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THE VOICE OF CARGO HANDLING

AN ILLUSTRATED GUIDE TO CONTAINER MARKING CODES

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November 2021

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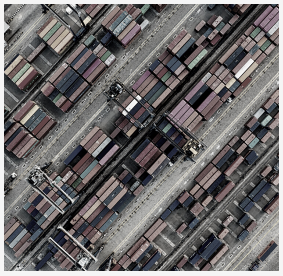

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First Published 2006

1st Revision 2014

ICHCA International BP#25

An Illustrated Guide to Container Marking Codes

ISBN: 978-1-85330-120-9

3rd Edition | Published November 2021

1. | THE NEED FOR MARKING CODES

Can you tell what kind of container is depicted on the cover of this pamphlet?

If you were familiar with the ISO numbering system and the ISO system of Size and Type codes you would be able to tell that this is a 20 foot long by 8 feet 6-inch-tall ISO general freight container with passive vents at the upper cargo space belonging to Florens Container Services Company, LTD., Hong Kong.

All this detail comes from the series of numbers in the upper right-hand corner of the container's right-hand door (see figure1 for a close-up).

Figure 1 Close up of ISO container numbers/markings

Of course, for most containers, if the container was right in front of you, you could ascertain this information simply by walking around the container. But there are numerous containers that are a little bit longer, taller or wider than normal. Some of these deviations from "standard" are not visually discernable but in all cases the information is available in the form of the ISO Size and Type Code which is displayed on the container and is typically on the manifest or other shipping document or EDI transmittal; if you know the system you will know what type of container you are dealing with.

2. | STATUS OF THE CODES

The Size and Type Codes are contained in the current edition of ISO Standard 6346. This was published in 1995 and has since been amended three times; a fourth amendment is currently being processed by ISO. Since 1995, it has been a mandatory requirement that all ISO containers must be marked with the appropriate Size and Type Codes in accordance with the Standard.

Prior to 1995, markings were optional (1984 edition of ISO Standard 6346). Some ISO containers built before 1984 will not be bear the Size and Type Code markings detailed in this pamphlet. Some will be marked only with the operational marks required by various regulatory bodies, i.e. tare, payload and maximum gross weight markings.

ISO Standard 6346 is concerned with ISO series one freight containers. There are no series two containers – the concept was to develop these to cover different sizes of containers but that has never been taken forward and there is no intention to do so at this time.

An ISO container is a container that is fully compliant with the non-optional provisions of the various ISO Standards that were in effect at the time of its construction.

Accordingly, a non-ISO container is one that does not meet the ISO standards. These are typically containers of lesser stacking or racking strength, lower payload capabilities or greater dimensions. There are also containers built that have different lifting provisions than ISO containers, e.g. they use padeyes for lifting instead of corner fittings.

It is estimated that approximately 99.9% of freight containers handled and carried in the marine mode are ISO series one containers and, furthermore, that 98% were constructed after 1995. The number of freight containers handled by ports and carried by ships that do not bear the type and size codes detailed in this pamphlet is very small.

3. | CRACKING THE CODE

The Container Number

The ISO container number, as exemplified in figure 1, consists of:

- the owner's code (CBH)
- the letter U, which designates that the number belongs to (identifies) a freight container
- the actual container number (344556)
- a check digit (3) shown in a box.

The letter U does not imply that the container is an ISO freight container, only that it is a freight container.

The check digit is mathematically derived from the preceding 10 digits. The equation to derive the check digit for each unique alphanumeric container number is set forth in ISO standard 6346. This provides a means to ensure that the container serial number is valid. It is typically used in computer-based systems as a simple means to verify that the container number has been entered correctly.

Owners' codes are internationally registered by the Bureau International des Containers (BIC) under the auspices of the International Organization for Standardization's (ISO) Technical Committee 104 (TC 104) on Freight Containers.

Also contained in ISO standard 6346 are the current size and type codes for freight containers and various operational marks.

The Size Code

There are multiple sets of size and type codes in use today. The first will be found on containers marked in accordance with the 1984 edition of ISO 6346. Typically codes from this version of the standard will be found on containers built prior to 1995.

Containers built after 1995 should be marked to the current ISO 6346, which became effective in that year, or to one of its subsequent amendments that was effective at the time the container was built.

