## **GENERAL DATA**

Section A1, sheet 1 of Name and address of manufacturer : Wuxi Chemical Equipment Co.,Ltd. Huayi road, Hua Zhuang Town, Wuxi, Jiangsu. China. : 4505600575 Principal's purchase order No. Item No.: 18-X-1810 Equip. tag No. and name : Caustic Dilution Cooler Manufacturer's production order No. : WHA22-031-1 Applicable design code ASME SECTION VIII DIV.1 2021 ED. Year of manufacture 2023 Manufacturer's serial No : WHA22-031-1 Name of design org. : Wuxi Chemical Equipment Co.,Ltd. Name of inspection org. : Wuxi Chemical Equipment Co.,Ltd. Type of vessel : Heat Exchange Design pres. int/ext psig[Bar(g)] : SHELL SIDE:150[10.342];TUBE SIDE:120/15[8.273/1.03] Design temperature °F[°C] : SHELL SIDE:190[87.78];TUBE SIDE:150[65.6]/300[148.9] ID In[mm] : 25[635] Wall thickness, Actual In[mm]: 0.472[12]/0.551[14] In.[mm] : SHELL SIDE:1/8[3.175];TUBE SIDE:1/8[3.175] Corrosion allowance, In.[mm] : 234.785[5963.5] Overall length of vessel Lb[Kg] : 9760[4436] Weight of vessel (empty) Weight of vessel incl. internals (empty) : / Heat treatment : YES When yes, type of heat treatment: Head/Tube bends/Channel/Shell side: Stress Relieving Pressure test date : SHELL SIDE:2023-2-23;TUBE SIDE:2023-2-27 Position : Horizontal psig[Barg] : SHELL SIDE:435[30];TUBE SIDE:435[30] Test pressure Test medium : Water Temperature of medium °F [°C] : SHELL SIDE:64.4[18];TUBE SIDE:64.4[18] NDE: - radiography (X-ray/Gamma-ray) : YES;FULL : YES;100% ultrasonic magnetic/particle : YES;100% : YES;100% dye penetrant Joint efficiency : SHELL SIDE:1.0;TUBE SIDE:1.0 Type of equipment support : LIFTING LUG Number(s) of approved drawing(s) WXCE6721-00 Rev. No.: 05 WXCE6721-00 Rev. No.: 05 WXCE6721-01 Rev. No.: WXCE6721-02 Rev. No.: 05 WXCE6721-03 Rev. No.: 05 WXCE6721-04 Rev. No.: WXCE6721-05 Rev. No.: 05 WXCE6721-06 Rev. No.: 04 Delete what does not apply

For manufacturer:

Name: Xu Junhua

Position: QC Engineer

Place and date

Huayi road, Hua Zhuang Town, Wuxi, Jiangsu, China Signature and stamp For inspection organization:

Name:

Position:

Name of company:

Place and date:

Date:

17, 2023

2023 3

## FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS

Date:	Aug. 17, 2	(
Date:	Any . 7 .:	7
	Page 1 of	

			-	AS RE	equirea	by the	Provision	ons (	of the	e ASME	Boiler	anc	Press	sure Ves	sel Co	de R	lules	s, Sect	tion VIII,	Divis	sion 1		
1.	Manu	ıfactı	ured	and c	certified	by	Wuxi Chemical Equipment Co., Ltd.																
36 H							36 Huayi Road, Binhu District, Wuxi, Jiangsu Province 214131, P. R. China.																
	2272													and addre							-		
2.	Manu	ifacti	ured	for			Air Products Manufacturing LLC., 1940 Air Products Blvd., Allentown PA 18106-5500, USA.																
3.	Locati	ion c	of ins	tallati	on		(Name and address of Purchaser)																
0.	Not Known																						
4.	Туре				Н	orizonta	al						Heat	Name and a	address)				V	۸/LI ۸	22-03	1 1	
		-		(H	lorizontal,	vertical, o	r sphere)			-	(Tank, se	parat		essel, heat	exch etc	2.)						I number)	
				NA				WX	CE6	721-00						08			(Wallo	actore		2023	
				(CRN)			(Drawing number)							National Board number						(Year built)			
5. /	ASME (	Code	Sec	ction \	/III, Div.	1				2021						N	IA			-		NA	
Iter	ns 6_1	1 inc	l to	he co	malatas	l for ain					pplicable (d	- 23				de Cas				[S	pecial S	ervice per	UG-120(d)
	Shell:				of course		gie waii t	esse	eis, je		т јаскете	ed v					nger	s, or c	hamber c	f mu	ıltichaı	nber ve	essels.
O. C	JIICII.	(a)	INUIT	iber 0		;(S)	-			2			(	b) Overa	all leng	th 				177	***		
		С	ourse	(s)			Materi	al		T	hickness			Long. Joint	(Cat. A)			Circum.	Joint (Cat. A	В&С	2)	Heat T	reatment
No	Di	iamete	er		Length		Spec./Grade	or Typ	е	Nom.	Cor	т.	Туре	Full, Spot	, None	Eff.	Тур	e Fu	III. Spot, Non	е	Eff.	Temp.	Time
1		ID 25"			98.425		SA-516 G	.70N		0.472	1/8	7	1	Full f	RT	1.0	1		Full RT		1.0	Ren	nark 1
1		ID 25"			78.575"		SA-516 G	.70N		0.472	1/8		1	Full F	RT	1.0	1		Full RT		1.0	Ren	nark 1
1				T				-		В	ody Flan	ges	on She	lls		_							
.	_																		Bolting	\\/:	esher		
No.	Туре		D	OE		nge Thk	Min Hub T	nk	Ма	terial	How Attac	hed	Location	-	Num & Si s 1-1/8"-8		_	Bolting	Material	(OD,	ID,Thk)		er Material
1	Integral	-	5"	32.28	83" 3	.743"	0.472		SA-26	6 Gr.2N	Welded	1	Left		L=15.94			SA-19	3 Gr.B7		156", 3", 0.25"	1	E PCC-1 ype 1
NA	NA NA	-	IA	N.A		NA	NA		Intro-	NA	NA		NA		NA			1	NA A	١	NA		NA
/ . F	leads: (	(a)		(1) 4-1-			Gr.70N,						(b)						NA				
T	Location	(Тор.	Τ	Thick		number, g	rade or type Radius	e) (H.T		ne and ten	np.) Conica		Uamia	pherical					rade or type)	(H.T.			
	Bottom, E	Ends)	٨	lin.	Corr.	Crov		ickle		Ratio	Apex Ang			dius	Fla Diame			ivex	ressure Concave	Ту		ategory ull, Spot, N	
(a)	Right E	End	0.3	394"	1/8"	N/	A N	IA		2:1	NA		1	1A	NA		N	A	Yes	5		NA	1.0
(b)	NA		1	NA	NA	N/	N N	IA		NA	NA		1	1A	NA	İ	NA		NA	N,	Α	NA	NA
	T								-	Вс	ody Flang	jes	on Hea	ds					D. III				
	Locatio	on T	vne	ID	OD	Flange 1	The Min	Hub T	hl	Maia	-:	er.		, Nun	n & Size	T B	oltino	Material	Bolting Was	sher	T	MasharA	Antorial
(a)				NA	NA NA	NA	TIIK IVIIII	NA	IIK	Material NA		HO	w Attache NA	· ·	NA		NA		(OD, ID, Th				
(b)	NA	1	NA	NA	NA	NA		NA NA						NA NA					NA NA				
3. T	ype of j	acke	ŧ				NA				Ja	cke	t closu	·e				200	NA		N. rathrama.		
																	(De	scribe a	s ogee and	weld, t	oar, etc.	The same of the sa	
					; If bolte	ed, des	cribe or s	ketcl	า								IA_		1	沈	田瓜	那	
9. M	AWP .		97ps		-	NA ———	at max.	temp	١.	190°F		Ν	A N	/lin. desi	gn met	al ter	np.	3	32°F :	at	<u>/</u> 2	97psig	3
ו חו	mpact t		nterna	al)		(ternal)		00/0		(Internal	5		ernal)					SCHOOL STATE	1	· 英	10 50 S	6	
i (). i	mpacit	iesi	100				d per UG						at test	emperat	ure of				1 17 13	NA	- 30	W.	
1. F	Hydro.,	pneı	10 ,.L	comb	o. test p		o and the co	ompon			sted] : 424.7ps	sia		Pro	of test				原道	联列	持照	音	
							sections				121.700				or test				Sal and	IVA	1/14	7	
	ubeshe				A-266 C			*		25"				2.260	en.			4 / 4 !!		N.	01		
		•			ary (materi	Samuel Co.	 no )]	ιDi	amete		to press 11			2.362				1/4"		<b>.</b>		mped	
					NA		- 11	o )] [Diameter (subject to press.)] NA				(1)	(Nominal thickness) NA				(Corr. allow.) [A			[Attachment (welded or bolted)] NA			
			5000	[Floatin	g (materia	I spec. no	0.)]			(Diameter	)		4)	lominal thic	kness)	= 1	iC	orr allo	w.)			chment)	
3. T	ubes				SA-179	9				0.75"				0.083"(n	nin.)			182	a-radii		********	U	
			(Mate	rial spec	c. no., grad	de or type	*)			(OD.)			(N	ominal thic	kness)	-	-	Number	')	i.	Type (st	raight or I	Di

