[redacted] **ENGINEERING [redacted] GUIDELINES [redacted] PLANT**

Code: CU[redacted] Superseded Date: INITIAL ISSUE

Area of Use: ALL [redacted] Current Effective Date: [redacted]

DOCUMENT TITLE: PIPE MATERIAL SPECIFICATION FOR POTABLE/NON-POTABLE WATER AND NON-MEDICAL VACUUM & GAS PIPING FABRICATED WITH COPPER TUBING

I. PURPOSE

1.1. This document defines CU[redacted] – *Pipe Material Specification for Potable/Non-Potable Water and Non-Medical Vacuum & Gas Piping Fabricated with Copper Tubing* within [redacted] North America.

1.2. This pipe material specification, and associated piping guidelines, is intended for use in new construction. Application to systems going under modification or addition are applicable to the extent that compliance with this guide remains feasible from a constructability and/or cost perspective.

1.3. All legacy drawings [redacted] defining pipe material specifications fabricated and installed prior to this publication are still available for use as required when performing work and additions to existing piping systems.

1.4. This pipe material specification and its requirements are modifications, additions and/or deletions (exceptions) to the requirements listed in PIP PH[redacted] – *Hygienic Process Material Specification* [redacted] *Copper Tubing, 0.000" C.A. Nonflammable Medical Gas Systems, Mill ID Finish, Mill OD Finish,* [redacted] *Seals/Seats,* [redacted] *Joint Construction*. The section/paragraph numbers and associated headings used in this pipe material specification correspond to the ones used in PIP PH[redacted]. Since this pipe material specification does not take exception to all requirements in PIP PH[redacted], the sections/paragraph numbers in this pipe material specification may not be sequential.

II. ADDENDA TO PIP PH[redacted]:

PRESSURE-TEMPERATURE RATINGS

[Delete]

~~All ratings for Brazed Joints per ASME B16.22 Mandatory Appendix II, Table II-2 (2013)~~

[Add]

All ratings for Soldered Joints per ASME B16.22 Mandatory Appendix I, Table I-1 (2018)

ITEM	NOTES	NOMINAL SIZE, in.	WALL THICKNESS (max psig)	ENDS	DESCRIPTION	USER CODE
TUBING	75, 76, 102					
[Delete]						
		~~¼" – 4"~~			~~CU, SMLS, ASTM B819, TYPE K HARD DRAWN, CGA G-4.1, Mill finish~~	
[Add]						
		¼"	[redacted] in		CU, SMLS, ASTM [redacted] COPPER TUBE, Mill Finish	
		⅜"	[redacted] in		CU, SMLS, ASTM [redacted] COPPER TUBE, Mill Finish	
		½"	[redacted] in		CU, SMLS, ASTM [redacted] COPPER TUBE, Mill Finish	
		⅝"	[redacted] in		CU, SMLS, ASTM [redacted] COPPER TUBE, Mill Finish	

[redacted]

ENGINEERING [redacted] GUIDELINES
[redacted] PLANT

Code: CU[redacted]

Superseded Date: INITIAL ISSUE

Area of Use: ALL [redacted]

Current Effective Date: [redacted]

DOCUMENT TITLE: PIPE MATERIAL SPECIFICATION FOR POTABLE/NON-POTABLE WATER AND NON-MEDICAL VACUUM & GAS PIPING FABRICATED WITH COPPER TUBING