All sets of size and type codes will provide information on the size and type of the container. The newer sets of codes provide greater specificity than the older ones. The newer codes are alpha numeric. The initial ones were strictly numeric. If the container in the example above had been marked under the initial standard the size and type code would have been 2210.

The first two digits of the size and type code are the size code. The size code describes the length, height and width of the container and, under the 1984 standard, whether or not the container was built with a gooseneck tunnel.

Gooseneck tunnels allow a container to be carried on a gooseneck chassis which lowers their overall height on the highway. This can be an important consideration when the highway has low overpasses or goes through low tunnels. The codes in the old standard were:

Table 1 SIZE CODE DESIGNATIONS IN ISO 6346 - 1984 EDITION

	NOMINAL HEIGHT *h*		*h* = 2438 MM (8 FT)		*h* = 2591 MM (8FT 6 IN)		*h* > 2591 MM (8 FT 6 IN)		1219 MM (4 FT) < *h* < 1205 MM (4 FT 3 IN)		1295 MM (4 FT. 3 IN.) < *h* < 2430 MM (8 FT.)	*h* < 1219M M (4 FT.)
ISO Freight Containers Series 1 and assimilated [1] containers	NOMINAL LENGTH *L*	TUNNEL for GOOSE NECK	WITHOUT	WITH	WITHOUT	WITH	WITHOUT	WITH	WITHOUT	WITH	WITH OR WITHOUT	WITH OR WITHOUT
		INDEX	0	1	2	3	4	5	6	7	8	9
	3,000 MM (10 FT)	1	10	11	12	13	14	15	16	17	18	19
	6,000 MM (20 FT)	2	20	21	22	23	24	25	26	27	28	29
	9,000 MM (30 FT)	3	30	31	32	33	34	35	36	37	38	39
	12,000 MM (40 FT)	4	40	41	42	43	44	45	46	47	48	49
Other Containers	3,000 MM (10 FT) < L < 6,000 MM (20 FT)	6	60	61	62	63	64	65	66	67	68	69
	6,000 MM (20 FT) < L < 9,000 MM (30 FT)	7	70	71	72	73	74	75	76	77	78	79
	9,000 MM (30 FT) < L < 12,000 MM (40 FT)	8	80	81	82	83	84	85	86	87	88	89
	L < 12,000 MM (40 FT)	9	90	91	92	93	94	95	96	97	98	99

1) "Assimilated" means that the container is accordance with ISO 1161 relating to the dimensions and location of corner fittings (horizontal plan view) and can be handled by equipment for lifting ISO containers

		Index	Size Code Designations Of Containers Having A Nominal Length < 3,000 mm (10 ft									
ISO Freight Containers	*L* < 3,000 mm (10 ft)	0	00	01	02	03	04	05	06	07	08	09
	Type of Containers		To be allocated									
Other Containers	*L* < 3,000 mm (10 ft)	5			52	53	54	55	56	57	58	59
	Internal Volume of Containers		These Codes Will Be Given Later									

Using the 1984 standard a 9'6" high (tall), 40' long, 8' wide freight container with a gooseneck tunnel would carry a size code of 45. A heated container that is 9 feet 6 inches high, 40 feet long and 8 feet wide would carry a size code 22 (figure 2 below).

