



Test Report

Report No.: ETP24C00088

For Question Please
Contact with SGS
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Date: 07-Feb-2025

MARS VALVE CO., LTD.
NO.83, SEC. 1, CHUNG-DE 8TH RD., TAICHUNG CITY 406, TAIWAN, R.O.C.

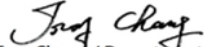
The following sample(s) was/were submitted and identified by the applicant as :

Sample Submitted By : MARS VALVE CO., LTD.
Sample Name : MARS BALL VALVE 1" STAINLESS STEEL

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Sample Receiving Date : 31-Dec-2024
Testing Period : 31-Dec-2024 to 04-Feb-2025
Test Result(s) : Please refer to next page(s).

Test Requested	Conclusion
As specified by client, the sample(s) was/were tested with reference to RoHS Directive 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).	PASS


Troy Chang / Department Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei



PIN CODE: 4465AAD0

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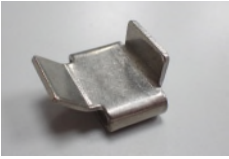
Photo of the Submitted Sample(s)

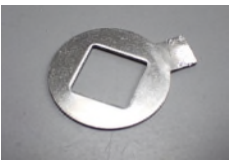


1. Material Fraction Composition

Table 1 The results of screening and chemical test

No.	Type of Components	Description		Figure	MDL Category	Screening		UV	ICP-OES	GC-MS	Other Chemical Test	Note
						Element	Data	Cr (VI)	Pb/Cd/Hg	PBB/PBDE		
1	BALL VALVE	1.1	SILVERY METALLIC SCREW		Metals	Pb	n.d.	n.d.	---			
						Cd	n.d.		---			
						Hg	n.d.		---			
						Cr	181000					
						Br	n.d.					
						Cr(VI)						
						PBB			---			
						PBDE			---			
		1.2	SILVERY METALLIC NUT		Metals	Pb	n.d.	n.d.	---			*5
						Cd	n.d.		---			
						Hg	n.d.		---			
						Cr	186000					
						Br	n.d.					
						Cr(VI)						
						PBB			---			
						PBDE			---			
	1.3	SILVERY METALLIC CASE		Metals	Pb	n.d.	n.d.	---			*5	
					Cd	n.d.		---				
					Hg	n.d.		---				
					Cr	182000						
					Br	n.d.						
					Cr(VI)							
					PBB			---				
					PBDE			---				
	1.4	SILVERY METALLIC GRIP		Metals	Pb	n.d.	n.d.	---			*5	
					Cd	n.d.		---				
					Hg	n.d.		---				
					Cr	186000						
					Br	n.d.						
					Cr(VI)							
					PBB			---				
					PBDE			---				

No.	Type of Components	Description		Figure	MDL Category	Screening		UV	ICP-OES	GC-MS	Other Chemical Test	Note
						Element	Data	Cr (VI)	Pb/Cd/Hg	PBB/PBDE		
1	BALL VALVE	1.5	BLUE POLYMER CAP WITH WHITE PRINT		Polymers	Pb	n.d.	---	---	---	Refer to Table 2	
						Cd	n.d.					
						Hg	n.d.					
						Cr	n.d.					
						Br	n.d.					
						Cr(VI)						
						PBB						
						PBDE						
		1.6	SILVERY METALLIC NUT		Metals	Pb	n.d.	n.d.	---	---		*5
						Cd	n.d.					
						Hg	n.d.					
						Cr	184000					
						Br	n.d.					
						Cr(VI)						
						PBB						
						PBDE						
		1.7	SILVERY METALLIC FRAME		Metals	Pb	n.d.	n.d.	---	---		*5
						Cd	n.d.					
						Hg	n.d.					
						Cr	187000					
						Br	n.d.					
						Cr(VI)						
						PBB						
						PBDE						
		1.8	WHITE PLASTIC RING		Polymers	Pb	n.d.	---	---	---	Refer to Table 2	
						Cd	n.d.					
						Hg	n.d.					
						Cr	n.d.					
						Br	n.d.					
						Cr(VI)						
						PBB						
						PBDE						

