Submission by Hailiang (Vietnam) Copper Manufacturing Co., Ltd received 3 November 2022

Hailiang Vietnam's Response to Request of Information on Standards

I · Standards Applied to Copper Tubes for Domestic Market of Vietnam and Australian Market

1. For Domestic Market of Vietnam

As reported in Attachment D-2 (Domestic Sales Database) of the initial response, the following standards are applied to copper tube products that Hailiang Vietnam sold in domestic market of Vietnam:

(1) No. ASTM B280 American Standard, which is provided at **Exhibit 1**.

(2) No. JIS H3300 Japanese Standard, which is provided at **Exhibit 2**.

(3) No. GB/T 17791 Chinese Standard, which is provided at **Exhibit 3**. Regarding the requirements of chemical composition, this standard refers to another Chinese standard No. GB/T 5231, which is provided at **Exhibit 4**. In addition, it is noted that "TP2" is also reported in Field 4.1 Specification / Standard in Attachment B-2. "TP2" is actually a copper grade number in Chinese standards, thus No. GB/T 17791 and GB/T 5231 Chinese standards also apply to the sales of copper tubes where "TP2" is reported.

2. For Australian Market

As reported in Attachment B-2 (Australian Sales Database) of the initial response, the following standards are applied to copper tube products that Hailiang Vietnam exported to Australian market:

(4) No. AS 1432 Australian Standard, which is provided at **Exhibit 5**.

(5) No. AS 1571 Australian Standard, which is provided at **Exhibit 6**.

II · Correspondence between the Copper Tube Standards for Vietnamese Market and Australian Market

Based on the scope of applications, the correspondence between the above-mentioned copper tube standards for Vietnamese market and Australian market are as follows:

Standards for Vietnamese Market		**Standards for Australian Market**	
Number of the Standard	Applications of the Copper Tube	Number of the Standard	Applications of the Copper Tube

JIS H3300	Copper and copper alloy seamless pipes and tubes for multiple applications	AS 1432	Copper tubes for plumbing, gasfitting and drainage applications
ASTM B280, GB/T 17791 and GB/T 5231	Seamless copper and copper alloys tube for air conditioner and refrigeration equipment	AS 1571	Copper-seamless tubes for air conditioning and refrigeration

III · Comparison between the Copper Tube Standards for Vietnamese Market and Australian Market

1. Chemical Composition: the standard requirements for Vietnamese market are basically the same as those for Australian market

a) Requirement of the Standards for Vietnamese Market

As stated above, the copper tube products Hailiang Vietnam sold in domestic market of Vietnam should meet the following standard: No. ASTM B280 American standard, No. JIS H3300 Japanese standard, and Chinese standards including No. GB/T 17791 and No. GB/T 5231 standards.

As shown in Table 3 of No. ASTM B280 standard, the requirement for minimum content for copper for all copper UNS Numbers are equal to or greater than 99.9%. For copper UNS number C12200, the composition of phosphorus shall be within 0.015% and 0.040%.

TABLE 3 Chemical Composition—Weight %

Element	Copper UNS No.		
	C10200[A]	C12000	C12200
Copper,[B] min	99.95	99.90	99.9
Phosphorus	. . .	0.004–0.012	0.015–0.040

[A] Oxygen shall be 10 ppm max.
[B] Copper + silver.

Table 3 of No. ASTM B280 Standard (see page 3 of Exhibit 1)

As shown in Table 2 of No. JIS H3300 standard, the requirement for minimum

Table 2 Chemical composition of tubes

Alloy No.	Chemical composition (mass %)											
	Cu	Pb	Fe	Sn	Zn	Al	As	Mn	Ni	P	Si	Cu +Fe +Mn +Ni
C 1020	99.96 min.	—	—	—	—	—	—	—	—	—	—	—
C 1100	99.90 min.	—	—	—	—	—	—	—	—	—	—	—
C 1201	99.90 min.	—	—	—	—	—	—	—	—	0.004 or over to and excl. 0.015	—	—
C 1220	99.90 min.	—	—	—	—	—	—	—	—	0.015 to 0.040	—	—

Table 2 of No. JIS H3300 Standard (see page 8 of Exhibit 2)

content for copper for all alloy numbers are also equal to or greater than 99.9%. For alloy number C1220, the composition of phosphorus shall be within 0.015% and 0.040%.

