in compliance with this Section shall consist of:
 - 1.1 a breathing apparatus complying with the requirements specified in Appendix I of this Section;
 - 1.2 a portable self-contained electric battery operated safety lamp capable of functioning efficiently for a period of at least three hours; and
 - 1.3 a firemen's axe.
- 2. Where more than one such outfit is provided they shall be kept in readily accessible and widely separated positions which are not likely to be cut off in the event of fire.

APPENDIX I

BREATHING APPARATUS

- 1. **A breathing apparatus provided in compliance with this Section may be either-**
 - 1.1 a smoke helmet or a, smoke mask, each of which shall be provided with an air pump or bellows and an air hose; or
 - 1.2 a self-contained breathing apparatus.
- 2. **General provisions.**
 - 2.1 A breathing apparatus furnished in a vessel in accordance with this Section shall be constructed of materials having adequate mechanical strength, durability and resistance to deterioration by heat or by contact with sea water and such materials shall be resistant to fire. The fabric used in the construction of any harness provided with a breathing apparatus shall be resistant to shrinkage. Where a cargo vessel, constructed or adapted for the carriage of bulk fluid cargoes of a flammable nature, is furnished with a breathing apparatus, all exposed metal parts of the apparatus, harness and fittings shall be materials resistant to frictional sparking.
 - 2.2 Each breathing apparatus shall be legibly and indelibly marked with the year of manufacture and the manufacturer's name, trade name or the registered mark.
 - 2.3 Each breathing apparatus shall be provided with operating instructions in clear and permanent lettering on a plate for attachment to the apparatus or for display in a clearly visible position near the apparatus stowage position.
- 3. **The following equipment shall be provided for use with each set of breathing apparatus:**
 - 3.1 a fire-proof life-and-signalling-line capable of being attached to the belt or harness of the breathing apparatus by the wearer by means of a snap-hook. The line shall be 3 metres longer than is required to reach from the open deck in clean air well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery spaces. The line shall be made of copper or galvanised steel wire rope having a breaking strength of at least 5 kilonewtons and shall be overlaid up to at least

- 10 millimetres in diameter by hemp or other covering to provide a surface which can be firmly gripped when wet;
- 3.2 means for protecting the eyes and face of the wearer against smoke where the face-piece of the breathing apparatus does not provide such protection;
- 3.3 for every apparatus other than a smoke helmet, a lightweight safety helmet with lining and adjustable head band; and
- 3.4 Plates of suitable material which is not readily combustible bearing the following code of signals to be used between the wearer and his attendant, one of which shall be attached to the harness and another attached to the free end of the lifeline.

<i>Signal</i>	<i>Meaning</i>
<i>By wearer of breathing apparatus</i>	
2 pulls	Slack Off Lifeline
3 pulls	Help me out immediately
<i>To wearer of breathing apparatus</i>	
3 pulls	Come out immediately

4. Smoke helmet or mask and its fittings.

- 4.1 Smoke helmet or smoke mask shall be fitted with a pump or bellows for the supply of air and the air inlet to the pump or bellows shall be so protected as to ensure that the supply of air cannot be obstructed. The air supply hose shall be sufficient in length to enable the air pump or bellows to be on the open deck in clear air well clear of any part of the accommodation, service, cargo or machinery spaces.
- 4.2 A smoke helmet or smoke mask shall otherwise comply with the following requirements-
- The design and construction shall be such that it will
- (a) provide the wearer with air from an uncontaminated source for an indefinite period;
 - (b) prevent entry of the external atmosphere;
 - (c) permit the component parts likely to require service to be, readily detached for maintenance but be secure against accidental disconnection; and
 - (d) ensure that couplings provide a secure, gas-tight joint and that when detached, washers are retained in position.
- 4.2.2 The waist belt or body harness shall be so designed that it causes no undue discomfort or limitation of movement to the wearer. The full weight of the trailing air hose shall be supported solely by the waist belt or body harness and there shall be no drag on the breathing tube or face piece.
- 4.2.3 The attachment or clip connecting the hose to the waist belt or body harness shall be so designed and constructed that whatever the direction of pull, the hose is not damaged nor is the supply of air reduced.
- 4.2.4 Provision shall be made on the waist belt or bodyharness for attachment and detachment by the wearer of a life and signalling line fitted with a snap hook.
- 4.2.5 The air hose shall be of rubber, plastic, a combination of both or other suitable material. It shall be flexible and non-kinking and shall comply with the requirements of paragraph 4.2.10 of this Appendix.
- 4.2.6 The air hose shall not be less than 18 mm internal diameter and shall not exceed 36 metres in length.
- 4.2.7 The apparatus shall include a breathing bag of 5 to 7 litres capacity.
- 4.2.8 The pump or bellows shall be capable of delivering to the breathing bag via the air hose not less than 85 litres of air per minute.
- 4.2.9 The resistance of the assembly when subjected to a continuous stream of air at a rate of 85 litres per minute shall not exceed 152 mm of water column.
- 4.2.10 Tests for the air hose shall be as follows:

- (a) The strength of the air hose and couplings shall be such that when tested with a steady longitudinal pull of 1.11 kilonewtons applied for one minute there shall be no separation of the couplings, failure of the hose or failure of the connection of the couplings to the hose.
 - (b) The resistance to collapse of the air hose shall be determined in the following manner. A length of air hose with its coupling shall be subjected to a load of 845 Newtons applied between two plane surfaces 76 mm square and on opposite sides of the hose and at right angles to its length whilst air is flowing through it at a rate of 85 litres per minute. Any portion of the hose and couplings may be so tested. The flow of air through the hose shall not be reduced to such an extent that the resistance requirements of paragraph 4.2.9 of this Appendix cannot be met and there shall be no appreciable residual distortion of the hose when the pressure has been released.
 - (c) The air hose and couplings shall not leak when immersed in water and subjected to an internal air pressure of 13.8 kilopascals. The test shall be applied after the hose and couplings have been submitted to the strength of hose and couplings test described in sub-paragraph 4.2.10 (a) of this Appendix and the couplings shall not be interfered with between tests. The flexible tube connected to the face piece shall be subjected to this test for air tightness, but shall not be subjected to the tests described in subparagraphs 4.2.10 (a) and 4.2.10 (b) of this Appendix.
- 4.2.11 In testing the apparatus it shall be worn in turn by five persons. After the apparatus has been correctly adjusted each wearer shall enter a gas chamber containing a concentration of 8 mg per cubic metre of ortho-chlorobenzal malononitrile in air. The wearer shall then ascend and descend at a rate of twelve times per minute two steps each having a 220 mm rise and he shall continue to do for ten minutes.
- 4.2.12 Whilst carrying out this test the wearer shall not detect any of the test gas in the inhaled air nor experience any undue impairment of efficiency or discomfort on account of fit, the air delivery or any other feature of the apparatus.

5. Self-contained breathing apparatus.

- 5.1 Every self-contained breathing apparatus provided in compliance with this Section shall be of the open circuit compressed air type.
- 5.2 Cylinders for breathing apparatus.
- 5.2.1 Where a vessel is provided with one self-contained breathing apparatus in accordance with this Section, it shall be provided with fully charged cylinders having a spare storage capacity of at least 1200 litres of free air.
- 5.2.2 Where a vessel is provided with more than one self-contained breathing apparatus in accordance with this Section, it shall be provided with fully charged cylinders having a spare storage capacity of at least 2400 litres of free air.
- 5.3 An open circuit compressed air type breathing apparatus shall otherwise comply with the following requirements:
- 5.3.1 The design and construction of self-contained breathing apparatus of the compressed air, open circuit type shall be such that the apparatus will-
- (a) provide respiratory protection;
 - (b) prevent entry of the external atmosphere;
 - (c) permit the component parts likely to require service to be readily detached for maintenance but be secure against accidental disconnection;
 - (d) ensure that couplings provide a secure, gas-tight joint and that when detached, washers are retained in position;
 - (e) permit it to be worn without undue discomfort and in such a manner that it is practicable for the wearer to lift and carry an unconscious person on his shoulders, or perform other duties of rescue; and
 - (f) not unduly impede the wearer when walking in a crouched attitude, crawling or manoeuvring in narrow tunnels and openings.
- 5.3.2 The apparatus shall consist of-
- (a) a face piece held securely in position with a head harness;
 - (b) pressure hose or pipe;