No.	Type of Components	Description		Figure	MDL Category	Screening		UV	ICP-OES	GC-MS	Other Chemical Test	Note
						Element	Data	Cr (VI)	Pb/Cd/Hg	PBB/PBDE		
1	BALL VALVE 	1.9	SILVERY METALLIC SHEET		Metals	Pb	n.d.	n.d.	---	---		*5
						Cd	n.d.		---			
						Hg	n.d.		---			
						Cr	187000		---			
						Br	n.d.	n.d.		---		
						Cr(VI)						
						PBB						
						PBDE						
		1.10	SILVERY METALLIC WASHER		Metals	Pb	n.d.	n.d.	---	---		*5
						Cd	n.d.		---			
						Hg	n.d.		---			
						Cr	173000		---			
						Br	n.d.	n.d.		---		
						Cr(VI)						
						PBB						
						PBDE						
		1.11	SILVERY METALLIC RING		Metals	Pb	n.d.	n.d.	---	---		*5
						Cd	n.d.		---			
						Hg	n.d.		---			
						Cr	193000		---			
						Br	n.d.	n.d.		---		
						Cr(VI)						
						PBB						
						PBDE						
		1.12	WHITE PLASTIC RING		Polymers	Pb	n.d.	---	---	---	Refer to Table 2	
						Cd	n.d.		---			
						Hg	n.d.		---			
						Cr	143		---			
						Br	n.d.	---		---		
						Cr(VI)						
						PBB						
						PBDE						