Figure 2 MARKINGS FOR A 9FT 6IN HIGH X 40FT LONG X 8FT WIDE HEATED CONTAINER - TYPE 22

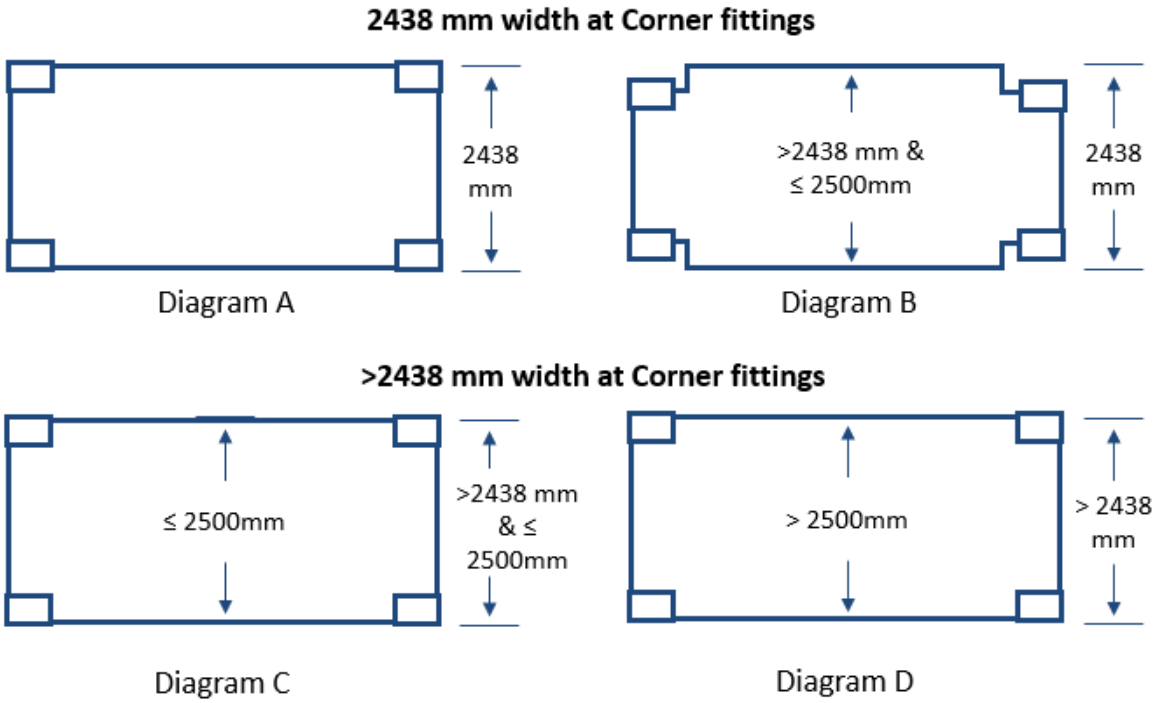
This same container, marked under the current standard, would also have a size code of 45. The current standard allows for some notable differences when compared to the old standard. Under the current standard, for example, a unique set of codes is provided for containers that are over 8 feet wide. The current size codes are shown in table 2 below.

Table 2 SIZE CODE DESIGNATIONS IN ISO 6346 - 1995 EDITION

Container length[1]		First Size Code character	Container Height		Second Size Code character - Container Width			
					2438 mm at corner fittings (8 ft)		>2438 mm at corner fittings	
mm	ft in		mm	ft in	Diagram A	Diagram B	Diagram C	Diagram D
2991	10'	1	2438	8'	0			
6058	20'	2	2591	8' 6"	2	R	C	L
9125	30'	3	2742	9'	4	S	D	M
12192	40'	4	2896	9' 6"	5	T	E	N
13716	45'	5	>2896	>9' 6"	6	U	F	P
Unassigned		6	2438 > h > 1219	8' > H > 4'	7a			
Unassigned		7	1295	4' 3"	8			
Unassigned		8	≤ 1219	≤ 4'	9			
Unassigned		9						
7150		A						
7315	24'	B						
7430	24' 6"	C						
7450		D						
7820		E						
8100		F						
12500	41'	G						
13106	43'	H						
13600		K						
Unassigned		L						
14630	48'	M						
14935	49'	N						
16154	53'	P						
Unassigned		R						

[1] Imperial dimensions are nominal lengths, for example a 20 ft container is actually 19’ 10.5“ long, see ISO 668.

[a)] Container height 1295 mm / 4' 3" strictly excluded from this category



The Type Code

Even greater flexibility was introduced with regard to the 'type' code under the 1995 standard. The old standard provided for the unique identification of 45 container types. Under the current standard 219 different types of containers are accommodated with a unique two-digit code. The codes themselves are too numerous to distill to a simple table or two and the reader is referred to ISO 6346 for the details on the current system and to Annex A of this document for the provisions that were set forth in the 1984 version of the standard. The following examples provide an idea of the flexibility of the system and the types of containers that can be identified by it.

Figure 3

Type: 45R1

a 40ft long, 9ft 6in high, 8ft wide mechanically refrigerated and heated container

Figure 4

Type: 45R1:

another 40ft long, 9ft 6in high, 8ft wide mechanically refrigerated and heated container

From this angle it is clear that the container is a "reefer".

Figure 5

42WO:
40ft long, 8ft 6in high, 8ft wide platform container with complete folding end structure. The four "flats" are shown coupled together with their built in twistlocks. In this configuration they can be lifted and handled without further banding or other means of securing the flats to one another.

