

# 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 of Wenzhou Huajiang Industrial Co., Ltd)

Purchaser: JC VALVULAS INDIA PVT LTD	Material Specification: ASTM A182 Gr F60-Edition 2024A	NO: R24120226
Order No.: JCCMP-2425001581	Date: 2025-01-05	

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	0.4-0.20	≥3:1
Actual	0.021	1.748	0.358	0.0022	0.0263	22.52	3.072	4.63	0.167	4.20:1

## Mechanical Property Test

H.T Batch No.	Test Temp.	Tensile Test				Elongation			Reduction of Area		Impact Test			Hardness (HB(max))
		Tensile σb (Mpa)	Yield σs 0.2 (Mpa)	Min 655	Min 450	(%)	Min 25	Min 45	Temp. (°C)	Specimen Size	Average of Three Specimens 100(J)	Minimum of Single Specimen 75(J)	Avg	
BD032412163	STD	739	502	Min 450	Min 450	45	Min 45	20	10*10*55	237	251	249	20,21	
	Ambient Temp.	Actual	502	Min 450	Min 450	45	Min 45	-30	10*10*55	Avg 245.67	Average of Three Specimens 60(J)	Minimum of Single Specimen 40(J)		

Heat No.	Other Test		VISUAL INSPECTION		Heat Treatment		Remarks
	PT	UT	ASME BPVC SECTION VIII, DIVISION I UF-45 & UF-46	Accepted	solution treat 1040°C ± 2h, Quenching below 260 °C, water cold		
SF9207F	Accepted	Accepted	Accepted	Accepted			

PO, SR, No.	Drawing No.	Item Description	Qty	Heat No.
17	X2B-100-2590N REV. 5	BALL DN100 CL.900-1500 ASTM A182 Gr.F60+25 Microns ENP SP-561 MDS No. JC-MDS-353, 104 Rev.6.2	30	SF9207F

We hereby certify that the parts listed above are manufactured and inspected, tested in accordance with the requirements of ASTM A182 Gr F60-Edition 2024A & JC-MDS-353 REV.6 & JC-MDS-104 REV.2 & SP-561 the material conforms to MR0175 for hardness.

YONGJIA TONG BALL VALVE CO., LTD.

JCC Valvulas India Pvt. Ltd.  
Chennai, Tamil Nadu, India

Verified & Accepted for hardness.

Q.A. P. D. D. J.

Q.A. Head: Zhongli Hu

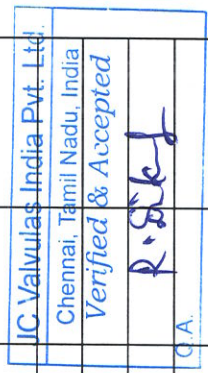
# Heat treatment record report 热处理记录报告

NO: TQ02412161

委托单位 (Entrust Company): 永嘉通球阀门有限公司

material trademark 材料牌号		A182 F60		Process name 工艺名称		固溶	
Equipment number 设备编号		BD1701-7		Recorder number 记录仪编号		18090356	
Thermocouple number 热电偶编号		70387		Order number 炉序号		BD032412163	
Holding temperature 保温温度		1040		Cooling medium 冷却介质		Pre-quinching temperature (介质) 淬前温度℃	
Soaking time 保温时间 h		2		Quenching temperature (介质) 淬后温度℃		39	
Production number 生产编号		1YD2412004		Heat NO. 炉号			
Description 型号规格		298*200*218		Quantity 数量		10	
Production number 生产编号		1YD2412004-1		Heat NO. 炉号		SF9207F	
Description 型号规格		30*360		Quantity 数量		1	
Production number 生产编号		1YD2412014		Heat NO. 炉号		SF9207F	
Description 型号规格		180*100*147		Quantity 数量		30	
product name 产品名称		浮动球		Test item 实验项目		EMR	
product name 产品名称		试棒		Test item 实验项目		δb MPa	
product name 产品名称		固定球		Test item 实验项目		δ%	
product name 产品名称				Test item 实验项目		AK/J/Cm <sup>2</sup>	
product name 产品名称				Test item 实验项目		硬度值	
Mechanical property 机械性能							
Q.A. Heat: zhongqiu							

