INTERNATIONAL STANDARD

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Ships and marine technology — Identification colours for the content of piping systems —

Part 2: Additional colours for different media and/or functions

Navires et technologie maritime — Couleurs pour l'identification du contenu des systèmes de tuyauterie —

Partie 2: Couleurs supplémentaires pour autres milieux et/ou fonctions

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 14726 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 14726-2 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 3, *Piping and machinery*.

It cancels and replaces ISO 5571:1981, of which it constitutes a technical revision.

ISO 14726 consists of the following parts, under the general title *Ships and marine technology — Identification colours for the content of piping systems*:

— *Part 1: Main colours and media*

— *Part 2: Additional colours for different media and/or functions*

Annexes A and B of this part of ISO 14726 are for information only.

Introduction

It is planned to merge ISO 14726-1 and ISO 14726-2 during the next review.

Ships and marine technology — Identification colours for the content of piping systems —

Part 2:
Additional colours for different media and/or functions

1 Scope

This part of ISO 14726 specifies additional colours to be used with the main colours given in ISO 14726-1 for the marking of piping systems in accordance with the content and/or function on board ships and marine structures.

Additional colours may not be used if no differentiation of a single main colour on board is needed.

This part of ISO 14726 does not apply to piping systems for medical gases, industrial gases and cargos.

It gives no definitions for the listed media and/or functions.

These additional colours may also be used, together with the main colours, for piping systems on drawings and diagrams.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 14726. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 14726 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 14726-1:1999, *Ships and marine technology — Identification colours for the content of piping systems — Part 1: Main colours and media*

IEC 60757:1983, *Code for designation of colours*

CIE Publication 15.2:1986, *Colorimetry* (second edition)

3 Additional colours for media and/or functions

Table 1 lists the names and letter codes for additional colours.

Table 2 lists media or media by function. Every main colour has the possibility of being used with 11 additional colours. The empty boxes in Table 2 are reserved for further standardization.

Informative annex A lists explanations for some media/functions.

Informative annex B gives standard colours and their equivalent colour codes in other colour systems.

Table 1 — Name of colour and letter code

Name of colour	Letter code [a]
Black	BK
Blue	BU
Brown	BN
Green	GN
Grey	GY
Maroon	MN
Orange	OG
Silver	SR
Red	RD
Violet	VT
White	WH
Yellow	YEO

[a] As given in IEC 60757.

Table 2 — Additional colours for different media and/or functions

Waste media	BK (main colour)
Black water	BK – BU – BK
Waste oil/Used oil	BK – BN – BK
Bilge water	BK – GN – BK
Exhaust gas	BK – GY – BK
	BK – MN - BK
	BK – OG – BK
	BK – SR – BK
	BK – RD – BK
	BK – VT – BK
Grey water	BK – WH – BK
Sewage, contaminated	BK – YEO – BK

Fresh water	BU (main colour)
	BU – BK – BU
Fresh water, sanitary	BU – BN – BU
Potable water	BU – GN – BU
Distillate	BU – GY – BU
	BU – MN - BU
Gas-turbine wash water	BU – OG – BU
Feed water	BU – SR – BU
	BU – RD – BU
Cooling fresh water	BU – VT – BU
Chilled water	BU – WH – BU
Condensate	BU – YEO – BU

Sea water	GN (main colour)
	GN – BK – GN
Decontamination water	GN – BU – GN
Sea water, sanitary	GN – BN – GN
	GN – GY – GN
	GN – MN – GN
	GN – OG – GN
	GN – SR – GN
	GN – RD – GN
Ballast water	GN – VT – GN
	GN – WH – GN
Cooling sea water	GN – YEO – GN

Fuel	BN (main colour)
Heavy fuel (HFO)	BN – BK – BN
Aviation fuel	BN – BU – BN
	BN – GN – BN
	BN – GY – BN
	BN – MN - BN
	BN – OG – BN
	BN – SR – BN
	BN – RD – BN
Biological fuel	BN – VT – BN
Gas-turbine fuel	BN – WH – BN
Diesel fuel (MDO)	BN – YEO – BN

Table 2 — Additional colours for different media and/or functions (*continued*)

Non-flammable gases	GY (main colour)
	GY – BK – GY
Oxygen	GY – BU – GY
Inert gas	GY – BN – GY
Nitrogen	GY – GN – GY
Refrigerant	GY – MN – GY
Compressed air LP (Low Pressure)	GY – OG – GY
	GY – SR – GY
Compressed air HP (High Pressure)	GY – RD – GY
Control air/regulating air	GY – VT – GY
Breathing air [a]	GY – WH – GY
Breathing gas [a]	GY – YEO – GN

[a] This marking is used in submarines for distribution systems used for breathing air from cylinders.