Figure 6

Type L5R1

a 45ft long, 9ft 6in high, 8ft wide mechanically refrigerated and heated thermal container

Figure 7

Type 42G0

40ft long, 8ft 6in high, 8ft wide general-purpose containers with openings at one end

Figure 8

Type 2200

20ft long, 8ft 6in high, 8ft wide general-purpose container with openings at one end marked under the 1984 version of the standard

Figure 9

Type 22G1:

another 20ft long, 8ft 6in high, 8ft wide general-purpose container with openings at one end and passive vents in the upper part of the cargo space. this one is marked under the current version of the standard

Other Marks

There are several other markings, symbols and "plates" that will be found on freight containers. Each is designed to portray specific information such as the maximum amount a loaded container might weigh (Maximum Gross Mass or Max Gross), its empty weight (Tare) and the maximum weight (mass) of cargo it is designed to carry (Payload). These are detailed within ISO 6346. Examples of the specialized markings in ISO 6346 include:

High Cube Container

Over-width Container

Certain international conventions (laws) require that Approval Plates detailing some container specifics and their approval details under the relevant convention be affixed to freight containers. Two examples of these, the CSC (Convention for Safe Containers) Plate and the TIR (Carnet) Plate, are typically affixed externally to the container's front wall or to its doors.

4. | CONCLUSION

The reader is referred to the current edition of ISO 6346 and its amendments for all the finer details on size and type codes as well as the other standard markings that will be found on most freight containers.

These markings and codes tell the initiated almost everything one needs to know about the type and service capabilities of a container. They can be a critical source of information when you do not have the luxury of having the container right in front of you.

Bibliography

ISO 668:1998	Series 1 freight containers – classification, dimensions and ratings
ISO1496-1:2013	Series 1 freight containers – specification and testing – part 1: general cargo containers for general purposes
ISO 6346:1995	Freight containers – coding, identification and marking
ISO 6346:1995 /	Amendment 3: 2012
ISO 6346:1995 /	Amendment 4: 2022
ISO 10374:1991	Freight containers – automatic identification

Freight Containers – ISO Standards Handbook. This contains all the main freight container standards current at the time of publication. ISBN 92-67-10319-9.

All the above can be obtained from your local Standards Organisation or from ISO in Geneva: http://www.iso.org

The Official Register of Internationally Protected ISO Alpha Codes for Identification of Container owners (BIC-Code) ISSN is available from Bureau International des Containers. All information related to the BIC (address, contact details, NROs, etc.) and the procedure for registration can be found on the BIC website.

www.bic-code.org

Appendix A Type Code Designations

(1984 version of ISO 6346)

The following table for other characteristics of containers, the type code, does not list all the possible characteristics of any one type container. Indeed for some types, individual categories have not been listed at all as it is considered that further detailed study is needed before a satisfactory structure can be agreed.

Where alternative "spare" code numbers exist and where a code number is desired for a container having important characteristics not mentioned in the table below, it is recommended that the highest "spare" number in the appropriate block should be used pending further allocation of code numbers by the ISO/TC 104 Sub-Committees concerned.

Example

On a closed container which is not ventilated, and not a thermal or folding or air container, nor for any specific purpose, and which characteristics significantly differ from those envisaged on the designations of codes 00 to 04, use code 06."

TYPE		CHARACTERISTICS	CODE
0	General purpose container (see notes 7 and 13)	Opening(s) at one and/or both ends	00
		Opening(s) at one or both ends plus "full" opening(s) on one or both sides	01
		Opening(s) at one or both ends plus "partial" opening(s) on one or both sides	02
		Opening(s) at one or both ends plus opening roof	03
		Opening(s) at one or both ends plus opening roof, plus opening(s) at one or both sides	04
		(Spare)	05
		(Spare)	06
		(Spare)	07
		(Spare)	08
		(Spare)	09

TYPE		CHARACTERISTICS	CODE
1	Closed container, vented (see notes 1 and 13)	Passive vents at upper part of cargo space – Total vent cross section area < 25 cm2/m of nominal container length	10
		Passive vents at upper part of cargo space – Total vent cross-section area > 25 cm2/m of nominal container length	11
	Closed container, ventilated (see note 13)	(Spare)	12
		Non-mechanical system, vents at lower and upper parts of cargo space	13
		(Spare)	14
		Mechanical ventilation system, located internally	15
		(Spare)	16
		Mechanical ventilation system, located externally	17
		(Spare)	18
		(Spare)	19

