MATERIAL TEST CERTIFICATE

EN10204:2004 3.1

YONGJIA TONG BALL Valve Co., Ltd.

Address: Dongou Industrial Zone, Oubei Street, Yongjia County, Zhejiang Province(1st Floor Plant ofWenzhou Huajiang Industrial Co., Ltd)

Purchaser:	JC VALVULAS INDIA PVT LTD	Material Specification:	ASTM A182 Gr F60-Edition 2024A	NO: R25010010
Order No.:	JCCMP-2425001581		Date:2025-01-07	

Chemical Composition (%)

Heat No.		C	Mn	Si	S	P	Cr	Mo	Ni	N	Forging Ratio
	Specification	≤0.03	≤2.00	≤1.00	≤0.020	≤0.030	22.0-23.0	3.00-3.50	4.5-6.5	0.14-0.20	≥3: 1
LK9006	Actual	0.019	0.93	0.360	0.0009	0.025	22.55	3.03	5.1	0.153	4.20:1

Mechanical Property Test

Tensile Test

H.TBatch No.	Test Temp.		Tensile σb (Mpa)	Yield σs 0.2 (Mpa)	Elongation (%)	Reduction of Area (%)
BD032412107	Ambient Temp.	STD	Min655	Min450	Min25	Min45
		Actual	755	506	43	58

Impact Test

Temp. (℃)	Specimen Size	Akv	(1)	(2)	(3)
20	10*10*55	Average of Three Specimens100(J)			
		Minimum of Single Specimen75(J)	252	269	243
		Avg	254.67		
-30	10*10*55	Average of Three Specimens60(J)			
		Minimum of Single Specimen40(J)	218	233	206
		Avg	219.00		

Hardness: 19,20 (HB)(max): -

Heat No.	Other Test			VISUAL INSPECTION	Heat Treatment	Remarks
	PT	UT	-	ASME BPVC SECTION VIII, DIVISION.1 UF-45 & UF-46	solution treat 1040℃, 2h, Quenching below 260 ℃, water cold	
LK9006	Accepted	Accepted	-	Accepted		

PO.SR.No.	Drawing No.	Item Description	Qty	Heat No.
18	X2B-150-2515N-01 REV.6	BALL DN150CL.150-300 ASTM A182 GR.F60 (UNS S32205) SP-561 MDS No. JC-MDS-353 Rev.6	3	LK9006

YONGJIA TONG BALL Valve Co., Ltd.
Q.A. Head: Zhongli Hu

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JC Valvulas India Pvt. Ltd.
Chennai, Tamil Nadu, India
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Q.A.

We hereby certify that the parts listed above are manufactured and inspected, tested in accordance with the requirements of the Specification ASTM A182 Gr F60-Edition 2024A&JC-MDS-353 REV.6&SP-561 the material conforms to MR0175 for hardness.

Heat treatment record report
热处理记录报告

委托单位（Entrust Company）:永嘉通球阀门有限公司　　NO:TQ02412113

material trademark 材料牌号	A182 F60			Process name 工艺名称	固溶		
Equipment number 设备编号	BD1701-7	Thermocouple number 热电偶编号	70387	Recorder number 记录仪编号	18090356	Order number 炉序号	BD032412107
Procedure content 工序内容	Holding temperature 保温温度	Soaking time 保温时间 h		Cooling medium 冷却介质	Pre-quenching temperature （介质）淬前温度℃		Quenching temperature （介质）淬后温度℃
固溶	1040	2		水冷	30		39

product name 产品名称	Production number 生产编号	Description 型号规格	Quantity 数量	Heat NO. 炉号
固定球	1YD2412015	237*150*180.5	3	LK9006
试棒	1YD2412015-1	30*360	1	LK9006