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

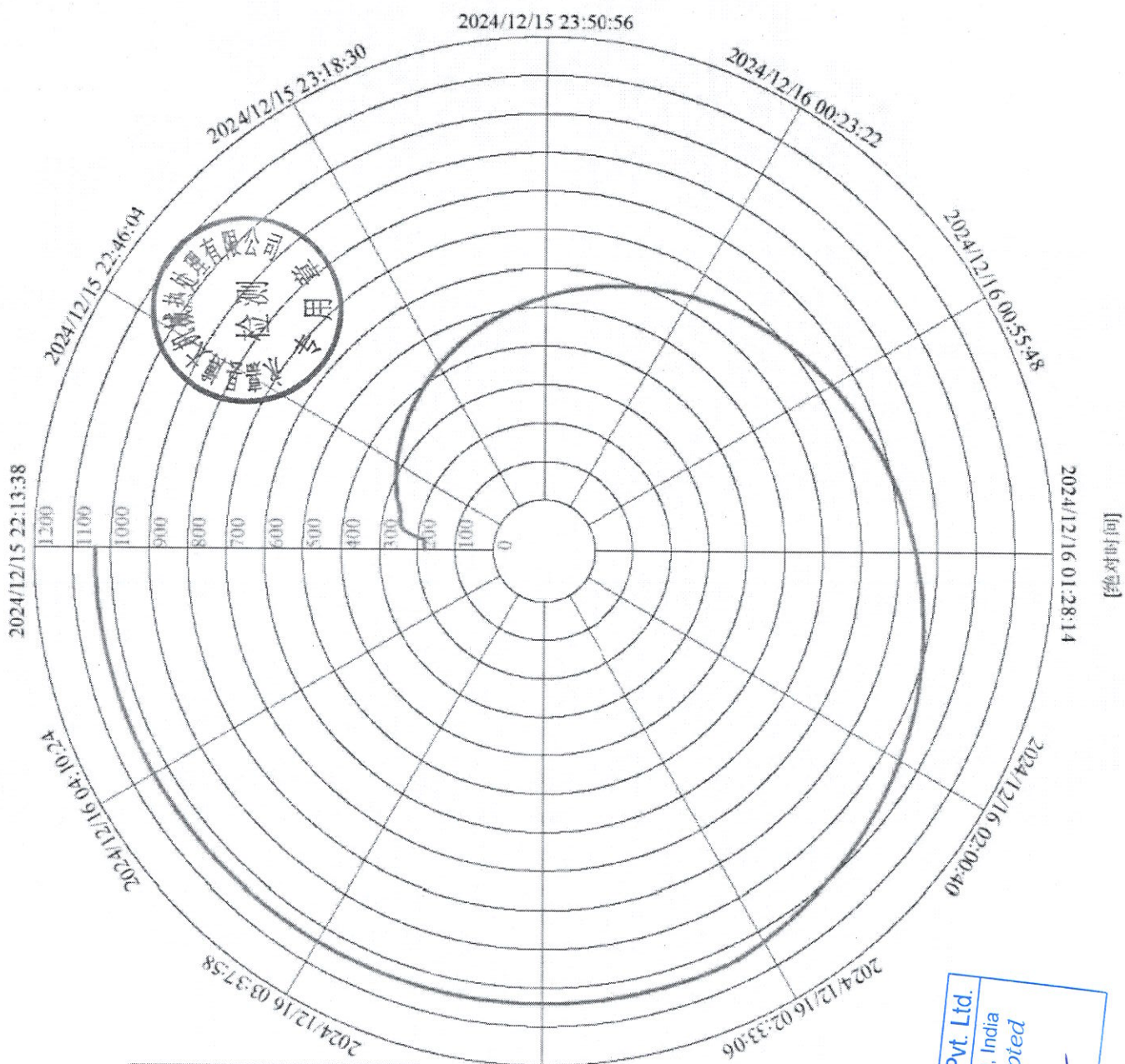


填表人: 叶建玲  
审核人: 方建东

日期: 2024-12-16

# 圆图曲线打印

设备名称: 总貌  
 打印通道: 通道02 [ ]  
 记录间隔: 2 秒  
 开始时间: 2024/12/15 22:13:38  
 结束时间: 2024/12/16 04:42:50  
 数据数量: 11677