As stated above, with respect to requirement of chemical composition, No. GB/T 17791 standard refers to No. GB/T 5231 standard. According to the Table 1 in No. GB/T 5231 standard, the requirements for minimum content for Cu+Ag for all grades are also equal to or greater than 99.9%. Also, for copper code C12200, the composition of phosphorus shall be within 0.015% and 0.040%, which is exactly the same as Australian standards below.

b) Requirement of the Standards for Australian Market

Table 1 Chemical Composition for Fabricated Copper

表 1 加工铜化学成分

GB/T 5231—2012

分类 Type	代号 Code	牌号 Grade	Cu+Ag (Minimum) Cu+Ag (最小值)	Composition for Chemical elements/% 化学成分质量分数/% P	Ag	Be	Sb	As	Fe	Ni	Pb	Sn	S	Zn	O
Oxygen-free copper 无氧铜	C10100	TU00	99.99	0.000 3	0.002 5	0.000 1	0.000 4	0.000 5	0.001 0	0.001 0	0.000 5	0.000 2	0.001 5	0.000 1	0.000 5
	T10130	TU0	99.97	0.002	—	0.001	0.002	0.002	0.004	0.002	0.003	0.002	0.004	0.003	0.001
	T10150	TU1	99.97	0.002	—	0.001	0.002	0.002	0.004	0.002	0.003	0.002	0.004	0.003	0.002
	T10180	TU2[e]	99.95	0.002	—	0.001	0.002	0.002	0.004	0.002	0.004	0.002	0.004	0.003	0.003
	C10200	TU3	99.95	—	—	—	—	—	—	—	—	—	—	—	0.001 0
Silver Oxygen-free copper 银无氧铜	T10350	TU00Ag0.06	99.99	0.002	0.05～0.08	0.000 3	0.000 5	0.000 4	0.002 5	0.000 6	0.000 6	0.000 7	—	0.000 5	0.000 5
	C10500	TUAg0.03	99.95	—	≥0.034	—	—	—	—	—	—	—	—	—	0.001 0
	T10510	TUAg0.05	99.95	0.002	0.02～0.06	0.001	0.002	0.002	0.004	0.002	0.004	0.002	0.004	0.003	0.003
	T10530	TUAg0.1	99.95	0.002	0.06～0.12	0.001	0.002	0.002	0.004	0.002	0.004	0.002	0.004	0.003	0.003
	T10540	TUAg0.2	99.95	0.002	0.15～0.25	0.001	0.002	0.002	0.004	0.002	0.004	0.002	0.004	0.003	0.003
	T10550	TUAg0.3	99.95	0.002	0.25～0.35	0.001	0.002	0.002	0.004	0.002	0.004	0.002	0.004	0.003	0.003
Silver Oxygen-free copper 锆无氧铜	T10600	TUZr0.15	99.97[d]	0.002	Zr 0.11～0.21	0.001	0.002	0.002	0.004	0.002	0.003	0.002	0.004	0.003	0.002
Pure copper 纯铜	T10900	T1	99.95	0.001	—	0.001	0.002	0.002	0.005	0.002	0.003	0.002	0.005	0.005	0.02
	T11050	T2[e,f]	99.90	—	—	0.001	0.002	0.002	0.005	—	0.005	—	0.005	—	—
	T11090	T3	99.70	—	—	0.002	—	—	—	—	0.01	—	—	—	—
Silver copper 银铜	T11200	TAg0.1-0.01	99.9[g]	0.004～0.012	0.08～0.12	—	—	—	—	0.05	—	—	—	—	0.05
	T11210	TAg0.1	99.5[h]	—	0.06～0.12	0.002	0.005	0.01	0.05	0.2	0.01	0.05	0.01	—	0.1
	T11220	TAg0.15	99.5	—	0.10～0.20	0.002	0.005	0.01	0.05	0.2	0.01	0.05	0.01	—	0.1
phosphorized copper 磷脱氧铜	C12000	TP1	99.90	0.004～0.012	—	—	—	—	—	—	—	—	—	—	—
	C12200	TP2	99.9	0.015～0.040	—	—	—	—	—	—	—	—	—	—	—
	T12210	TP3	99.9	0.01～0.025	—	—	—	—	—	—	—	—	—	—	0.01
	T12400	TP4	99.90	0.040～0.065	—	—	—	—	—	—	—	—	—	—	0.002