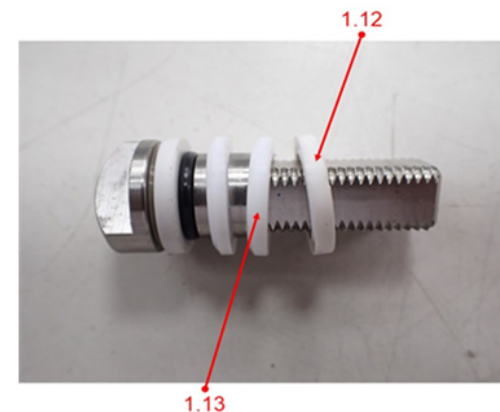
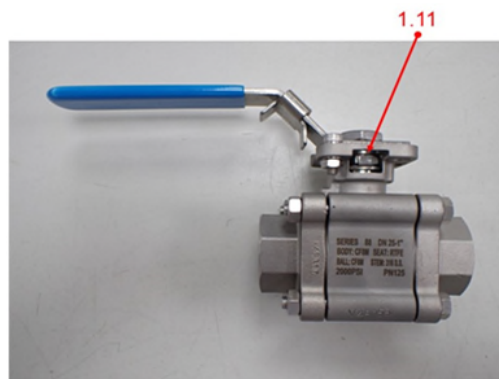
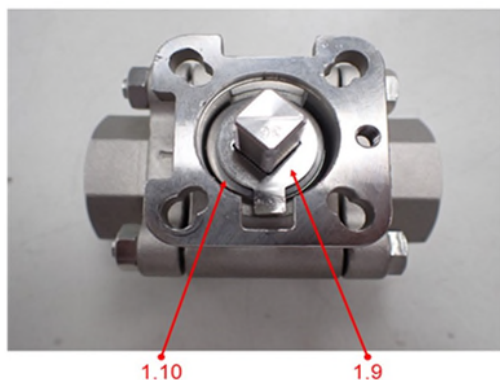
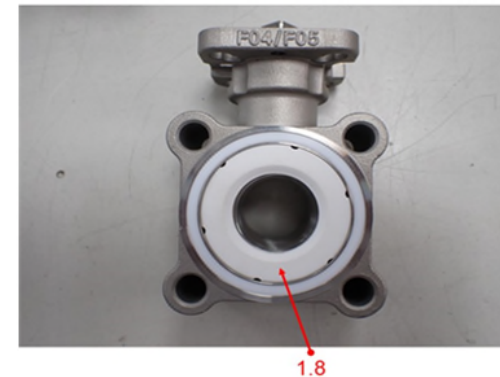
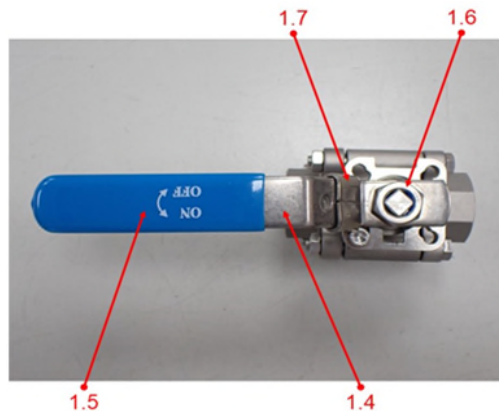
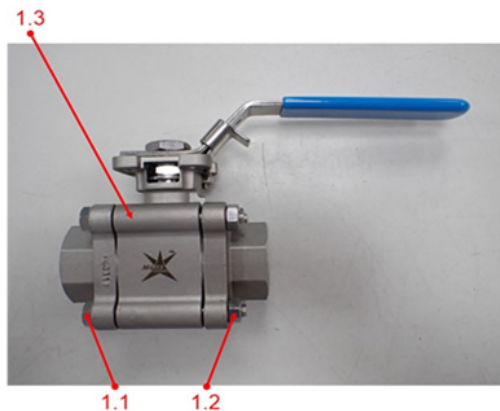
No.	Type of Components	Description		Figure	MDL Category	Screening		UV	ICP-OES	GC-MS	Other Chemical Test	Note
						Element	Data	Cr (VI)	Pb/Cd/Hg	PBB/PBDE		
1	BALL VALVE    	1.13	WHITE PLASTIC RING		Polymers	Pb	n.d.		---		Refer to Table 2	
						Cd	n.d.		---			
		Hg	n.d.	---								
		Cr	n.d.									
		Br	n.d.									
		Cr(VI)		---								
		PBB						---				
		PBDE						---				
		1.14	WHITE PLASTIC RING		Polymers	Pb	n.d.		---		Refer to Table 2	
						Cd	n.d.		---			
						Hg	n.d.					
						Cr	n.d.					
						Br	n.d.					
						Cr(VI)						---
						PBB			---			
						PBDE			---			
1.15	SILVERY METALLIC FRAME		Metals	Pb	n.d.		---			*5		
				Cd	n.d.		---					
				Hg	n.d.							
				Cr	188000							
				Br	n.d.	n.d.						
				Cr(VI)								
				PBB			---					
				PBDE			---					
1.16	BLACK POLYMER RING		Polymers	Pb	n.d.		---		Refer to Table 2			
				Cd	n.d.		---					
				Hg	n.d.							
				Cr	n.d.							
				Br	n.d.							
				Cr(VI)						---		
				PBB			---					
				PBDE			---					

No.	Type of Components	Description		Figure	MDL Category	Screening		UV	ICP-OES	GC-MS	Other Chemical Test	Note
						Element	Data	Cr (VI)	Pb/Cd/Hg	PBB/PBDE		
1	BALL VALVE	1.17	WHITE PLASTIC RING		Polymers	Pb	n.d.	---	---	---	Refer to Table 2	
						Cd	n.d.					
						Hg	n.d.					
						Cr	n.d.					
						Br	n.d.					
						Cr(VI)						
						PBB						
						PBDE						
		1.18	SILVERY METALLIC BALL		Metals	Pb	n.d.	n.d.	---	---		*3, *5
						Cd	n.d.					
						Hg	n.d.					
						Cr	188000					
						Br	n.d.					
						Cr(VI)						
						PBB						
						PBDE						
		1.19	SILVERY METALLIC SPRING		Metals	Pb	n.d.	n.d.	---	---		*5
						Cd	n.d.					
						Hg	n.d.					
						Cr	154000					
						Br	n.d.					
						Cr(VI)						
						PBB						
						PBDE						
		1.20	SILVERY METALLIC AXLE		Metals	Pb	122	n.d.	---	---		*5
						Cd	n.d.					
						Hg	n.d.					
						Cr	171000					
						Br	n.d.					
						Cr(VI)						
						PBB						
						PBDE						