生产编号 Production Number	物料编号 Material Number	设备名称 Description	产品名称 Product Name	序列号 Serial No.	品牌 Brand Name	数量 Quantity	单位 Unit
110241204	A102-500	2007201218	变频器	5F800VF	BECC042180	1	只
110241204-1	A102-500	327300	变频器	5F800VF	BECC042180	1	只
110241204-4	A102-500	1001100147	变频器	5F800VF	BECC042180	30	只

2024/12/16 03:05:32

*Q. A. Head: Zhangyi Hu*

JC Valvulas India Pvt. Ltd.  
 Chennai, Tamil Nadu, India  
 Verified & Accepted  
*R. S. K. J.*

[绝对时间]



## Test Report

TC1472825000022983F

<b>Customer:</b>  <b>M/s. JC Valvulas India Private Limited</b>  No: 143, 1st Main Road, Industrial Estate, Perungudi ,City:Chennai ,600096	Report No.:	<b>TR/24-25/7362-1</b>
	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: SF9207F, Material: F60, SP-Code: SP-561, PO No: SC-2425002573

**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 : 12-03-2025 to 13-03-2025**

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 Fecl <sub>3</sub> 6H <sub>2</sub> O in 900 ml of Distilled water
pH of test solution	1.30
Size (mm)	L:54.55 x W:25.20 x Thk:8.17
Total surface area of the specimen (dm <sup>2</sup> )	0.4052
Initial Weight of the specimen (g)	87.0363
Start of Test	12.03.2025 (05.00 pm)
End of Test	13.03.2025 (05.00 pm)
Duration of Test (Hours)	24 Hours
Test Temperature (Degree Celcius)	24°C
Final weight of the specimen (g)	87.0358
Weight Loss (mg)	0.5000
Corrosion rate (mdd)	1.2338
Observation	Pitting not Observed at 20x magnification
Photographs	The Macro photograph is enclosed

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Chennai, Tamil Nadu, India  
Verified & Accepted  
*C. Sathish*

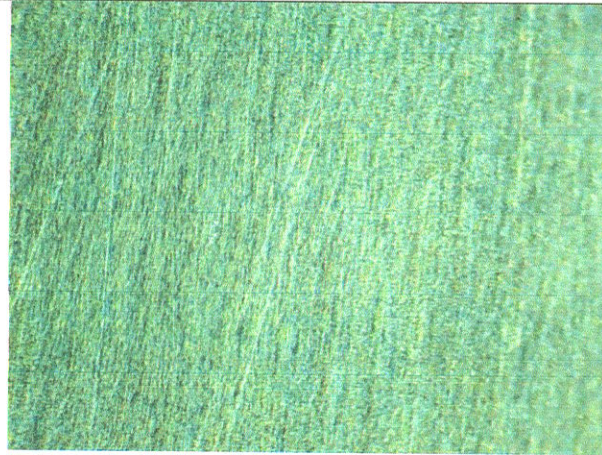
**NOTE :** This report relates only to the particular sample submitted for test \* Any correction is not attested shall invalidate this certificate \* Sample will be destroyed after 15 days from the date of testing unless instructed otherwise \* Any complaints about this report should be communicated 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.





TC1472825000022983F

TR/24-25/7362-1 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

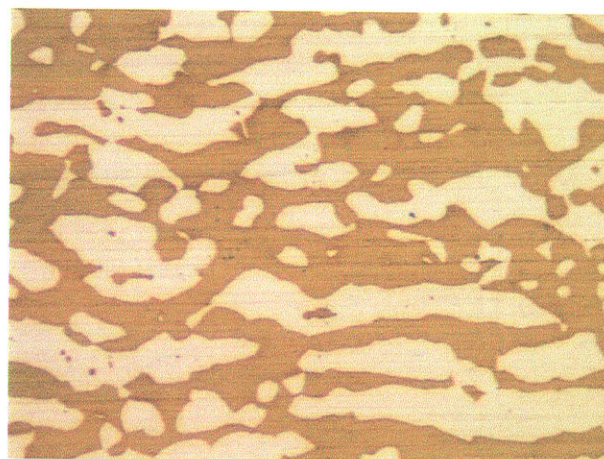
Result

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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*C. Sathiyaj*