Acids, alkalis	VT (main colour)
	VT – BK – VT
	VT – BU – VT
	VT – BN – VT
	VT – GN – VT
	VT – GY – VT
	VT – MN – VT
	VT – OG – VT
	VT – SR – VT
	VT – RD – VT
	VT – WH – VT
	VT – YEO – VT

Masses (dry and wet)	MN (main colour)
	MN – BK – MN
	MN – BU – MN
	MN – BN – MN
	MN – GN – MN
	MN – GY – MN
	MN – OG – MN
	MN – SR – MN
	MN – RD – MN
	MN – VT – MN
	MN – WH – MN
	MN – YEO – MN

Steam	SR (main colour)
Steam for heating purposes	SR – BK – SR
	SR – BU – SR
	SR – BN – SR
	SR – GN – SR
	SR – GY – SR
	SR – MN – SR
	SR – OG – SR
	SR – RD – SR
	SR – VT – SR
Exhaust steam	SR – WH – SR
Supply steam	SR – YEO – SR

Oil other than fuel	OG (main colour)
	OG – BK – OG
Thermal fluid	OG – BU – OG
	OG – BN – OG
Lubrication oil for gas turbines	OG – GN – OG
Hydraulic fluid	OG – GY – OG
	OG – MN – OG
Lubricating oil for steam turbines	OG – SR – OG
	OG – RD – OG
Lubrication oil for gears	OG – VT – OG
	OG – WH – OG
Lubricating oil for internal-combustion engines	OG – YEO – OG

Air in ventilation systems	WH (main colour)
Discharge air	WH – BK – WH
Mechanical supply air, cold	WH – BU – WH
Natural exhaust air	WH – BN – WH
Atmospheric air	WH – GN – WH
Mechanical exhaust air	WH – GY – WH
Decontaminated supply air	WH – MN – WH
Mechanical recirculated air	WH – OG – WH
Mechanical supply air, warm	WH – SR – WH
Smoke clearance	WH – RD – WH
Conditioned supply air	WH – VT – WH
Natural supply air	WH – YEO – WH

Table 2 — Additional colours for different media and/or functions (*continued*)

Fire fighting/fire protection	**RD** (main colour)
	RD – BK – RD
	RD – BU – RD
	RD – BN – RD
Fire-fighting water	RD – GN – RD
Fire-fighting gas	RD – GY – RD
	RD – MN – RD
Sprinkler water	RD – OG – RD
	RD – SR – RD
Spray water	RD – VT – RD
Fire-fighting powder	RD – WH – RD
Fire-fighting foam	RD – YEO – RD

Flammable gases	**YEO** (main colour)
	YEO – BK – YEO
Hydrogen	YEO – BU – YEO
	YEO – BN – YEO
	YEO – GN – YEO
Acetylene	YEO – GY – YEO
	YEO – MN – YEO
	YEO – OG – YEO
	YEO – SR – YEO
	YEO – RD – YEO
Liquid gas	YEO – VT – YEO
	YEO – WH –YEO

4 Design

The marking shall be applied in accordance with ISO 14726-1:1999, clauses 5 and 6. The marking shall be readily visible. It shall be arranged in such a way that the additional colour is surrounded by the main colour.

Annex A
(informative)

Explanations for some media/functions

A.1 Waste media

A.1.1 Description

This includes all media that contains dirt or other foreign substances.

These media are described in A.1.2 to A.1.6.

A.1.2 Black water

Black water includes the following.

a) Sewage from all kinds of toilets, urinals and bidets.

b) Sewage from all kinds of medical areas (hospital, pharmacy, etc.) and from all wash-basins, bathing tubes and scuppers located in these areas.

c) Sewage from rooms with living animals.

d) Sewage that contains any sewage from a) to c).

A.1.3 Waste oil/used oil

Oil drained after admissible working hours, exceeding admissible analysis values or containing dirt or other foreign substances.

A.1.4 Bilge water

Water from all kinds of ship bilges.

A.1.5 Exhaust gas

Exhaust from combustion engines, boilers and thermal fluid heaters.

A.1.6 Grey water

All kinds of sewage from sanitation rooms, provision rooms, ventilation rooms, cargo holds and decks, excluding black water.

A.1.7 Sewage, contaminated

All contaminated sewage, excluding black water and grey water.

A.2 Fresh water

A.2.1 Description

This includes water used for either human consumption or for engineering technical purposes, e.g. fresh water for cooling engines.

A.2.2 Fresh water types

Fresh water types include the following.

a) Fresh water, sanitary: fresh water used in sanitation plants.

b) Cooling fresh water: fresh water, with additional substances used for cooling purposes.

c) Gas-turbine wash water: fresh water used for washing gas turbines.

d) Feed water: water to feed a boiler.

e) Distillate: chemically pure water.

f) Potable water: water used for human consumption.

g) Chilled water: water used as a heat carrier, e.g. in an air-conditioning plant.

h) Condensate: condensed steam.

A.3 Fuel

A.3.1 Description

Fuel is a substance that is used to produce heat by burning.

A.3.2 Fuel types

Types of fuel include the following.

a) Heavy fuel (HFO): fuel according to ISO 8216-0, family R.

b) Aviation fuel: fuel used for aircraft.

c) Biological fuel: all fuels of biological origin.

d) Gas-turbine fuel: fuel used for gas turbines.

e) Diesel fuel (MDO): fuel according to ISO 8216-1, category DMC.