- (c) outlet valve;
 - (d) a lung-governed air supply device;
 - (e) means of overriding the lung-governed air supply device;
 - (f) cylinder(s) of compressed air;
 - (g) cylinder valve;
 - (h) pressure gauge;
 - (i) a pressure-gauge isolating valve;
 - (j) warning device to indicate when the supply of air is nearing its end; and
 - (k) body harness.
- 5.3.3 Means shall be provided for the automatic regulation of the air supply to the wearer of the apparatus in accordance with his breathing requirements when he is breathing any volume of free air up to 85 litres per minute whilst the pressure in the cylinder or cylinders is above 1 megapascal. The effective life shall be deemed to have been reached when the pressure of air in the cylinder or cylinders has fallen so low that a flow of 38 litres per minute cannot be maintained. The storage capacity of the air cylinder or cylinders attached to the apparatus shall be at least 1200 litres of free air.
- 5.3.4 Any pressure pipe or hose which is exposed to the full pressure of the cylinder shall be designed and tested to withstand a pressure at least one-and-a-half times the full cylinder pressure. Any pressure pipe or hose which is subjected to pressure from a reducing valve shall be designed and tested to withstand a pressure at least one-and-a-quarter times the working pressure. Any hose which is attached to the face piece shall be flexible, shall permit free head movement and shall not close off by kinking or by chin or arm pressure.
- 5.3.5 The lung-governed air supply device shall consist of a pressure reducing valve and a demand valve either separate or in combination. The design of the device shall be such that it cannot be operated accidentally, it is adequately protected against damage, and its efficiency is not impaired by any heat or moisture likely to be encountered in use. Where the device includes an adjustable reducing valve, it shall incorporate a suitable locking device to prevent the adjustment being altered accidentally.
- 5.3.6 Compressed air shall –
- (a) contain not less than 21 per cent nor more than 22 per cent by volume of oxygen;
 - (b) not contain more than 0.002 per cent by volume of carbon monoxide; and
 - (c) be odourless, and free from oil and other impurities.
- 5.3.7 Cylinders shall comply with the requirements of a recognised standard. Manufacturers and suppliers should ensure that cylinders are tested, marked and certificated in order that they may be filled to capacity at Australian filling stations.
- 5.3.8 The cylinder valve shall comply with the requirements of a recognised standard. The valve shall be operated by a hand wheel distinguishable by touch from any other hand wheel in the apparatus, and shall be so designed and positioned that it can easily be operated by the wearer with a wet or slippery hand. The design of the valve shall be such that the spindle cannot be unscrewed completely out of the valve body. The assembly should include a trap to prevent foreign particles from the cylinder entering the circuit.
- 5.3.9 Pressure gauge requirements.
- (a) The pressure gauge shall be of the 'visual' or 'tactile' type, designed to withstand a pressure of one-and-a-quarter times the maximum working pressures of the cylinder.
 - (b) The size and position of the gauge shall be such that it can easily be read by the wearer when the apparatus is being worn. The dial of a visual type gauge shall be protected by non-splinterable, clear, non-flammable material. Additional protection shall be provided where necessitated by the position of the gauge.
 - (c) The design of a visual type gauge shall include provision for a failure point such that in the event of rupture of the tube or diaphragm the failure point will act as a safety device to prevent the glass from being blown out.
 - (d) A throttling or slow leak orifice which limits the flow of air to the gauge shall be incorporated to prevent sudden build-up of pressure.