Test item 实验项目

Mechanical property 机械性能			
EMR	$\acute{o}_{b\ MPa}$	δ%	ψ%
AK/J/Cm²			硬度值

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Q.A. Head. Zhongli Hu

Yongjia Boda machinery heat treatment co.,Ltd
永嘉县博大机械热处理有限公司

永嘉县博大机械热处理有限公司 检测专用章

填表人：叶建玲　　审核人：方建东

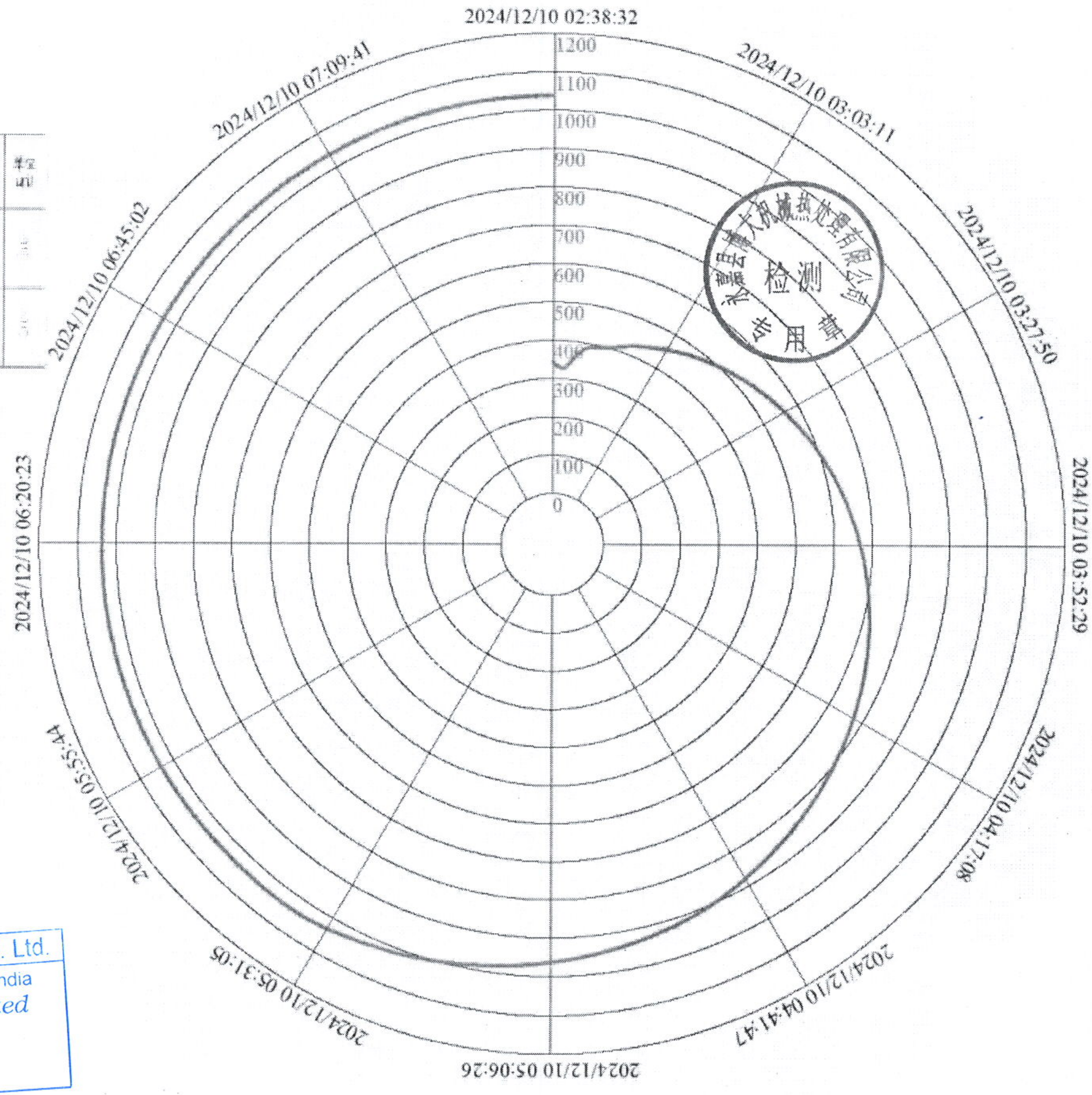
日期：2024-12-11

圆图曲线打印

设备名称: 总貌
打印通道:通道04[℃] [redacted]
记录间隔: 2 秒
开始时间: 2024/12/10 02:38:32
结束时间: 2024/12/10 07:34:20
数据数量: 8875

生产编号 Production number	材料牌号 material trademark	规格 Description	产品名称 product name	炉号 Heat NO	订单 Order number	数量 Quantity	单位 unit
[illegible]	A182 F53	[illegible]	[illegible]	[illegible]	[illegible]	3	[illegible]
[illegible]	A182 F53	[illegible]	试样	[illegible]	[illegible]	1	[illegible]

Q.A. Head: zhong li Hu



[绝对时间]

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Q.A. R. Dinesh

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D25, Ambattur Industrial Estate, Chennai – 600058
Ph: 044-26242525/044-26244399,
Email: cre@microlabtesting.com
Web: www.microlabtesting.com

TC-14728

Test Report

TC1472825000022984F

Customer: **M/s. JC Valvulas India Private Limited** No: 143, 1st Main Road, Industrial Estate, Perungudi ,City:Chennai ,600096	Report No.:	**TR/24-25/7360-1**
	Report Date:	25-03-2025
	Customer Ref. No.:	DC2425002014
	Ref. Date	07-03-2025
	Sample Received Date:	10-03-2025
	Date Of Completion:	24-03-2025

Samples drawn by Customer

Sample Description: Test Bar, Heat No: LK9006, Material: F60, SP-Code: SP-561, PO No: SC-2425002572