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Table 1 of No. GB/T 5231 Standard (see page 5 of Exhibit 4)

Under Australian standards, the requirements are basically the same. As shown in table 2.1 of No. AS1432 standard, for alloy designation C12200 of AS 2738, the minimum composition of copper (including silver) is 99.9% and the composition of phosphorus shall be within 0.015% and 0.040%. This requirement is the basically the same as the requirements of the standards for Vietnamese market above.

Tubes shall be manufactured from phosphorus deoxidized copper complying with the chemical composition requirements of alloy designation C12200 of AS 2738 as specified in Table 2.1.

Chemical composition shall be determined by recognized chemical analysis methods of sufficient accuracy and reproducibility to identify an alloy that does not comply with this Standard.

TABLE 2.1

CHEMICAL COMPOSITION

Element	Composition %	
	Min.	Max.
Copper (including silver)	99.90	—
Phosphorus	0.015	0.040

Table 2.1 of No. AS1432 Standard (see page 9 of Exhibit 5)

As shown in table 1 of No. AS1571 standard, the minimum composition of copper (including silver) is 99.9% and the composition of phosphorus shall be within 0.015% and 0.040%.

6 CHEMICAL COMPOSITION Tubes shall comply with the chemical composition given in Table 1.

NOTE: The chemical composition is to be determined by recognized chemical analysis methods of sufficient accuracy and reproducibility to meet the requirements of Table 1.

TABLE 1

CHEMICAL COMPOSITION REQUIREMENTS

Element	Composition, percent	
	Min.	Max.
Copper (including silver)	99.90	—
Phosphorus	0.015	0.040

Table 1 of No. AS1571 Standard (see page 8 of Exhibit 6)

c) Comparison

The above comparison clearly shows that, with respect to the chemical composition, the requirements of the standards for copper tubes sold in domestic market of Vietnam are basically the same as those sold for Australian market.

2. Tolerance of Outside Diameter: the standard requirements for Vietnamese market are similar to or even stricter than those for Australian market

a) Requirement of the Standards for Vietnamese Market

In No. ASTM B280 standard, Table 1 specified that the tolerance of outside diameter ("**OD**") shall be within ± 0.025 mm to ± 0.051 mm, depending on the specified dimension.

TABLE 1 Standard Dimensions and Weights, and Tolerances in Diameter and Wall Thickness for Straight Lengths

NOTE 1—Applicable to drawn temper tube only.