TYPE		CHARACTERISTICS	CODE
2	Thermal containers (see note 2) Insulated (see note 3)	Insulated – note 2(a) applies	20
		Insulated – note 2(b) applies	21
	Heated (see note 4)	Heated – notes 2(a) and 2(c) apply	22
		(Spare)	23
	Named cargo containers	(Spare)	24
		(Spare) Livestock carrier	25
		(Spare) Automobile carrier	26
		(Spare)	27
		(Spare)	28
		(Spare)	29

TYPE		CHARACTERISTICS	CODE
3	Thermal containers – (see note 2)	Refrigerated – expendable refrigerant – notes 2(a) and 2(c) apply	30
		Refrigerated and heated – notes 2(a) and 2(c) apply	31
	Refrigerated – (see note 5)	(Spare)	32
		(Spare)	33
		(Spare)	34
	Refrigerated and heated (see notes 4 and 5)	(Spare)	35
		(Spare)	36
		(Spare)	37
		(Spare)	38
		(Spare)	39

TYPE		CHARACTERISTICS	CODE
4	Thermal containers (see note 2) Refrigerated and/or heated with removable equipment (see notes 5 and 6)	Refrigerated and/or heated with removable equipment appliance located EXTERNALLY – note 2(a) applies	40
		Refrigerated and/or heated with removable equipment appliance located externally – note 2(a) applies	41
		Refrigerated and/or heated with removable equipment appliance located EXTERNALLY – note 2(b) applies	42
		(Spare)	43
		(Spare)	44
		(Spare)	45
		(Spare)	46
		(Spare)	47
		(Spare)	48
		(Spare)	49

TYPE		CHARACTERISTICS	CODE
5	Open-top container – (see note 14)	Openings(s) at one or both ends	50
		Opening(s) at one or both ends, plus removable top member(s) in end frame(s)	51
		Opening(s) at one or both ends, plus opening(s) on one or both sides	52
		Opening(s) at one or both ends, plus opening(s) on one or both sides plus removable top member(s) in end frame(s)	53
		(Spare)	54
		(Spare)	55
		(Spare)	56
		(Spare)	57
		(Spare)	58
		(Spare)	59

TYPE		CHARACTERISTICS	CODE
6	Platform (container) Platform-based container with incomplete superstructure	Platform container – see note 8	60
		With complete and fixed ends (2)	61
		With fixed free-standing posts	62
		With complete and folding ends	63
		With folding free-standing posts	64
		With roof	65
		With open top	66
		With open top, open ends (skeletal)	67

TYPE		CHARACTERISTICS	CODE
	(see notes 7, 8, 9) Platform-based container with complete superstructure and open-sided	(Spare) (Spare)	68 69

TYPE		CHARACTERISTICS	CODE
7	Tank containers (see notes 10, 11 and 12)	For non-dangerous liquids, test pressure 0.45 bar For non-dangerous liquids, test pressure 1.5 bar For non-dangerous liquids, test pressure 2.65 bar For dangerous liquids, test pressure 1.5 bar For dangerous liquids, test pressure 2.65 bar For dangerous liquids, test pressure 4.0 bar For dangerous liquids, test pressure 6.0 bar For dangerous gases, test pressure 10.5 bar For dangerous gases, test pressure 22.0 bar For dangerous gases, test pressure (to be developed)	70 71 72 73 74 75 76 77 78 79

TYPE		CHARACTERISTICS	CODE
8	Dry bulk containers (see note 11)	Reserved for dry bulk containers (code allocation, characteristic text and notes – unless requested, shall be provided by ISO/TC 104/SC 2)	80 89

TYPE		CHARACTERISTICS	CODE
9	Air/surface containers (see note 15)		90 91 92 93 94 95 96 97 98 99

About The Author

Michael T. Bohlman is President of Knows Maritime, LLC. He previously worked for Horizon Lines, LLC (formally known as Sea-Land Service, Inc.) where in his position as Director of Marine Services, he had primary responsibility for safety, security, environmental protection, Customs, ship-to-shore communications, crew management / labour relations and regulatory compliance. In addition, he had overall responsibility for HORIZON Lines' third-party fleet management program under which 9 ships were managed and operated for the US Navy's Military SeaLift Command and the US Maritime Administration.

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