ITEM	NOTES	NOMINAL SIZE, in.	WALL THICKNESS (max psig)	ENDS	DESCRIPTION	USER CODE
		3/4"	[redacted] in		CU, SMLS, ASTM [redacted], COPPER TUBE, Mill Finish	
		1	[redacted] in		CU, SMLS, ASTM [redacted], COPPER TUBE, Mill Finish	
	516	1 1/4"	[redacted] in		CU, SMLS, ASTM [redacted], COPPER TUBE, Mill Finish	
		1 1/2"	[redacted] in		CU, SMLS, ASTM [redacted], COPPER TUBE, Mill Finish	
		2	[redacted] in		CU, SMLS, ASTM [redacted], COPPER TUBE, Mill Finish	
	516	2 1/2"	[redacted] in		CU, SMLS, ASTM [redacted], COPPER TUBE, Mill Finish	
		3	[redacted] in		CU, SMLS, ASTM [redacted], COPPER TUBE, Mill Finish	
	516	3 1/2"	[redacted] in		CU, SMLS, ASTM [redacted], COPPER TUBE, Mill Finish	
		4	[redacted] in		CU, SMLS, ASTM [redacted], COPPER TUBE, Mill Finish	
VALVES *[Add]*	09					
Gate		1/4" – 3"	200 CWP	THRD x THRD	Bronze body and wedge, 150 pound, non-rising stem	V-1[redacted]0
					Approved Valve(s): [redacted] Figure 437 – Source: [redacted] - Bronze Valves Catalog page 16	
		1/2" – 3"	200 CWP	SLD x SLD	Bronze body and wedge, Solder Ends, 150 pound, non-rising stem	V-1[redacted]0 (Solder)
					Approved Valve(s): [redacted] Figure 1320 – Source: [redacted] - Bronze Valves Catalog page 17	
		1/4" – 3"	200 CWP	THRD x THRD	Bronze body and wedge, 150 pound, rising stem	V-1[redacted]1
					Approved Valve(s): [redacted] Figure 431 – Source: [redacted] - Bronze Valves Catalog page 14	
		1/2" – 3"	200 CWP	SLD x SLD	Bronze body and wedge, Solder Ends, 150 pound, rising stem	V-1[redacted]1 (Solder)
					Approved Valve(s): [redacted] Figure 1330 – Source: [redacted] - Bronze Valves Catalog page 18	
Globe		1/4" – 3"	200 CWP	THRD x THRD	Globe/angle globe, bronze body, stainless steel plug and seat ring, 150 pound	V-2[redacted]1
					Approved Valve(s): [redacted] Model 101T-LF (lead free) – Source: [redacted] Commercial Valve Catalog Page J-2	
					[redacted]	

Attachment I: Approved Valves Catalog Information

This Attachment, Attachment I of [redacted]-*Pipe Material Specification, Selection, Development, and Application Guideline*, provides an update to *legacy* Construction Specification Section [redacted] *Valve Specifications Sheet*. New systems constructed within [redacted] North America facilities should follow the specified Pipe Material Specifications and refer to this attachment to ensure proper procurement of valves in compliance with [redacted] North America standards.

Each page within this attachment contains the following header:

[redacted] Attachment I: Approved Valves Catalog Information
USER CODE: V-#### (Page # of #)
PMS: XX##, XX##, XX##, ETC.

Line 1:
The first line of the header is the name and title of this attachment.

Line 2:
The second line lists the USER CODE which corresponds to two documents:

1) the "VALVE NO." column on *legacy* Section [redacted] Valve Specification Sheets
2) the "USER CODE" column on the Pipe Material Specifications
3) If the individual valve is identified on multiple pages, a (Page # of #) will appear next to the User Code

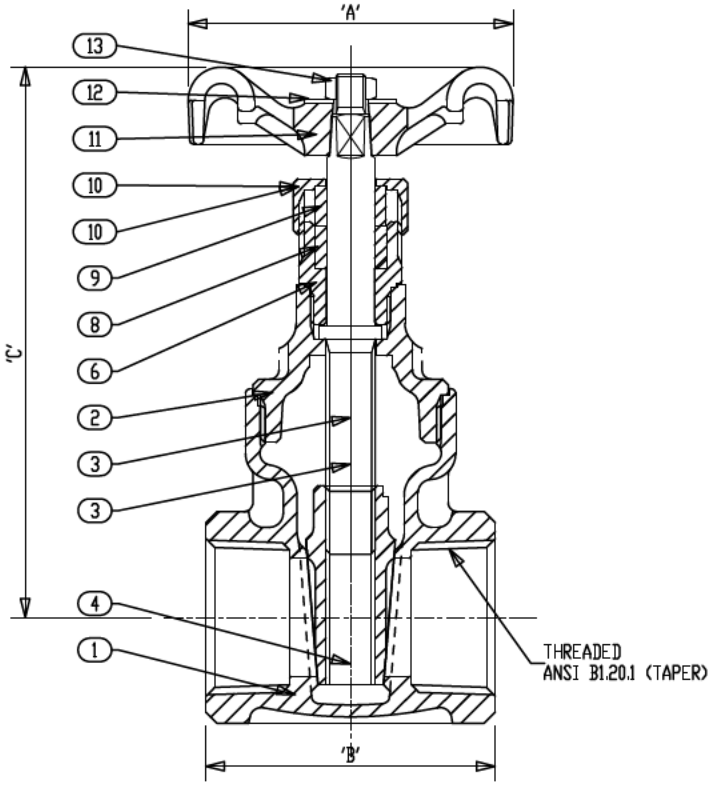
   NOTE: Valves V-5[redacted]0, V-5[redacted]0, V-6[redacted]0, V-8[redacted]0, V-8[redacted]0, and V-8[redacted]0 are not named in *legacy* Section [redacted] They have been numbered in this document for identification on the Pipe Material Specification only

Line 3:
The third line lists the Pipe Material Specification Code(s) where the individual valve is listed as an appropriate option for use within a particular piping system/ fluid service.