Standard Size, in.	Outside Diameter, in. (mm)	Wall Thickness, in. (mm)	Weight, lb/ft (kg/m)	Tolerances	
				Average[A] Outside Diameter, Plus and Minus, in. (mm)	Wall[B] Thickness, Plus and Minus, in. (mm)
¼	0.250 (6.35)	0.025 (0.635)	0.068 (0.102)	0.001 (0.025)	0.0025 (0.06)
⅜	0.375 (9.52)	0.030 (0.762)	0.126 (0.187)	0.001 (0.025)	0.003 (0.08)
½	0.500 (12.7)	0.035 (0.889)	0.198 (0.295)	0.001 (0.025)	0.004 (0.10)
⅝	0.625 (15.9)	0.040 (1.02)	0.285 (0.424)	0.001 (0.025)	0.004 (0.10)
¾	0.750 (19.1)	0.042 (1.07)	0.362 (0.539)	0.001 (0.025)	0.004 (0.10)
⅞	0.875 (22.3)	0.045 (1.14)	0.455 (0.677)	0.001 (0.025)	0.004 (0.10)
1⅛	1.125 (28.6)	0.050 (1.27)	0.655 (0.975)	0.0015 (0.038)	0.004 (0.10)
1⅜	1.375 (34.9)	0.055 (1.40)	0.884 (1.32)	0.0015 (0.038)	0.006 (0.15)
1⅝	1.625 (41.3)	0.060 (1.52)	1.14 (1.70)	0.002 (0.051)	0.006 (0.15)
2⅛	2.125 (54.0)	0.070 (1.78)	1.75 (2.60)	0.002 (0.051)	0.007 (0.18)
2⅝	2.625 (66.7)	0.080 (2.03)	2.48 (3.69)	0.002 (0.051)	0.008 (0.20)
3⅛	3.125 (79.4)	0.090 (2.29)	3.33 (4.96)	0.002 (0.051)	0.009 (0.23)
3⅝	3.625 (92.1)	0.100 (2.54)	4.29 (6.38)	0.002 (0.051)	0.010 (0.25)
4⅛	4.125 (105)	0.110 (2.79)	5.38 (8.01)	0.002 (0.051)	0.011 (0.28)

[A] The average outside diameter of a tube is the average of the maximum and minimum outside diameters as determined at any one cross section of the tube.
[B] The tolerances listed represent the maximum deviation at any point.

Table 1 of No. ASTM B280 Standard (See page 2 of Exhibit 1)

In No. JIS H3300 standard, Table 11 specified that the tolerance scope of diameter ranges from ±0.05 mm to ±0.65 mm, depending on the specified dimension

Table 11 Tolerances on average diameter(13) of tubes

Outside diameter or inside diameter	Alloy No.			
	C 1020 • C 1100 • C 1201 • C 1220 • C 2200 • C 2300 • C 2600 • C 2700 • C 2800		C 4430 • C 6870 • C 6871 • C 6872 • C 7060 • C 7100 • C 7150 • C 7164	
	Class		Class	
	Common grade	Special grade	Common grade	Special grade
4 or over up to and incl. 15	±0.08	±0.05	—	—
Over 15 up to and incl. 25	±0.09	±0.06	—	—
Over 25 up to and incl. 50	±0.12	±0.08	—	—
Over 50 up to and incl. 75	±0.15	±0.10	±0.15	±0.10
Over 75 up to and incl. 100	±0.20	±0.13	±0.20	±0.13
Over 100 up to and incl. 125	±0.27	±0.15	±0.27	±0.15
Over 125 up to and incl. 150	±0.35	±0.18	±0.35	±0.18
Over 150 up to and incl. 200	±0.50	—	±0.50	—
Over 200 up to and incl. 250	±0.65	—	±0.65	—
Over 250 up to and incl. 350	±0.40 %	—	±0.40 %	—

Note (13) The term "average diameter" is defined as the mean value either obtained from the maximum and minimum outside diameters or obtained from the maximum and minimum inside diameters measured at arbitrary cross section of the tube.

Remarks 1 When the tolerance is specified for only either plus or minus side, the value in the table shall be doubled.

2 The tolerance for tubes having a dimension exceeding the range of specified dimensions shall be as agreed upon between the purchaser and the supplier.

Table 11 of No. JIS H3300 Standard (See page 22 of Exhibit 2)

In No. GB/T 17791 standard, Article 3.3.1 and Table 3 specified that, the tolerance of OD shall be within ±0.05 mm to ±0.08 mm, depending on the specified dimension.