(Nominal thickness)

(Number)

[Type (straight or U)]

Date: Aug. 17, 2023

Date FORM U-1 2 Page 3 Manufactured by Wuxi Chemical Equipment Co., Ltd Manufacturer's Serial No WHA22-031-1 CRN NA National Board No. 508 Items 14-18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers. 14. Shell: (a) No. of course(s) b) Overall length 27.559 Course(s) Material Thickness Long. Joint (Cat. A) Circum. Joint (Cat. A, B & C) Heat Treatment No Diameter Length Spec./Grade or Type Nom Corr Full, Spot, None Туре Eff Туре Full, Spot, None Fff Temp. Time 1 ID 25 27.559 SA-516 Gr.70N 0.551 1/8 1 Full RT 1.0 1 Full RT 1.0 Remark 3 NA Body Flanges on Shells Bolting M Type ID OD Flange Thk Min Hub Thk Material How Attached Washer Location Num & Size **Bolting Material** Washer Material (OD, ID, Thk) Integral 36Nos 1-1/8"-8UN-2A 25 32.283 374 0.551 2.156 ASME PCC-1 SA-266 Gr 2N Welded Left SA-193 Gr. B7 L=12.992" 1.188". 0.25 Type 1 Integral 36Nos 1-1/8"-8UN-2A 32.283 3.74 0.551 SA-266 Gr.2N 2.156 ASME PCC-1 Welded Right SA-193 Gr.B7 L=15.945 1.188", 0.25" Type 1 15. Heads: (a) SA-266 Gr.2N, No H.T. (b) NA (Material spec. number, grade or type) (H.T. — time and temp.) (Material spec. number, grade or type) (H.T. — time and temp.) Thickness Radius Location (Top. Elliptical Conical Side to Pressure Hemispherical Category A Flat Bottom, Ends) Ratio Min Con Crown Knuckle Apex Angle Radius Diameter Convex Concave Туре Full, Spot, None Fff (a) Left End 2.953 1/8 MA NA NA NA 32.283 Yes Yes S NA 1.0 (b) NA Body Flanges on Heads Location ID Type 00 Flange Thk Min Hub Thk Washer Material How Attached Num & Size Bolting Material Washer Material (OD, ID, Thk) (a) NA (b) NA NA NA NA NA NA MA NA NA NA 16. MAWP 214.88psig FV at max. temp. 150°F 300°F Min. design metal temp. 32°F 214.88psig at (Internal) (External) (Internal) (External) 17. Impact test No, exempted per UG-20(f), UCS-66(a), (c) at test temperature of NΔ [Indicate yes or no and the component(s) impact tested] 18. Hydro., pneu., or comb. test pressure Hydro. at 424.7psig Proof test NA 19. Nozzles, inspection, and safety valve openings: Purpose Material Nozzle Thickness Diameter Attachment Details Reinforcement (Inlet, Outlet, Drain, etc.) Type Location or Size Nozzle Flange Material Nom Corr Nozzle (Insp. Open.) Flange T1, TS Inlet NPS 6 CL.300 WN/RF SA-106 Gr. B SA-105N Sch80 1/8 SA-516 Gr.70N Fig. UW-16.1(d) None RT, eff.1.0 T2, TS Outlet NPS 6 CL.300 WN/RF SA-106 Gr. B SA-105N Sch80 1/8 SA-516 Gr.70N Fig. UW-16.1(d) None RT, eff. 1.0 S1, SS Inlet NPS 3 CL.600 LWN/RF SA-105N SA-105N 0.803 1/8 Inherent Fig. UW-16.1(c) S2, SS Outlet 1 NPS 3 CL.600 LWN/RF SA-105N SA-105N 0.803 1/8 Inherent Fig. UW-16.1(c) NA V. Vent NPS 2 CL.300 LWN/RF SA-105N SA-105N 0.653 1/8 Inherent Fig. UW-16.1(c) NA D, Drain 1 NPS 2 CL.300 LWN/RF SA-105N SA-105N 0.654 1/8 inherent Fig. UW-16-1(c) NA Aux 1~2, Auxiliary 2 NPS 2 CL.300 LWN/RF SA-105N SA-105N 0.654 1/8 Inherent Fig. UW-16.1(c) AN Aux 3~4, Auxiliary 2 NPS 2 CL.300 WN/RF SA-266 Gr.2N SA-105N Sch80 1/8" Inherent Fig. UW-16.1(c) None RT eff 1.0 20. Supports: Skirt No Lugs NA Legs NA Others 2Nos Saddles Attached Welded to shell (Yes or no) (Number) (Number) 21. Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of (Describe) the report (list the name of part, item number, Manufacturer's name, and identifying number): 22. Remarks