Use of other valves (different name brand, model, etc.) that are similar to the valves listed in this attachment are permissible with written end user approval.

Class 150 • Threaded Bonnet • Non-Rising Stem • Threaded Ends

437 Gate Valve



Materials of Construction

No.	Description	Material	ASTM Spec.
1	Body	Bronze	B-62 C83600
2	Bonnet	Bronze	B-62 C83600
3	Stem	Copper Silicon Bronze	B-371 C69400
4	Disc	Bronze	B-62 C83600
6	Stuffing Box	Brass	B-371 C69400
8	Packing Ring	Graphite (Asbestos Free)	
9	Gland	Brass	BSEN12164 CW614N
10	Packing Nut	Brass	BSEN12164 CW614N
11	Handwheel	Malleable Iron	A-197 F22000
12	ID Plate	Aluminum	
13	Handwheel Nut	Brass	BSEN12164 CW614N

See page 8 for Pressure-Temperature Ratings.

Industry Standards
MSS SP-80, Type 1

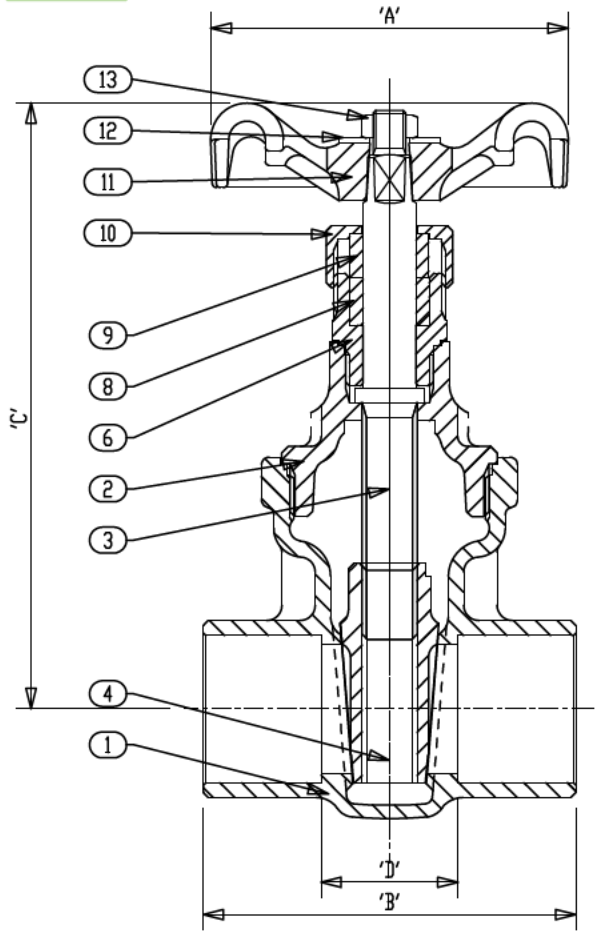
Dimensions and Weights

Inches (millimeters) - Pounds (kilograms)

Valve Size	Dimensions			Wt.
	C	A	B	
¼	[redacted]			
⅜				
½				
¾				
1				
1 ¼				
1 ½				
2				
2 ½				
3				

200 CWP • Threaded Bonnet • Non-Rising Stem • Solder Ends

1320 Gate Valve



Materials of Construction

No.	Description	Material	ASTM Spec.
1	Body	Bronze	B-62 C83600
2	Bonnet	Bronze	B-62 C83600
3	Stem	Copper Silicon Bronze	B-371 C69400
4	Disc	Bronze	B-62 C83600
6	Stuffing Box	Copper Silicon Brass	B-124 C37700
8	Packing Ring	Graphite (Asbestos Free)	
9	Gland	Brass	BSEN12164 CW614N
10	Packing Nut	Brass	BSEN12164 CW614N
11	Handwheel	Malleable Iron	A-197 F22000
12	ID Plate	Aluminum	
13	Handwheel Nut	Brass	BSEN12164 CW614N

Caution: Before installing solder-joint valves, be sure solder or brazing alloy melting point is high enough to withstand line pressure, temperature conditions, and is compatible with fluid medium.
See page 7 for Adjusted Pressure-Temperature Ratings.