3.3.1 管材的外形尺寸及其允许偏差应符合表 3 和表 4 的规定。
The dimension and tolerance of tubes shall comply with the requirement of Tables 3 and 4

表 3 管材的外径及其允许偏差 单位为毫米
Table 3 Outside Diameter of Tubes and Tolerance Unit: MM

尺寸范围 Specified OD	允许偏差 Tolerance
3.0～15	±0.05
>15～20	±0.06
>20～30	±0.07
>30～54	±0.08

注：当要求外径允许偏差全为(+)或全为(－)单向偏差时，其值为表中相应数值的 2 倍。

Note: When the required difference for outside diameter is all positive (+) or negative (-), the tolerance is the double of the numerical value expressed in the table.

Table 3 of No. GB/T 17791 Standard (See page 4 of Exhibit 3)

b) Requirement of the Standards for Australian Market

In No. AS 1571 standard, Article 8.2.1 and Table 2 specified that, for straight tubes, the tolerance for outside diameter are “0 to -0.08 mm”, or “0 to -0.15 mm”, or “0 to -0.30 mm”; and for coils, the tolerance for outside diameter ranges from “0 to -0.13 mm” to “o to -0.46 mm”.

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TABLE 2
DIMENSIONAL TOLERANCES FOR OUTSIDE DIAMETER

millimetres

Specified outside diameter	Tolerance*	
	Straight lengths	Coils
>3.18 ≤12.70	+0, –0.08	+0, –0.13
>12.70 ≤19.05	+0, –0.08	+0, –0.20
>19.05 ≤25.40	+0, –0.08	+0, –0.31
>25.40 ≤31.75	+0, –0.08	+0, –0.38
>31.75 ≤50.80	+0, –0.08	+0, –0.46
>50.80 ≤101.60	+0, –0.15	—
>101.60 ≤155.58	+0, –0.30	—

* Allowable deviation of mean outside diameter.

Table 2 of AS 1571 standard (See page 9 of Exhibit 6)

According to this Australian standard, only negative tolerance is allowed, while positive tolerance violate the requirement of the standard. In other words, under this Australian standard, the actual outside diameter of the finished copper tube products could be equal to or smaller than the specified outside diameter in the standard.

On the other hand, the three standards for Vietnamese market above all allow both positive and negative tolerance. Under these standards, the actual outside diameter of

the finished copper tube products could be equal to, or smaller than, or larger than the specified outside diameter in the standard. For example, for tubes with OD of 16 mm, under No. GB/T 17791 standard, the tolerance is ±0.06, which means that the scope of OD could be from 15.94 mm to 16.06 mm. And under No. AS 1571 standard, the scope of OD could be from 15.92 mm to 15 mm. This example shows that, the requirements on tolerance for outside diameter under the standard for Vietnamese market are even stricter than Australian standard

c) Comparison

In conclusion, the above comparison demonstrates that, with respect to the tolerance on outside diameter, the requirements of the standards for copper tubes sold in domestic market of Vietnam are similar to or even stricter than those sold for Australian market.

3. Tolerance of Wall Thickness: the standard requirements for Vietnamese market are similar to or even stricter than those for Australian market

a) Requirement of the Standards for Vietnamese Market

In No. ASTM B280 standard, Table 1 specified that the tolerance of wall thickness shall be within ±0.025 mm to ±0.051 mm, depending on the specified dimension. For most sizes, the allowable deviation is around or within ±10%.

TABLE 1 Standard Dimensions and Weights, and Tolerances in Diameter and Wall Thickness for Straight Lengths

NOTE 1—Applicable to drawn temper tube only.

