



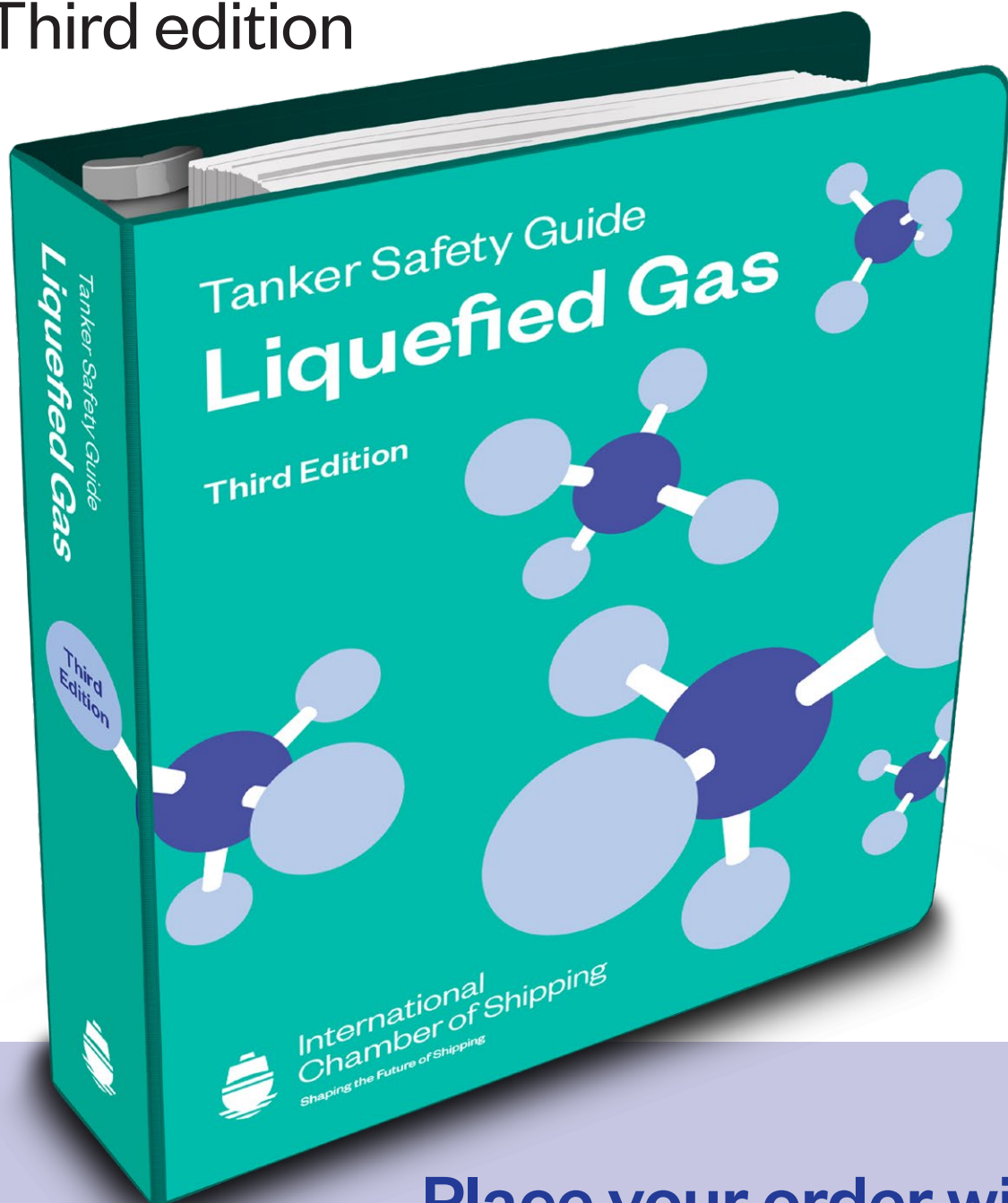
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ICS Tanker Safety Guide (Liquefied Gas)