See attached Form U-4.

Mfr. Representative:

Authorized Inspector:

Aug. 17, 2023

M==f==td-l-				RM U-1		ď	Page	3	of	3
Manufactured by	/ Wuxi C	hemical Equipment Co.,	Ltd.							
Manufacturer's S	Serial No.	WHA22-031-1	CRN _	NA	Nati	onal Board	No.	50	08	
			CERTIFICATE (	OF SHOP COMPLIA	NCE					
We certify that th	e statemen	ts in this report are cor				struction	and wor	kmanshin o	f this s	iossol
		AND PRESSURE VESS			material, cor	iotraotion,	ana wor	Milansiip o	1 (1115 )	76226
U Certificate of Au			30,972	Expires	April 16	, 2026		,		
Date	Aug. 17, 202	Name	Wuxi Cher	mical Equipment Co.	, Ltd.	Signed		2 PAR		
				(Manufacturer)				(Representa	itive)	
			CERTIFICATE	OF SHOP INSPECT	ION			•		
I, the undersigned	l, holding a	valid commission issue	d by the Nation	nal Board of Boiler	and Pressure	e Vessel!	nspectors	and emplo	ved b	v
		APAVE SA			of		. /	a consideration and asset Property	,	,
have inspected the	pressure ve	essel described in this Ma	inufacturer's Dat	ta Report on		April 13	, 2023			and
state that, to the b	est of my kr	nowledge and belief, the	Manufacturer h	nas constructed this	pressure ves	sel in acc	ordance v	with ASMF F	BOILE	RANI
		ction VIII, Division 1. By sig								
		sure vessel described in								chall
		personal injury or proper							Jioyei	SHAII
Date Ana	17 7073	Signed	, admaga ar a	7	Commissions	inected wit				
_ ~~	/. /				Commissions			15677	liver or	
		CERTIE	(Authorized I	D ASSEMBLY COM	ADLIANCE	(National Bo	ard Authorize	d Inspector Comr	nission n	umber)
We certify that the	statements ii									
		this report are correct a					sel confor	ms with the i	equire	ments
	ND FRESSU	RE VESSEL CODE, Secti	on VIII, Division	U Certificate of Auth	norization Num	ber ——	**************************************	Expires		
Date		Name –				Signed				
				(Assembler)				(Representat	ive)	