Discipline : Chemical, Group : CORROSION TESTING

PITTING CORROSION TEST (A923-METHOD-C) **Test Method : ASTM A923:2023- Method C**

Verified By: N THINESH KANNAN **Tested on : 13-03-2025 to 14-03-2025**

Test Parameters	Result
Sample preparation	All the machined surfaces of the specimen were ground finished using 120 grit paper
Test Solution	Dissolve 100 g of reagent grade ferric chloride Fecl3 6H20 in 900 ml of Distilled water
pH of test solution	1.30
Size (mm)	L:54.83 x W:25.01 x Thk:8.04
Total surface area of the specimen (dm^2)	0.4026
Initial Weight of the specimen (g)	85.0300
Start of Test	13.03.2025 (11.20 am)
End of Test	14.03.2025 (11.20 am)
Duration of Test (Hours)	24 Hours
Test Temperature (Degree Celcius)	24°C
Final weight of the specimen (g)	85.0295
Weight Loss (mg)	0.5000
Corrosion rate (mdd)	1.2418
Observation	Pitting not Observed at 20x magnification
Photographs	The Macro photograph is enclosed

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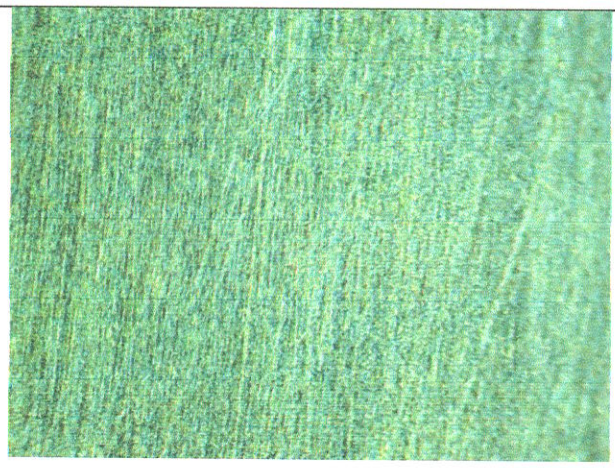
TR/24-25/7360-1 Dt- 25-03-2025



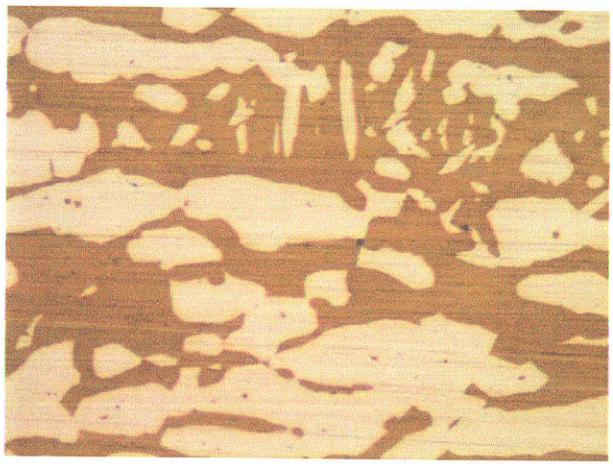
20X

Discipline : Mechanical, Group : METALLOGRAPHY TEST

MICROSTRUCTURE EXAMINATION **Test Method : ASTM A923:2022- Method A**

Verified By: KARTHIK **Tested on : 11-03-2025**

Test Parameters	Result
Mag/Etchant	500x/40% NaOH Electro Etched
Observation	Micro examination of the specimen revealed uniform ferrite and austenite phase distribution and no continuous precipitates at the grain boundaries. The structure is free from intermetallic phases (like sigma, chi, laves) & other precipitates (Nitrides) and carbides. No deleterious secondary phases. This microstructure is classified as "Unaffected structure" as per section 6.3.1 of ASTM A923 Method A & is an Acceptable microstructure.



Mag-500x

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TR/24-25/7360-1 Dt- 25-03-2025

FERRITE CONTENT TEST (30 FIELDS) **Test Method : ASTM E562:2019e1**

Verified By: KARTHIK **Tested on : 11-03-2025**

Test Parameters	Result
Mag/Etchant	100x/20% NaOH Electro Etched
Field 1%	54.0
Field 2%	53.5
Field 3%	54.0
Field 4%	53.5
Field 5%	53.0
Field 6%	53.5
Field 7%	54.0
Field 8%	53.0
Field 9%	53.5
Field 10%	53.0
Field 11%	54.0
Field 12%	53.5
Field 13%	53.0
Field 14%	54.0
Field 15%	53.0
Field 16%	53.5
Field 17%	54.0
Field 18%	53.0
Field 19%	53.5
Field 20%	54.0
Field 21%	53.0
Field 22%	53.5
Field 23%	53.0
Field 24%	53.5
Field 25%	54.0
Field 26%	53.0
Field 27%	53.5
Field 28%	53.0
Field 29%	53.5