No.	Type of Components	Description		Figure	MDL Category	Screening		UV	ICP-OES	GC-MS	Other Chemical Test	Note
						Element	Data	Cr (VI)	Pb/Cd/Hg	PBB/PBDE		
1		BALL VALVE	1.21	SILVERY METALLIC SCREW		Metals	Pb	n.d.	n.d.	---		*5
							Cd	n.d.		---		
							Hg	n.d.		---		
							Cr	177000				
							Br	n.d.				
							Cr(VI)					
							PBB			---		
							PBDE			---		
			1.22	SILVERY METALLIC WASHER		Metals	Pb	n.d.	n.d.	---		*5
							Cd	n.d.		---		
							Hg	n.d.		---		
							Cr	184000				
							Br	n.d.				
							Cr(VI)					
							PBB			---		
							PBDE			---		
			1.23	SILVERY METALLIC NUT		Metals	Pb	n.d.	n.d.	---		*5
							Cd	n.d.		---		
							Hg	n.d.		---		
							Cr	189000				
							Br	n.d.				
							Cr(VI)					
							PBB			---		
							PBDE			---		

Table 2 The test results of Phthalates (Unit: mg/kg)

Test Item (s):	Method	MDL	Result						
			1.5	1.8	1.12	1.13	1.14	1.16	1.17
Di-(2-ethylhexyl) phthalate (DEHP)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	50	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Diisobutyl phthalate (DIBP)		50	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Dibutyl phthalate (DBP)		50	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Butyl benzyl phthalate (BBP)		50	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.

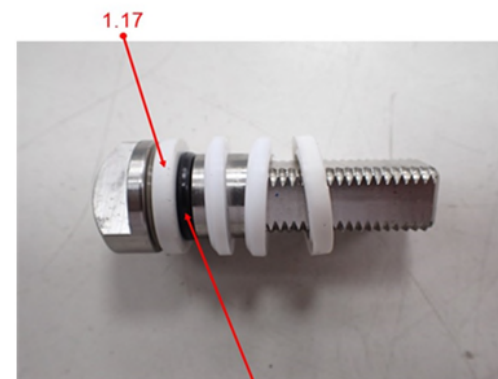




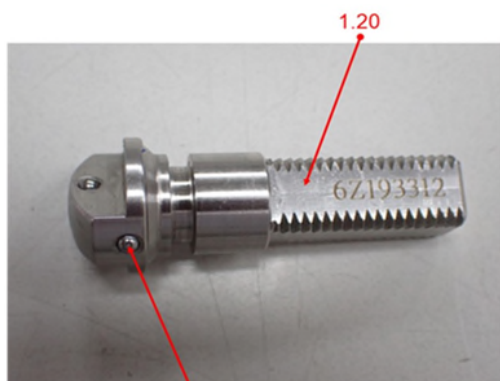
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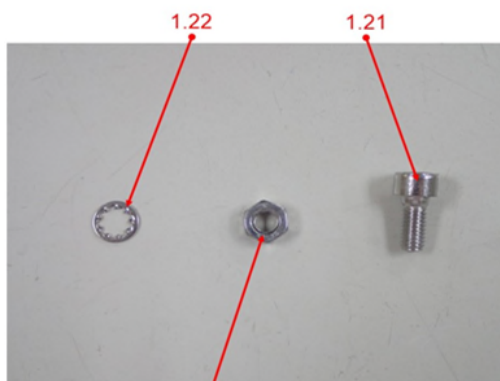
1.15