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TR/24-25/7362-1 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%	53.0
Field 2%	52.5
Field 3%	52.0
Field 4%	53.0
Field 5%	53.5
Field 6%	52.5
Field 7%	53.0
Field 8%	52.5
Field 9%	53.0
Field 10%	53.5
Field 11%	52.0
Field 12%	52.5
Field 13%	51.0
Field 14%	51.5
Field 15%	53.0
Field 16%	52.0
Field 17%	52.5
Field 18%	53.0
Field 19%	52.5
Field 20%	53.0
Field 21%	52.5
Field 22%	51.0
Field 23%	52.0
Field 24%	52.5
Field 25%	53.5
Field 26%	53.0
Field 27%	52.5
Field 28%	53.5
Field 29%	53.0



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 Chennai, Tamil Nadu, India  
 Verified & Accepted  


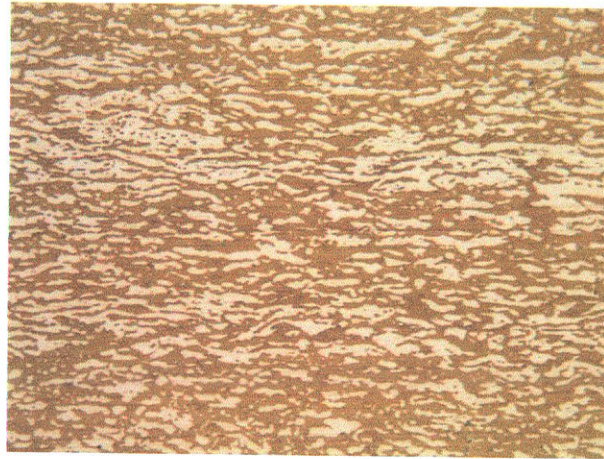
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TR/24-25/7362-1 Dt- 25-03-2025

Field 30%	53.5
Average %	52.61
RA %	0.47
Volume Estimate (VV+)%	52.86
Volume Estimate (VV-)%	52.36



Mag-100x

  
K. Mathan Kumar  
Head, Corrosion & Polymer Department

For MICROLAB  
  
A. Karthik  
Head, Metallurgy Department

Authorized Signatory

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

JC Valvulas India Pvt. Ltd.

Chennai, Tamil Nadu, India  
Verified & Accepted



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## Test Report

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Samples drawn by Customer

**Sample Description:** Test Bar, Heat No: SF9207F, Material: F60, SP-Code: SP-561, PO No: SC-2425002573

**Discipline : Chemical, Group : CORROSION TESTING**

**INTERGRANULAR CORROSION TEST (PRACTICE-C)**

**Test Method : ASTM A262:2015 (2021)**

**Verified By: N THINESH KANNAN**

**Tested on : 12-03-2025 to 24-03-2025**

Test Parameters	Result	Requirement
Test Solution	Nitric Acid Test Solution	
Volume of test solution (ml/cm <sup>2</sup> )	1000	
Size (mm) and total surface area (cm <sup>2</sup> )	L:25.20 x W:21.04 x Thk:8.17 & 18.1598	
Test start date & time	12.03.2025 (05.00 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	33.4489	
Final wt.of speciman in g	33.4353	
Weight Loss in g	0.0136	
Corrosion rate (mils/month)	0.5604	
Period	2nd 48 hours	
Initial wt.of speciman in g	33.4353	
Final wt.of speciman in g	33.4203	
Weight Loss in g	0.0150	
Corrosion rate (mils/month)	0.6181	
Period	3rd 48 hours	
Initial wt.of speciman in g	33.4203	
Final wt.of speciman in g	33.3980	
Weight Loss in g	0.0223	
Corrosion rate (mils/month)	0.9188	

JC Valvulas India Pvt. Ltd.

Chennai, Tamil Nadu, India  
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*C. Dathini*

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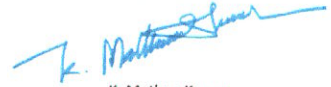


TR/24-25/7362-1-2 Dt- 25-03-2025

Period	4th 48 hours
Initial wt.of speciman in g	33.3980
Final wt.of speciman in g	33.3704
Weight Loss in g	0.0276
Corrosion rate (mils/month)	1.1372
Period	5th 48 hours
Initial wt.of speciman in g	33.3704
Final wt.of speciman in g	33.3304
Weight Loss in g	0.0400
Corrosion rate (mils/month)	1.6482
Average Corrosion Rate (mils/month)	0.9765

4.0 max.

**For MICROLAB**



K. Mathan Kumar  
Head, Corrosion & Polymer Department

**Authorized Signatory**

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

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Chennai, Tamil Nadu, India  
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