Standard Size, in.	Outside Diameter, in. (mm)	Wall Thickness, in. (mm)	Weight, lb/ft (kg/m)	Tolerances	
				Average[A] Outside Diameter, Plus and Minus, in. (mm)	Wall [B] Thickness, Plus and Minus, in. (mm)
¼	0.250 (6.35)	0.025 (0.635)	0.068 (0.102)	0.001 (0.025)	0.0025 (0.06)
⅜	0.375 (9.52)	0.030 (0.762)	0.126 (0.187)	0.001 (0.025)	0.003 (0.08)
½	0.500 (12.7)	0.035 (0.889)	0.198 (0.295)	0.001 (0.025)	0.004 (0.10)
⅝	0.625 (15.9)	0.040 (1.02)	0.285 (0.424)	0.001 (0.025)	0.004 (0.10)
¾	0.750 (19.1)	0.042 (1.07)	0.362 (0.539)	0.001 (0.025)	0.004 (0.10)
⅞	0.875 (22.3)	0.045 (1.14)	0.455 (0.677)	0.001 (0.025)	0.004 (0.10)
1⅛	1.125 (28.6)	0.050 (1.27)	0.655 (0.975)	0.0015 (0.038)	0.004 (0.10)
1⅜	1.375 (34.9)	0.055 (1.40)	0.884 (1.32)	0.0015 (0.038)	0.006 (0.15)
1⅝	1.625 (41.3)	0.060 (1.52)	1.14 (1.70)	0.002 (0.051)	0.006 (0.15)
2⅛	2.125 (54.0)	0.070 (1.78)	1.75 (2.60)	0.002 (0.051)	0.007 (0.18)
2⅝	2.625 (66.7)	0.080 (2.03)	2.48 (3.69)	0.002 (0.051)	0.008 (0.20)
3⅛	3.125 (79.4)	0.090 (2.29)	3.33 (4.96)	0.002 (0.051)	0.009 (0.23)
3⅝	3.625 (92.1)	0.100 (2.54)	4.29 (6.38)	0.002 (0.051)	0.010 (0.25)
4⅛	4.125 (105)	0.110 (2.79)	5.38 (8.01)	0.002 (0.051)	0.011 (0.28)

[A] The average outside diameter of a tube is the average of the maximum and minimum outside diameters as determined at any one cross section of the tube.
[B] The tolerances listed represent the maximum deviation at any point.

Table 1 of No. ASTM B280 Standard (See page 2 of Exhibit 1)

In No. JIS H3300 standard, Table 13 specified that the tolerance of wall thickness shall be within ±0.06 mm to ±0.05 mm, depending on the specified dimension. For almost all sizes, the allowable deviation is within ±10%.

Table 13 Tolerances on wall thickness (Common grade)

Unit: mm

Outside diameter	Wall thickness									
	0.25 or over up to and incl. 0.4	Over 0.4 up to and incl. 0.6	Over 0.6 up to and incl. 0.8	Over 0.8 up to and incl. 1.4	Over 1.4 up to and incl. 2	Over 2 up to and incl. 3	Over 3 up to and incl. 4	Over 4 up to and incl. 5.5	Over 5.5 up to and incl. 7	Over 7
4 or over up to and incl. 15	±0.06	±0.07	±0.10	±0.13	±0.15	±0.18				
Over 15 up to and incl. 25	±0.07	±0.08	±0.10	±0.15	±0.18	±0.20	±0.30	±0.40	±0.45	
Over 25 up to and incl. 50		±0.09	±0.11	±0.15	±0.18	±0.20	±0.30	±0.40	±0.45	±8 %
Over 50 up to and incl. 100			±0.15	±0.18	±0.22	±0.25	±0.30	±0.40	±0.45	±8 %
Over 100 up to and incl. 175				±0.22	±0.25	±0.30	±0.35	±0.42	±0.45	±9 %
Over 175 up to and incl. 250					±0.30	±0.35	±0.40	±0.45	±0.50	±9 %

Remarks 1 When the tolerance is specified for only either plus or minus side, the value in the table shall be doubled.