Third edition

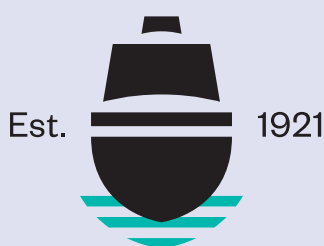
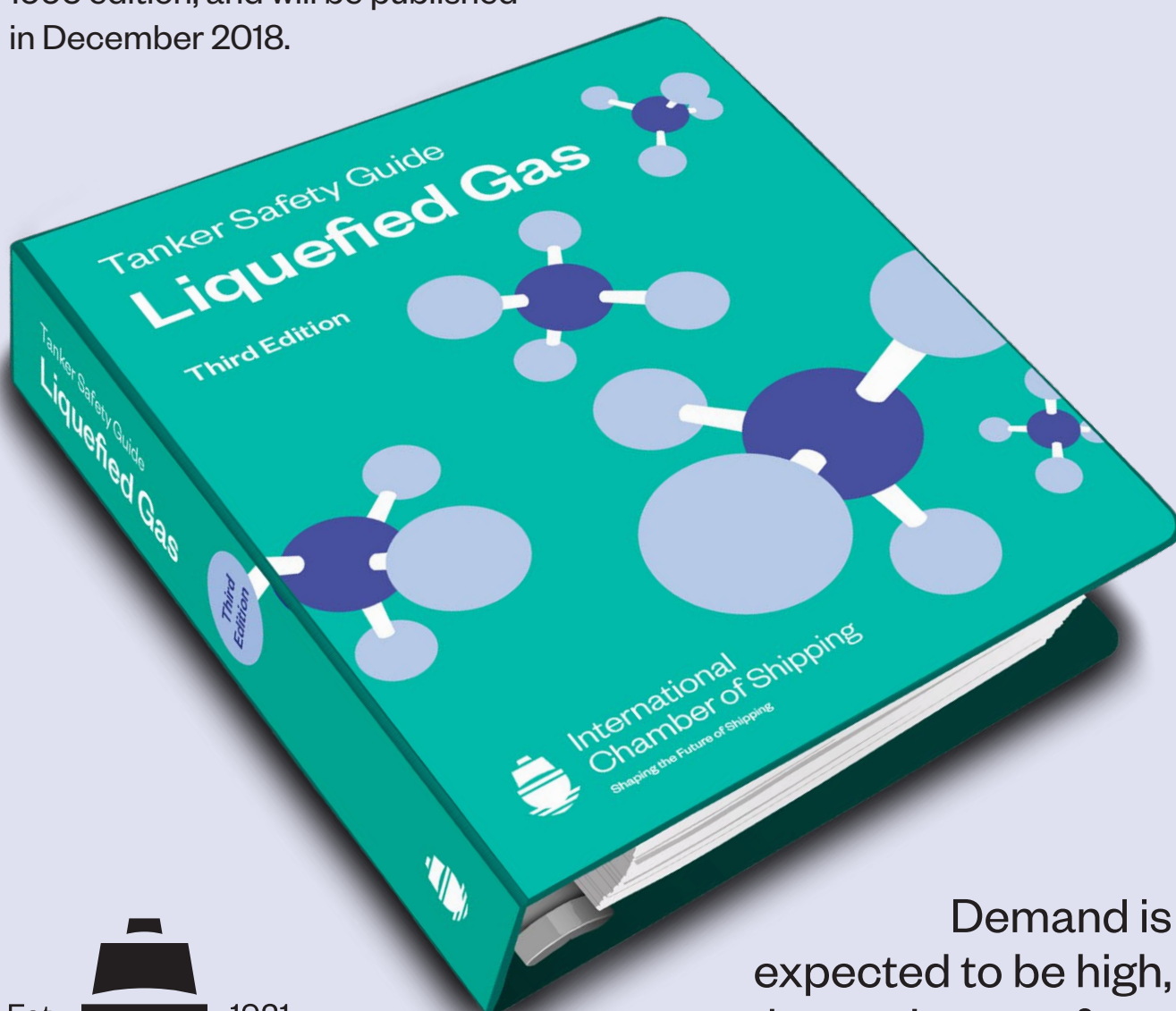


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4.4.5 Self-Pressurising Pressure-Independent Type A Tank

This type of cargo tank is designed using the principles of atmospheric pressure containment. The tank is constructed of aluminium alloy and is fitted with a pressure-relieving device (PRD) to prevent over-pressurisation. The tank is designed to withstand a maximum internal pressure of 1.0 bar (14.7 psi) and is fitted with a PRD to prevent over-pressurisation.

Figure 4.4.5 Self-Pressurising Pressure-Independent Type A Tank

4.4.5.1 Self-Pressurising Pressure-Independent Type A Tank (With Heating)

This type of cargo tank is designed using the principles of atmospheric pressure containment. The tank is constructed of aluminium alloy and is fitted with a pressure-relieving device (PRD) to prevent over-pressurisation. The tank is designed to withstand a maximum internal pressure of 1.0 bar (14.7 psi) and is fitted with a PRD to prevent over-pressurisation.