Industry Standards
MSS SP-80, Type 1

Dimensions and Weights

Inches (millimeters) - Pounds (kilograms)

Valve Size	Dimensions	[redacted]
½	[redacted]	
¾		
1		
1 ¼		
1 ½		
2		
2 ½		
3		

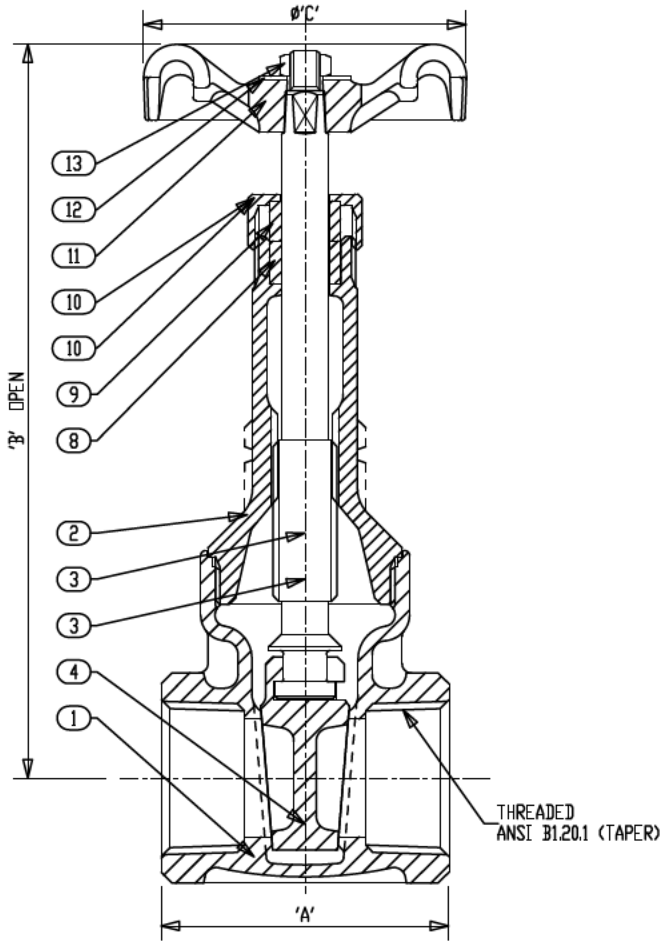
*Piping Make-Up Dimensions

[redacted]

[redacted]

Class 150 • Threaded Bonnet • Rising Stem • Threaded Ends

431 Gate Valve



Materials of Construction

No.	Description	Material	ASTM Spec.
1	Body	Bronze	B-62 C83600
2	Bonnet	Bronze	B-62 C83600
3	Stem	Copper Silicon Bronze	B-371 C69400
4	Disc	Bronze	B-62 C83600
8	Packing Ring	Graphite (Asbestos Free)	
9	Gland	Brass	BSEN12164 CW614N
10	Packing Nut	Brass	BSEN12164 CW614N
11	Handwheel	Malleable Iron	A-197 F22000
12	ID Plate	Aluminum	
13	Handwheel Nut	Brass	BSEN12164 CW614N

See page 8 for Pressure-Temperature Ratings.

Industry Standards
MSS SP-80, Type 2

Dimensions and Weights

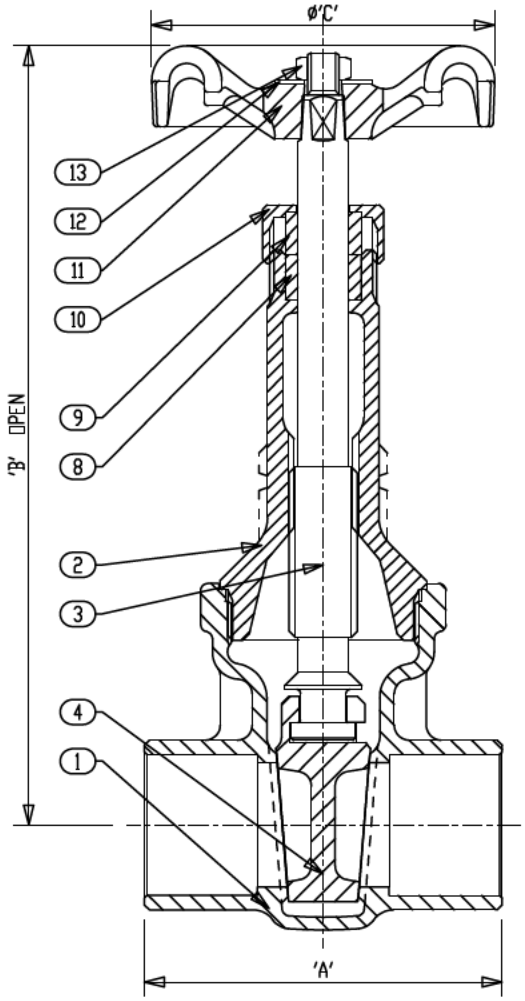
Inches (millimeters) - Pounds (kilograms)