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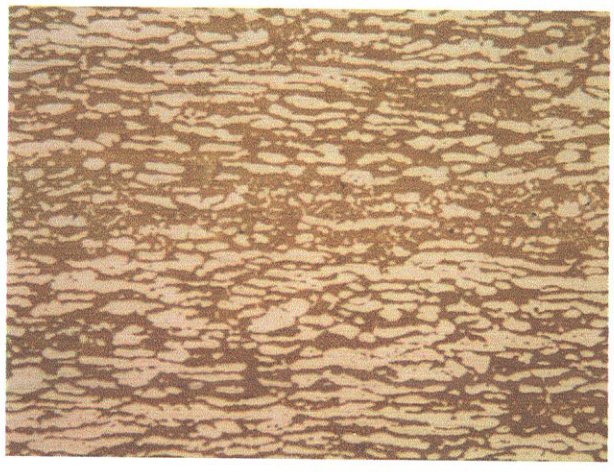
Field 30%	54.0
Average %	53.48
RA %	0.28
Volume Estimate (VV+)%	53.63
Volume Estimate (VV-)%	53.33



Mag-100x

For MICROLAB

K. Mathan Kumar
Head, Corrosion & Polymer Department

A. Karthik
Head, Metallurgy Department

Authorized Signatory

---------- **End of Test Report** ----------

JC Valvulas India Pvt. Ltd.
Chennai, Tamil Nadu, India
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NOTE : This report relates only to the particular sample submitted for test * Any correction is not attested shall invalidate this certificate * Sample will be destroyed after 15 days from the date of testing unless instructed otherwise * Any complaints about this report should be communicated in writing within 7 days of this report * This report not to be produced wholly or in parts and cannot be used as an evidence in a court of law and shall not be used in advertising Media without prior permission in writing * Sample description is not verified in all cases and is given as described by the customers * Sample are not drawn by us unless otherwise stated * Laboratory reports the statements of Conformity to material specification as per Decision Rule 1, Non Conformity as per Decision Rule 4 & For Rule 2 & 3 Customer provides feedback.

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Test Report

Customer: **M/s. JC Valvulas India Private Limited** No: 143, 1st Main Road, Industrial Estate, Perungudi ,City:Chennai ,600096	Report No.:	**TR/24-25/7360-1-2**
	Report Date:	25-03-2025
	Customer Ref. No.:	DC2425002014
	Ref. Date	07-03-2025
	Sample Received Date:	10-03-2025
	Date Of Completion:	24-03-2025

Samples drawn by Customer

Sample Description: Test Bar, Heat No: LK9006, Material: F60, SP-Code: SP-561, PO No: SC-2425002572

Discipline : Chemical, Group : CORROSION TESTING

INTERGRANULAR CORROSION TEST (PRACTICE-C) **Test Method : ASTM A262:2015 (2021)**

Verified By: N THINESH KANNAN **Tested on : 13-03-2025 to 24-03-2025**

Test Parameters	Result	Requirement
Test Solution	Nitric Acid Test Solution	
Volume of test solution (ml/cm²)	1000	
Size (mm) and total surface area (cm²)	L:24.98 x W:18.81 x Thk:8.02 & 16.4214	
Test start date & time	13.03.2025 (12.45 pm)	
Test end date & time	24.03.2025 (09.30 am)	
Duration of Test (Hours)	240	
Period	1st 48 hours	
Initial wt.of speciman in g	29.0696	
Final wt.of speciman in g	29.0593	
Weight Loss in g	0.0103	
Corrosion rate (mils/month)	0.4693	
Period	2nd 48 hours	
Initial wt.of speciman in g	29.0593	
Final wt.of speciman in g	29.0488	
Weight Loss in g	0.0105	
Corrosion rate (mils/month)	0.4784	
Period	3rd 48 hours	
Initial wt.of speciman in g	29.0488	
Final wt.of speciman in g	29.0337	
Weight Loss in g	0.0151	
Corrosion rate (mils/month)	0.6880	

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TR/24-25/7360-1-2 Dt- 25-03-2025

Period	4th 48 hours
Initial wt.of speciman in g	29.0337
Final wt.of speciman in g	29.0163
Weight Loss in g	0.0174
Corrosion rate (mils/month)	0.7928
Period	5th 48 hours
Initial wt.of speciman in g	29.0163
Final wt.of speciman in g	28.9943
Weight Loss in g	0.0220
Corrosion rate (mils/month)	1.0024
Average Corrosion Rate (mils/month)	0.6862

4.0 max.

For MICROLAB

K. Mathan Kumar
Head, Corrosion & Polymer Department

Authorized Signatory

---------- **End of Test Report** ----------

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