2 The tolerances for tubes having dimensions exceeding the range of the specified dimensions shall be as agreed upon between the purchaser and the supplier.

Table 13 of No. JIS H3300 Standard (See page 23 of Exhibit 2)

In No. GB/T 17791 standard, Table 4 indicates that, depending on the specified OD or WT, the scope of tolerance is from ±0.03 mm to ±0.12mm. For most sizes, the allowable deviation is around or within ±10%.

GB/T 17791—2017

Table 4 Wall Thickness of Tubes and Tolerance

表 4 管材的壁厚及其允许偏差

Unit: MM
单位为毫米

平均外径 Average outer diameter	壁厚 Wall thickness				
尺寸范围 Scope of Sizes	0.25～0.4	>0.4～0.6	>0.6～0.8	>0.8～1.5	>1.5～2.5
	允许偏差(±) Tolerance (±)				
3.0～15	±0.03	±0.04	±0.05	±0.06	±0.07
>15～20	±0.04	±0.05	±0.06	±0.07	±0.09
>20～30	—	±0.05	±0.07	±0.09	±0.10
>30～54	—	—	±0.09	±0.10	±0.12
注：当要求壁厚允许偏差全为(+)或全为(−)单向偏差时，其值为表中相应数值的 2 倍。					

Note: When the required difference for wall thickness is all positive (+) or negative (-), the tolerance should be the double of the numerical value expressed in the table.

3.3.2 直管的不定尺长度为 400 mm～10 000 mm，管材的定尺或倍尺长度应在不定尺范围内，倍尺长

Table 4 of No. GB/T 17791 Standard (See page 5 of Exhibit 3)

b) Requirement of the Standards for Australian Market

According to Article 8.2.3 of No. AS 1571 standard, the wall thickness of tubes at any point shall not vary from the specified thickness by more than ±10%. Table 4.2 of No. AS 1571 standard shows similar range of tolerance on wall thickness.

8 DIMENSIONS AND TOLERANCES

8.1 General Tubes shall conform to the manufacturing tolerances specified in Clause 8.2.

8.2 Manufacturing tolerances

8.2.1 *Mean outside diameter* For tubes in all tempers either coiled or in straight lengths, the mean outside diameter shall not vary from the specified diameter by more than the tolerances specified in Table 2.

8.2.2 *Out-of-roundness* For tubes in the H temper supplied in straight lengths, the outside diameter at any point shall not vary from the mean diameter by more than 1%.

8.2.3 *Thickness* The thickness of tubes at any point shall not vary from the specified thickness by more than ±10%.

8.2.4 *Length* Tubes ordered to a specified length shall not vary from that length by more than the amount of tolerance specified in Table 3.

Article 8.2.3 of No. AS 1571 Standard

c) Comparison

In conclusion, the above comparison demonstrates that, with respect to the tolerance on wall thickness, the requirements of the standards for copper tubes sold in domestic market of Vietnam are same as or similar to those sold for Australian market. Hailiang Vietnam note that there is no significant difference between the requirements of the standards for Vietnamese market and Australian standards. The differences, if any, are consistent with the practice and reality of the industry, which will not result in significant difference in the product specification and quality between copper tube products for Vietnamese market or Australian market.

Moreover, in multiple instances, the tolerance allowances in the standards for Vietnamese market are less than 10%, while the tolerance allowance in No. AS 1571 standard for Australian standard is equal to 10%. In other words, the requirements of the standards for Vietnamese market could be even stricter than those for Australian market.

In any event, all costs, selling prices in domestic market and export to Australia were reported on kg basis according to the actual weight of the products. Therefore, all the tolerances within the allowed scope under the standards have already been taken into account and reflected in costs and selling prices.

