

Shipbuilding – Application of copper pipes

1. Scope This Japanese Industrial Standard specifies standard dimensions applicable to phosphorus-deoxidized copper seamless pipes used for pipings in general, in ships.

Remark: This standard makes reference to the following standards:

- JIS B 2240** – General rules for copper alloy pipe flanges
- JIS F 7435** – Shipbuilding – Brass 30 K unions with bite joint(s)
- JIS F 7436** – Shipbuilding – Copper tube 10 K brazed unions
- JIS F 7437** – Shipbuilding – Copper tube 10 K screwed unions
- JIS F 7440** – Shipbuilding – Copper pipe 20 K brazed type unions
- JIS F 7441** – Shipbuilding – Copper pipe 20 K screwed unions
- JIS H 3300** – Copper and copper alloy seamless pipes and tubes

2. Dimensions The applicable standard dimensions for pipes shall be as given in **Table 1**.

Table 1 Applicable standard dimensions for pipes

Unit: mm

Nominal dia. of joint	Outside dia. of copper pipe	Thickness																									
		1	1.2	1.4	1.5	1.6	1.8	2	2.3	2.5	2.6	2.9	3	3.2	3.3	3.5	4	4.5	5	5.5	6	7	8	8.5	9	10	
4	6	○*	○																								
6	8	○*	○*																								
	10	○*	○*	○		○		○																			
10	15		○*	○	○*	○	○	○	○	○																	
15	20		○*		○	○	○	○																			
20	25					○	○	○*																			
25	30						○	○																			
32	35					○		○	○																		
	38																										
40	45							○*	○																		
50	55							○	○				○														
65	70							○			○						○										
80	85								○								○										
100	110												○				○										
125	140												○						○								
150	160															○	○			○							
200	210															○		○				○					
250	270																○							○			
300	320																									○	

Remarks: 1. Mark ○ signifies standard dimensions for application.

2. Mark * signifies dimensions conformed with **JIS H 3300**.

3. Those shown within the thick line frame signify standard dimensions for application. For those outside standard dimensions for application shall be subject to an agreement between the parties concerned.

4. The copper pipes in **Table 1** are applicable to such products as specified in **JIS B 2240**, **JIS F 7436**, **JIS F 7437**, **JIS F 7440** and **JIS F 7441**, and others.

Reference: Reference Table 1 and 2 show exemplary applications of thickness corresponding to the outside diameters of copper pipe acceptable for various Classification Society rules (NK, AB, LR, NV).

Reference Table 1 are applied for straight pipe, and Reference Table 2 are applied for bending process pipe in condition of considering bending radius of three times outside diameter of pipe.

This Reference Table is to supplement matters relating to the object of standard, and is not part of the requirements.

Reference Table 1

Unit: mm

Nominal dia. of joint	Outside dia. of copper pipe	Thickness								
		Non-shock water Maximum working pressure 0.7 MPa Temperature 100 °C	Non-shock water Maximum working pressure 1.4 MPa Temperature 100 °C	Non-shock water Maximum working pressure 2.2 MPa Temperature 100 °C	Saturated steam Maximum working pressure 0.5 MPa Temperature 158 °C	Saturated steam Maximum working pressure 1.0 MPa Temperature 183 °C	Refrigerant in refrigerator Maximum working pressure 2.2 MPa	Hydraulic oil (*) Maximum working pressure 4.0 MPa Temperature 75 °C	Hydraulic oil (*) Maximum working pressure 7.0 MPa Temperature 75 °C	Hydraulic oil (*) Maximum working pressure 14.0 MPa Temperature 75 °C
4	6	1	1	1	1	1	1	1		
6	8	1	1	1	1	1	1	1	1	
	10	1	1	1	1	1	1	1	1	2
10	15	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.4	(2.5)
15	20	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.8	(3.5)
20	25	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(2.3)	(4.5)
25	30	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	1.6	(3)	(5)
32	35	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	2	(3.2)	(6)
	38	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(2.3)	(3.5)	(7)
40	45	2	2	2	2	2	2	(2.5)	(4.5)	(8)
50	55	2	2	2	2	2	2	3	(5)	(10)
65	70	2	2	(2.3)	2	2	2	(4)	(7)	
80	85	2.5	2.5	(2.9)	2.5	2.5	2.5	(5)	(8)	
100	110	3	3	(3.5)	3	3	3	(6)	(10)	
125	140	3	3	(4.5)	3	(4)	(4)	(8)		
150	160	3.5	3.5	5.5	3.5	(4.5)	(4.5)	(10)		
200	210	3.5	4.5	7	3.5	(5.5)	(5.5)			
250	270	4	(5.5)	(9)	4	(7)	(7)			
300	320	(4)	(7)		(4)	(8.5)	(8.5)			

Note(*): For items which are to conform to the requirements of the Classification Society (NK), this table is applicable to hydraulic oil pipes, but is not applicable to control oil pipes in the engine room.

Remarks: 1. The applications in the parentheses are other than indicated in Table 1.

2. This table is applicable to pipes with the maximum working temperature up to 200 °C for Classification Societies NK, LR and NV, and up to 208 °C for ABS.