Valve Size	Dimensions			Wt.
	B	C	A	
¼	[redacted]			
⅜				
½				
¾				
1				
1 ¼				
1 ½				
2				
2 ½				
3				

[redacted]

200 CWP • Threaded Bonnet • Rising Stem • Solder Ends

1330 Gate Valve



Materials of Construction

No.	Description	Material	ASTM Spec.
1	Body	Bronze	B-62 C83600
2	Bonnet	Bronze	B-62 C83600
3	Stem	Copper Silicon Bronze	B-371 C69400
4	Disc	Bronze	B-62 C83600
8	Packing Ring	Graphite (Asbestos Free)	
9	Gland	Brass	BSEN12164 CW614N
10	Packing Nut	Brass	BSEN12164 CW614N
11	Handwheel	Malleable Iron	A-197 F22000
12	ID Plate	Aluminum	
13	Handwheel Nut	Brass	BSEN12164 CW614N

Caution: Before installing solder-joint valves, be sure solder or brazing alloy melting point is high enough to withstand line pressure, temperature conditions, and is compatible with fluid medium.
See page 7 for Adjusted Pressure-Temperature Ratings.

Industry Standards
MSS SP-80, Type 2

Dimensions and Weights

Inches (millimeters) - Pounds (kilograms)

Valve Size	Dimensions			Wt.
	A	B	C	
½	[redacted]			
¾				
1				
1 ¼				
1 ½				
2				
2 ½				
3				

[redacted]

MODEL 101S/101S-LF
SOLDER END RISING STEM GATE VALVE

LEADFREE OPTIONS

FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- 200 CWP
- Max. Temp: 406°F
- Lead Free Option (NSF/ANSI/CAN 61 & NSF/ANSI 372)

STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

APPROVALS
- CRN 0C14667

PART NUMBER	LF PART NUMBER	NPS	LENGTH (IN.)	HEIGHT (IN.)	WEIGHT (LB.)
[redacted]	[redacted]	1/2	1.88	[redacted]	[redacted]
		3/4	2.43		
		1	2.96		
		1-1/4	3.14		
		1-1/2	3.44		
		2	4.11		
		2-1/2	4.79		
		3	5.43		

Length is measured from end-to-end.
Height is measured from centerline to top of wheel in full open position.

MODEL 101T/101T-LF
NPT END RISING STEM GATE VALVE

LEADFREE OPTIONS

FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- 200 CWP
- 125 SWP
- Max. Temp: 406°F
- Lead Free Option (NSF/ANSI/CAN 61 & NSF/ANSI 372)

STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

APPROVALS
- CRN 0C14667

PART NUMBER	LF PART NUMBER	NPS	LENGTH (IN.)	HEIGHT (IN.)	WEIGHT (LB.)
[redacted]	[redacted]	1/4	[redacted]	[redacted]	[redacted]
		3/8			
		1/2			
		3/4			
		1			
		1-1/4			
		1-1/2			
		2			
		2-1/2			
		3			

Length is measured from end-to-end.
Height is measured from centerline to top of wheel in full open position.

MODEL 102S/102S-LF
SOLDER END-NON RISING STEM GATE VALVE

LEADFREE OPTIONS

FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- 200 CWP
- Max. Temp: 406°F
- Lead Free Option (NSF/ANSI/CAN 61 & NSF/ANSI 372)

STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

APPROVALS
- CRN 0C14667

PART NUMBER	LF PART NUMBER	NPS	LENGTH (IN.)	HEIGHT (IN.)	WEIGHT (LB.)
[redacted]	[redacted]	1/2	[redacted]	[redacted]	[redacted]
		3/4			
		1			
		1-1/4			
		1-1/2			
		2			
		2-1/2			
		3			

Length is measured from end-to-end. Height is measured from centerline to top of wheel in full open position.