4. Cleanness: the standard requirements for Vietnamese market are similar to or even stricter than those for Australian market

a) Requirement of the Standards for Vietnamese Market

In No. ASTM B280 standard, Article 10.2.2 requires that, the residue weight shall not exceed 0.0035 g/ft^2 (0.038 g/m^2) of the interior surface.

In No. GB 17791 standard, Tables 11 and 12 stipulate that the maximum allowed

amount of residue is 25 mg/m^2 or 38 mg/m^2, and there are also requirements on amount of oil content, moisture, chloridion, and paraffin.

3.9 清洁度 Cleanness

Total amount of residue on internal surface of O60 or O50 tubes shall comply with requirement in Table 11

3.9.1 软化退火(O60)和轻退火(O50)的管材内表面残留物(总量)应符合表 11 的规定。拉拔硬(H80)、轻拉(H55)和表面硬化(O60-H)状态的管材内表面残留物(总量)由供需双方协商确定。

Total amount of residue on internal surface of H80, H55 or O60-H tubes is up to the negotiation between the supplier and purchaser.

表 11 内表面残留物(总量)

Table 11 Requirement on Residue on Internal Surface (Total)

外径/mm OD/mm	残留物(总量)/(mg/m^2) Total Residue/(mg/m2)
≤15	≤25
>15	≤38

3.9.2 冰箱用铜管内表面残留物应符合表 12 的规定。

Total amount of residue on internal surface of tubes for refrigerator shall comply with requirement in Table 12

表 12 冰箱用铜管内表面残留物

Table 12 Requirement on Residue on Internal Surface of Tubes for Refrigerator

项目 Item		最大允许量/(mg/m^2) Maximum allowed amount/(mg/m2)
Residue (Total)	残留物(总量)	25
Oil	油分	7
Moisture	水分	25
chloridion	氯离子(Cl^-)	0.2
paraffin	石蜡	0.5

注 1：残留物(总量)包括可溶性和不溶性两类杂质，不包括水分。

注 2：油分包括矿物油和非矿物油。

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Note:

1. Total amount of residue includes soluble and insoluble residue and does not include moisture
2. Oil content includes mineral oil and non-mineral oil.

Tables 11 and 12 of No. GB 17791 Standard (see page 7 of Exhibit 3)

b) Requirement of the Standards for Australian Market

In No. AS 1571 standard, Article 12 require the cleanness of tubes and the amount of residue shall not exceed 0.038g/m^2.

12 CLEANNESS The inside of a tube (supplied with ends sealed) when washed with trichloroethylene shall be sufficiently clean so that the residue after evaporation of the solvent does not exceed 0.038 g/m^2 of internal surface.

Article 12 of No. AS 1571 Standard (see page 9 of Exhibit 6)

c) Comparison

The upper limit for residue is the same between the standards for Vietnam Market and Australian market, i.e., 38 mg/m^2 (equivalent to 0.038 g/m^2). While in No. GB 17791 standard for Vietnam market, there are also stricter and more detailed requirement on the residue. For example, for tubes with OD greater than 15 mm, the allowed amount of residue is 25 mg/m^2, and there are also requirements on amount of oil content, moisture, chloridion, and paraffin.

In addition, we also note that both the standard for Vietnamese market and the

standard for Australian market have requirement for capping. Specifically, both No. GB/T 17791 standard and No. AS 1571 standard provide that tubes shall be sealed by capping or other applicable method to ensure the cleanness. Article 6.2.1 of No. GB/T 17791 standard requires that the coil tubes shall be filled with protective gas and sealed. And Article 5.3 of No. AS 1571 standard requires that "Tubes shall be either capped, plugged, crimped or otherwise packaged in order to maintain internal cleanness under normal conditions of handling and storage". In this regard, the requirement on capping is similar.

IV · Conclusion

The above comparisons clearly demonstrate that, with respect to the chemical composition, outside diameter, wall thickness, tolerance and cleanness, the requirements of the standards for Vietnamese market are the same as, or similar to, or even stricter than those sold for Australian market.