1.16



1.18~1.19



1.23



Test Report

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Date: 07-Feb-2025

Test Item	MDL (mg/kg)				Screening threshold (mg/kg)	Test method
	Category Element	Polymers	Composite Material	Metals		
XRF (X-ray fluorescence)	Pb	50	100	100	500	With reference to IEC 62321-3-1 (2013)
	Cd	50	50	50	50	
	Hg	50	100	100	500	
	Cr	50	100	100	500	
	Br	50	100	n.a.	250	

Test Item (s)	Unit	Test method	MDL
Lead (Pb)	mg/kg	With reference to IEC 62321-5: 2013 and performed by ICP-OES.	2
Cadmium (Cd)			
Mercury (Hg)	mg/kg	With reference to IEC 62321-4: 2013+ AMD1: 2017 and performed by ICP-OES.	2
Hexavalent chromium Cr(VI)	mg/kg	With reference to IEC 62321-7-2: 2017 and performed by UV-VIS. (For Polymers and Electronics)	8
Hexavalent chromium Cr(VI)	µg/cm ²	With reference to IEC 62321-7-1: 2015 and performed by UV-VIS. (For Coatings on Metals) (#2)	0.1

Test Item (s)	Unit	Method	MDL (mg/kg)
PBBs	mg/kg	With reference to IEC 62321-6: 2015 and performed by GC/MS.	-
Monobromobiphenyl	mg/kg		5
Dibromobiphenyl	mg/kg		5
Tribromobiphenyl	mg/kg		5
Tetrabromobiphenyl	mg/kg		5
Pentabromobiphenyl	mg/kg		5
Hexabromobiphenyl	mg/kg		5
Heptabromobiphenyl	mg/kg		5
Octabromobiphenyl	mg/kg		5
Nonabromobiphenyl	mg/kg		5
Decabromobiphenyl	mg/kg		5
PBDEs	mg/kg		-
Monobromodiphenyl ether	mg/kg		5
Dibromodiphenyl ether	mg/kg		5
Tribromodiphenyl ether	mg/kg		5
Tetrabromodiphenyl ether	mg/kg		5
Pentabromodiphenyl ether	mg/kg		5
Hexabromodiphenyl ether	mg/kg		5
Heptabromodiphenyl ether	mg/kg		5
Octabromodiphenyl ether	mg/kg		5
Nonabromodiphenyl ether	mg/kg		5
Decabromodiphenyl ether	mg/kg		5

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1. mg/kg = ppm
2. MDL = Method detection limit
3. n.d. = not detected or lower than MDL
4. "---" = not conducted
5. n.a. = not applicable
6. " - " = Not Regulated
7. The XRF result of Br for metal sample is conducted from semi-quantitative method of polymer. If the Br result is shown as n.d., the reading will be less than 100ppm.
8. (#2):
 - a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 $\mu\text{g}/\text{cm}^2$.
The coating is considered to contain Cr(VI).
 - b. The sample is negative for Cr(VI) if Cr(VI) is n.d. (concentration less than 0.10 $\mu\text{g}/\text{cm}^2$).
The coating is considered a non-Cr(VI) based coating.
 - c. The result between 0.10 $\mu\text{g}/\text{cm}^2$ and 0.13 $\mu\text{g}/\text{cm}^2$ is considered to be inconclusive - unavoidable coating variations may influence the determination.

9. Magnetic samples can not be located on test position and there are breakdown risks on XRF equipment. Therefore, this kind of sample will be conducted chemical test directly.
10. If the test result by EDXRF analysis is greater than XRF screening threshold, the test sample should be further conducted by chemical test.
11. Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019. According to this rule, the judgement of conformity is based on the comparing test results with limits.

Mark	Description of Mark
*1	The sample weight is not enough to conduct chemical tests.
*2	The item is exempted from EU RoHS directive.
--*2	The item might be exempted from EU RoHS directive.
*3	The result was retested after regetting the same sample from client.
*4	The sample is provided separately from the client.
*5	Adopting modified IEC 62321-7-1: 2015, due to the test area less than 25 cm^2
*6	The test item was tested by dry base.
*7	The testing requirement is by client, and the retained sample is utilized for this test.