A.4 Sea water

A.4.1 Description

Sea water is water taken from outside the ship.

A.4.2 Sea-water types

Sea-water types include the following.

a) Decontamination water: sea water used for decontamination purposes.

b) Sea water, sanitary: sea water used for the sanitation plant.

c) Ballast water: sea water used for stability, trimming, anti-rolling and rigidity purposes.

d) Cooling sea water: sea water used for cooling purposes.

A.5 Non-flammable gases

Non-flammable gas types include the following.

a) Oxygen.

b) Nitrogen.

c) Compressed air: air under pressure that is greater than that of the atmosphere.

d) Refrigerant: substance used as a heat carrier for refrigeration purposes.

e) Control air/regulation air: air used for control and regulation purposes.

f) Breathing air: compressed air used in breathing-air cylinders.

g) Breathing gas: Compressed gas used in breathing-gas cylinders.

A.6 Oil other than fuel

A.6.1 Description

This includes natural and synthetic oils other than fuel.

A.6.2 Types

Types of oil other than fuel include the following.

a) Thermal fluid: fluid used as a heat carrier in thermal-fluid heater systems.

b) Lubricating oil for gas turbines: oil used for lubricating purposes in a gas-turbine plant.

c) Hydraulic fluid: fluid used in hydraulic systems to transmit pressure and/or volumetric flow.

d) Lubricating oil for steam turbines: oil used for lubricating purposes in a steam-turbine plant.

e) Lubricating oil for gears: oil used for lubricating purposes in gears.

f) Lubricating oil for internal-combustion engines: oil used for lubricating purposes in internal-combustion engines.

A.7 Steam

A.7.1 Description

Steam is the invisible vapour into which water is converted when heated to boiling point.

A.7.2 Types

Types of steam include the following.

a) Steam for heating purposes: steam used for heating purposes.

b) Supply steam: steam that passes into an apparatus.

c) Exhaust steam: steam that is returning from an apparatus.

A.8 Fire fighting/fire protection

Fire-fighting system types include the following.

a) Fire-fighting water: water used for fire-fighting purposes.

b) Fire-fighting gas: gas used for fire-fighting purposes (e.g. CO_2).

c) Sprinkler water: water used for fire-fighting purposes in a sprinkler plant.

d) Spray water: sea water used in spray and wash-down plants.

e) Fire-fighting powder: powder used for fire-fighting purposes.

f) Fire-fighting foam: foam used for fire-fighting purposes.

A.9 Air in ventilation systems

Types of air in ventilation systems include the following.

a) Discharge air: air that is exhausted into the free atmosphere.

b) Mechanical supply air, cold: cooled air with a temperature lower than room air temperature, mechanically supplied.

c) Natural exhaust air: air that leaves a room without mechanical assistance.

d) Atmospheric air: air in an outdoor atmosphere (fresh air).

e) Mechanical exhaust air: air that leaves a room with mechanical assistance.

f) Decontaminated supply air: air that is cleaned, for example, to remove poisons or other life-threatening substances.

g) Mechanical recirculated air: air that returns to a room, i.e. a part of the exhaust air.

h) Mechanical supply air, warm: warmed air with a temperature higher than room air temperature, mechanically supplied.

i) Smoke clearance: removal of smoke after a fire.

j) Conditioned supply air: supply air that must be retained at a given temperature and humidity.

k) Natural supply air: supply air that enters a room without mechanical assistance.

Annex B
(informative)

Standard colours and equivalent colour codes

The colours of this part of ISO 14726 are defined in accordance with CIE Publication 15.2. This annex provides guidance for those countries that use other colour systems. Table B.1 contains the standard colours and their equivalent codes in other colour systems.

Table B.1 — Standard colours and equivalent colour codes

Main colour	Letter code	RAL	Pantone	Munsell code
Black	BK	9 005	Black c	N1
Blue	BU	5 015	PMS 2925 c	2.5PB 3.5/10
Brown	BN	8 001	PMS 154 c	5YR 3.5/4
Green	GN	6 018	PMS 362 c	10GY 4/10
Grey	GY	7 001	PMS 430 c	N5
Maroon	MN	8 015	PMS 490 c	2.5RP 4/12
Orange	OG	2 003	PMS 158 c	2.5YR 6/14
Silver	SR	9 006	PMS 877 c	—
Red	RD	3 000	PMS 1797 c	7.5R 4/14
Violet	VT	4 001	PMS 2633 c	2.5P 4/11
White	WH	9 010	White	N9.5
Yellow-ochre	YEO	1 021	PMS 116 c	2.5Y 8/14

NOTE Additional colour codes may by added.

Bibliography

[1] ISO 8216-0:1986, *Petroleum products — Fuels (class F) — Classification — Part 0: General*

[2] ISO 8216-1:1996, *Petroleum products — Fuels (class F) — Classification — Part 1: Categoriies of marine fuels*

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