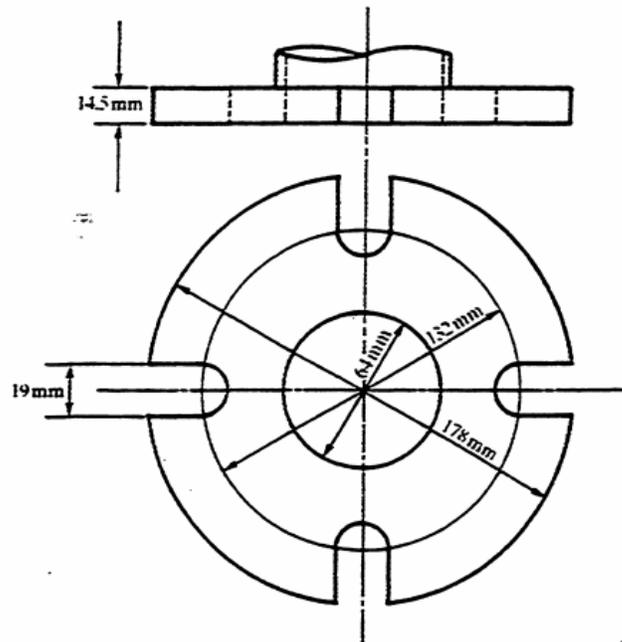
- (e) The gauge shall be clearly marked to indicate:
 - (i) when the cylinder is full; and
 - (ii) when the cylinder capacity has been reduced by 80 per cent of its effective life.
 - (f) The markings, on a circular dial, should extend over an arc of 300 degrees.
- 5.3.10 An isolating valve shall be provided in the pressure gauge circuit to prevent loss of air in the event of failure of the gauge, its connecting pipe or hose or any component part.
- 5.3.11 Means shall be provided for warning the wearer audibly when the cylinder capacity has been reduced by 80 per cent of its effective life.
- 5.3.12 The body harness shall be so designed as to enable the wearer to put on and take off the apparatus quickly and easily without assistance. It shall be adjustable to suit the wearer and designed to avoid undue discomfort. Provision shall be made on the harness of attachment and detachment by the wearer of a life and signalling line fitted with a snap hook.
- 5.3.13 The apparatus, when fully charged, should be as light as practicable and its weight should not in any case exceed 16 kilograms.
- 5.3.14 Standards for face pieces shall be as follows:
- (a) The full piece assembly shall be tested for leakage from around the eye piece(s) and from any attachment to the face piece whilst the leakage test specified in subparagraph 5.3.14 (c) is being carried out. The periphery of the face piece and the inlet from the breathing tube shall be sealed during this test. Any leakage from these sources together with the leakage from the outlet valve assembly shall not exceed the values specified in sub-paragraph 5.3.14 (c).
 - (b) The performance requirements for outlet valves specified in sub-paragraphs 5.3.14 (c) and 5.3.14 (d) below shall apply to the whole assembly which shall include every outlet valve and every part through which exhaled air passes.
 - (c) The total leakage shall not exceed 5 millilitres in 10 seconds when tested with air at a constant suction head of 25 mm water gauge. During this test the valve and its seating shall be dry.
 - (d) The resistance imposed shall not exceed 20 mm water gauge when a continuous stream of air at a rate of 85 litres per minute is passed through the valve.
 - (e) Tests for face piece attachments.
 - (i) The device shall function so that the opening pressure and the resistance imposed shall not exceed 57 mm water gauge when a continuous stream of air at a rate up to 227 litres per minute is passed through the assembly for a period of thirty minutes.
 - (ii) After being operated for 50 hours continuously by a tidal volume of 2 litres at a rate of 20 respirations per minute, the device shall be capable of complying with the requirements of 5.3.14 (e) (i) above.
- 5.3.15 Tests to be carried out by persons wearing breathing apparatus.
- (a) The whole apparatus shall be worn in turn by five persons. After the apparatus has been correctly adjusted each wearer shall enter a gas chamber containing a concentration of-
10 mg/m³ of chloracetophenone in air.
 - (b) Each test shall be performed for a period equal to the nominal effective life of the charged cylinder.
 - (c) The following tasks shall be performed whilst wearing apparatus.
 - (i) One-third of the period walking moving head from side-to-side, nodding, and bending the body at the waist;
 - (ii) one-third of the period ascending and descending at the rate of twelve times per minute two steps each having a 220 mm rise; and
 - (iii) one-third of the period walking at the rate of 6 kilometres/hour on level ground.
 - (d) While carrying out the test procedure described in sub-paragraph 5.3.15 (a) above, the wearer shall not detect any chloracetophenone in the inhaled air, nor experience any undue impairment of efficiency or discomfort on account of fit, the air delivery, or any other feature of the apparatus.

- 5.3.16 In addition to the markings required by item 2 of this Appendix, the cylinder body shall be painted light grey with black and white quadrants on the shoulder, as specified in AS CB4, SAA Code for Compressed Gas Cylinders.
- 5.3.17 Every breathing apparatus shall be provided with a servicing and instruction manual.

APPENDIX J

INTERNATIONAL SHORE CONNECTION

1. The international shore connection required by this Section to be installed in the vessel shall be in accordance with the following specification and the appended sketch.
 Outside diameter: 178 mm
 Inner diameter: 64 mm
 Bolt circle diameter: 132 mm
 Holes: 4 holes of 19 mm diameter equidistantly placed, slotted to the flange periphery
 Flange thickness: 14.5 mm minimum
 Material: Any suited to 1035 kilopascal service
2. The flange shall have a flat face on one side, and to the other shall have permanently attached thereto a coupling that will fit the vessel's hydrants and hose.
3. The connection shall be kept aboard the vessel together with a gasket of any material suitable for 1035 kilopascal service, together with 4 bolts of 16 mm diameter, 50 mm in length and 4 matching nuts and 8 washers.
4. Fixed provision shall be made to enable the connection to be used on the port side and on the starboard side of the vessel to enable water to be supplied to the firemain from another vessel or from the shore.



INTERNATIONAL SHORE CONNECTION

APPENDIX K

FIRE BUCKETS

1. Every fire bucket provided in compliance with this Section shall be of metal painted red and be clearly and permanently marked with the word 'FIRE'. Except in open vessels, every such fire bucket shall be kept filled with sand or water.
2. Except in open vessels, fire buckets provided in compliance with this Section shall not be used for any purpose other than extinguishing fire.

APPENDIX L

AIR-FOAM EQUIPMENT

1. A foam applicator unit shall consist of-
 - 1.1 an inductor type of air-foam nozzle capable of being connected to the fire main by a fire hose;
 - 1.2 a transportable tank containing at least 20 litres of froth making liquid; and
 - 1.3 a spare tank.
2. The nozzle shall be capable of producing effective foam suitable for extinguishing an oil fire, at the rate of at least 1.5 cubic metres per minute.