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by , have compared the statements in this Manufacturer's Data Report with the described pressure vessel and state that parts referred to as data items , not included in the certificate of shop inspection, have been inspected by me and to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of . By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection. Date Signed Commissions

(Authorized Inspector)

07/17



## FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section Vill, Division 1

1.	. Manufactured and o	certified by	Wuxi Che	mical Equipme	ent Co., Ltd.								
	-		36 Huay	Road, Binnu (Na	District, Wuxi, Jia me and address of M	ngsu Province 2141	131, P. R. China.						
2.	Manufactured for _		Air Pro	ducts Manufa	cturing LLC., 1940	) Air Products Blvd.	, Allentown PA 1810	6-5500. USA					
3.	Location of installati	ser)											
		***************************************				Not Known (Name and address)							
4.		lorizontal		-	Heat exch.	William the same of the control of t		IA22-031-1					
	(Horizontal,	vertical, or sphe	ere)	(Tank, s	eparator, heat exch.,	etc.)	rer's serial number)						
	NA			WXCE6721-	00 Rev. 05	508	8	2023					
	(CRN	)		(Drawing r	number)	(National Boa	rd number)	(Year built)					
	Data Report Item Number												
-	Remarks:	1 The shell	Lwas porfo	rmed DM/IT	at 1166~1184°F, h	Remarks							
	Tromanto.	2 The shell	l side hood	is sold forms	at 1166~1184°F, h	olding 1hr.							
		performed :	at 1166~11	84°F, holding	30mine	ertification indicating	g SR heat treatment	after cold forming was					
		3. The char	nel was ne	erformed PWH	T at 1166~1184°F	holding the							
		4. Nozzle(V	//D/Aux 1/ A	Aux 2/ Aux 3/	Aux 4) blind flange	. 6Nos SA-105NI /	VEME D16 5 2017 NI	PS 2 CL.300 BL/RF, fixed					
		with full thre	ead studs S	A-193 Gr. B7.	5/8"-11 UNC-2A	I =5 91" 8 pcs for 6	asch nozzlo, and hos	25 2 CL.300 BL/RF, fixed					
		with full thread studs SA-193 Gr. B7, 5/8"-11 UNC-2A, L=5.91", 8 pcs for each nozzle, and heavy hex nuts SA-194 Gr. 2H, 5/8"-11UNC-2B, 16 pcs for each nozzle.											
		5. The U-tul	be bends w	vere performed	SR at 1166~117	5°F, holding 0.5hr.							
		<ul><li>5. The U-tube bends were performed SR at 1166~1175°F, holding 0.5hr.</li><li>6. Inspection openings are omitted according to UG-46(a)(2).</li></ul>											
		7. The over	pressure pr	otection syste	m not supplied by	the vessel Manufac	cturer.						
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							3.77	10 mg					
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Certifi	icate of Authorization:	Type	U	No.	30.072	Evoiros		The same of the sa					
		- 750	-		30,972	Expires	April 10	5, 2026					
Date	Aug. 17, 20	023	Name	Wuxi Char	mical Equipment C	o I td O:	. 2	- Pat					
	3   2.		. 101110	TYUNI CITE	(Manufacturer)	o., Ltd. Signed	- Ital	1430					
2005 0000	1	5			0-		(1	Répresentative)					
Date	Ang. 17. 70	,25	Signed		22	Commission	NB	15677					
	J			(Authoriz	ed Inspector)	2577455	The last contract of the last	Inspector Commission number)					