Figure 4.4.5.1 Self-Pressurising Pressure-Independent Type A Tank (With Heating)

4.4.5.2 Cylindrical or Spherical Pressure-Independent Type A Tank

This type of cargo tank is designed using the principles of atmospheric pressure containment. The tank is constructed of aluminium alloy and is fitted with a pressure-relieving device (PRD) to prevent over-pressurisation. The tank is designed to withstand a maximum internal pressure of 1.0 bar (14.7 psi) and is fitted with a PRD to prevent over-pressurisation.

Figure 4.4.5.2 Cylindrical or Spherical Pressure-Independent Type A Tank

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4.4.6.1 Atmospheric Pressure-Independent Type A Tank

This type of cargo tank is designed using the principles of atmospheric pressure containment. The tank is constructed of aluminium alloy and is fitted with a pressure-relieving device (PRD) to prevent over-pressurisation. The tank is designed to withstand a maximum internal pressure of 1.0 bar (14.7 psi) and is fitted with a PRD to prevent over-pressurisation.

Figure 4.4.6.1 Atmospheric Pressure-Independent Type A Tank

4.4.6.2 Atmospheric Pressure-Independent Type A Tank (With Heating)

This type of cargo tank is designed using the principles of atmospheric pressure containment. The tank is constructed of aluminium alloy and is fitted with a pressure-relieving device (PRD) to prevent over-pressurisation. The tank is designed to withstand a maximum internal pressure of 1.0 bar (14.7 psi) and is fitted with a PRD to prevent over-pressurisation.

Figure 4.4.6.2 Atmospheric Pressure-Independent Type A Tank (With Heating)

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Butanes (All Isomers)

Appearance	Colorless	Boiling Point	-0.5°C
Color	Colorless, odorless, flammable	Freezing Point	-138.3°C
UN Number	1059	Flash Point	-75°C
UN Function	Flammable Gas	Auto-ignition Temperature	420°C
CASRN	106-97-8	Relative Density (air = 1)	2.48
MFAGS	2.1, 2.2, 2.3	Relative Density (water = 1)	0.58
MFAGS	2.1, 2.2, 2.3	Relative Density (air = 1)	2.48

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4.4.6.3 Atmospheric Pressure-Independent Type A Tank

This type of cargo tank is designed using the principles of atmospheric pressure containment. The tank is constructed of aluminium alloy and is fitted with a pressure-relieving device (PRD) to prevent over-pressurisation. The tank is designed to withstand a maximum internal pressure of 1.0 bar (14.7 psi) and is fitted with a PRD to prevent over-pressurisation.

Figure 4.4.6.3 Atmospheric Pressure-Independent Type A Tank

4.4.6.4 Atmospheric Pressure-Independent Type A Tank (With Heating)

This type of cargo tank is designed using the principles of atmospheric pressure containment. The tank is constructed of aluminium alloy and is fitted with a pressure-relieving device (PRD) to prevent over-pressurisation. The tank is designed to withstand a maximum internal pressure of 1.0 bar (14.7 psi) and is fitted with a PRD to prevent over-pressurisation.

Figure 4.4.6.4 Atmospheric Pressure-Independent Type A Tank (With Heating)

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4.6.5 The Mollier (Pressure - Enthalpy) Diagram

This diagram is used to determine the phase behavior of a mixture. It shows the relationship between pressure and enthalpy for a mixture of components. The diagram is used to determine the phase behavior of a mixture and to calculate the composition of the vapor and liquid phases.

Figure 4.6.5 The Mollier (Pressure - Enthalpy) Diagram

4.6.6 Vapour Pressure of a Mixture

This diagram is used to determine the vapour pressure of a mixture. It shows the relationship between temperature and vapour pressure for a mixture of components. The diagram is used to determine the vapour pressure of a mixture and to calculate the composition of the vapor and liquid phases.

Figure 4.6.6 Vapour Pressure of a Mixture

Component	Mole %	Vapour Pressure at 40°C (kPa)	Antoine Equation Parameters (A, B, C)
1	0.1	0.01	7.07414, 1163.645, 21.84
2	0.2	0.02	7.07414, 1163.645, 21.84
3	0.3	0.03	7.07414, 1163.645, 21.84
4	0.4	0.04	7.07414, 1163.645, 21.84
5	0.5	0.05	7.07414, 1163.645, 21.84
6	0.6	0.06	7.07414, 1163.645, 21.84
7	0.7	0.07	7.07414, 1163.645, 21.84
8	0.8	0.08	7.07414, 1163.645, 21.84
9	0.9	0.09	7.07414, 1163.645, 21.84

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