



INSPECTION AND TEST PLAN – FLANGES SPECTACLE BLINDS & DRIP RINGS

VCS-SD-ITP-003

INSPECTION AND TEST PLAN – FLANGES SPECTACLE BLINDS & DRIP RINGS

REV	DATE	DESCRIPTION	PREP	CHK	APPR
0	24.05.2017	ISSUED AS STANDARD	GS	ADE	AD

ABBREVIATIONS

CE	Carbon Equivalent	NPSH	Net Positive Suction Head
DFT	Dry Film Thickness	PO	Purchase Order
DPT	Dye Penetrant Testing	PESO	Petroleum Explosive Safety Organization
DHT	De-hydrogen Heat Treatment	PQR	Procedure Qualification Record
ERTL	Electronics Regional Test Laboratory	PR	Purchase Requisition
FCRI	Fluid Control Research Institute	PMI	Positive Material Identification
HT	Heat Treatment	RT	Radiography Testing
HIC	Hydrogen Induced Cracking	SSCC	Sulphide Stress Corrosion Cracking
ITP	Inspection and Test Plan	TC	Test Certificate
IP	Ingress Protection	TPI or TPIA	Third Party Inspection Agency
IHT	Intermediate Heat Treatment	UT	Ultrasonic Testing
IC	Inspection Certificate	VDR	Vendor Data Requirement
IGC	Inter Granular Corrosion	WPS	Welding Procedure Specification
MRT	Mechanical Run Test	WPQ	Welders Performance Qualification
NDT	Non Destructive Testing	MPT / MT	Magnetic Particle Testing

1.0 SCOPE:

This Inspection and Test Plan covers the minimum testing requirements of Flanges, Spectacle blinds & Drip Rings.

2.0 REFERENCE DOCUMENTS:

PO/PR/ Standards referred there in/ Job specifications /Approved documents.

3.0 INSPECTION AND TEST REQUIREMENTS:

SL. NO.	STAGE/ ACTIVITY	CHARACTERISTICS	QUANTUM OF CHECK	RECORD	SCOPE OF INSPECTION		
					SUB SUPPLIER	SUPPLIER	TPIA
1.0	Procedure						
1.1	Heat Treatment, NDT and Other Procedures	Documented Procedures	100%	Procedure Documents	-	H	R
1.2	WPS,PQR & WPQ	Welding Parameters & Qualification Record	100%	WPS,PQR & WPQ	-	H	W- New R- Existing
2.0	Material Inspection						
2.1	Raw Material Inspection	Chemical & Mechanical Properties	100%	Test Certificates	-	H	R

3.0	In Process Inspection						
3.1	Welding / Forging	Forging /Welding Parameters	100%	Inspection Reports	-	H	-
3.2	Heat Treatment	Stress Relieving, Normalising, Tempering, Solution Annealing, Stabilization Heat Treatment etc. as applicable	100%	HT chart	-	H	R
3.3	Identification of Test Samples	Product Chemical, Mechanical, Impact, IGC and Other test as applicable	100%	Test Reports	-	H	H(Note-1)
3.4	Product Analysis (As applicable)	Chemical Composition	As per PR/Purchase Specification	Test Reports	-	H	R
3.5	Destructive Testing	Mechanical, Impact, IGC and Other test as applicable	100%	Test Reports	-	H	H(Note-1)
3.6	NDT as applicable	Surface & Internal Imperfections	As per PR/Purchase Specification	NDT Reports	-	H	R
3.7	Galvanizing (If Applicable)	Integrity Of Galvanised Coating	100%	Inspection Report	-	H	-
4.0	Final Inspection						

4.1	Final Inspection	1. Visual 2. Dimensions 3. Hardness 4. Marking etc	100%	Inspection report	-	H	H(Note-1)
4.2	PMI Check	Chemical Check	As Per VCS Spec.	Inspection report	-	H	RW
4.3	Final Stamping	Stamping of accepted Items	Stamping of Items which are witnessed by TPIA.	Inspection report	-	H	H(Note-1)
5.0	Painting						
5.1	Rust Preventive Coating & Colour Coding	Visual Inspection & Colour Coding as applicable	100%	Inspection report	-	H	-
6.0	Documentation & IC						
6.1	Documentation & Inspection Certificate(IC)	Review of Stage Inspection Reports / Test Reports & Issue of IC	100%	Supplier TC & IC	-	H	H

Legend:

H - Hold (Do not proceed without approval),

P - Perform,

RW - Random Witness (As specified or 10% [min.1 no. of each size and type of Bulk item]),

R - Review,

W - Witness (Give due notice, work may proceed after scheduled date).PR- PURCHASE REQUISITION

NOTES (As applicable):

1. For Non NACE & Non Hydrogen service Carbon Steel Flanges, Spectacle Blinds & Drip Rings up to size 24"-300ANSI Class Will be accepted on review of Supplier Test Certificates. Supplier Test Certificate to be reviewed by TPIA.
2. This document describes the generic test requirements. Any additional test or Inspection scope if specified in contract documents shall also be Applicable (unless otherwise agreed upon).
3. Acceptance Norms for all the activities shall be as per PO/PR/STANDARDS referred there in /Job Specification /Approved Documents.
4. For orders placed on stockist, items shall be accepted based on manufacturer's TC with EN310204 type 3.2 certification from VCS / OWNER approved suppliers.



**QUALITY ASSURANCE PLAN
MULTI LAYER COMPOSITE (MLC) PIPE**

QAP NO : 15792/PC-PE-SS-0014-QAP
 Date : 22.04.2021
 Prepared by: AS
 Checked by: RKT
 Approved by: HK

SR. NO.	INSPECTION AND TESTING	QUANTUM OF CHECK / TEST	PROCEDURE	ACCEPTANCE CRITERIA AND CERTIFICATE	FORMAT OF RECORD	INSPECTION BY		REMARKS
						Manufacturer	TPIA	
1.0	Raw Materials	Each Batch	ISO 17484-1	ISO 17484-1	RMTC	H	R	
2.0	Dimesion & visual Inspection	100%	ISO 17484-1/PTS	ISO 17484-1/PTS	IR	P	W	
3.0	Long-term pressure strength	100%	ISO 17484-1/PTS	ISO 17484-1/PTS	IR	P	W	
4.0	Resistance to slow crack growth of the outer layer	100%	ISO 17484-1/PTS	ISO 17484-1/PTS	IR	P	W	
5.0	Resistance to gas constituents	One sample per Lot	ISO 17484-1/PTS	ISO 17484-1/PTS	TC	P	R	
6.0	Thermal durability of the outer layer of M-pipes	One sample per Lot	ISO 17484-1/PTS	ISO 17484-1/PTS	TC	P	R	
7.0	Oxidation induction time (OIT)	One sample per Lot	ISO 11357-6	ISO 11357-6	TC	P	R	
8.0	Delamination:P-pipes	One sample per Lot	ISO 17484-1/PTS	ISO 17484-1/PTS	IR	P	W	
9.0	Delamination:M-pipes	One sample per Lot	ISO 17484-1/PTS	ISO 17484-1/PTS	IR	P	W	
10.0	Odorant permeability	One sample per Lot	ISO 17484-1/PTS	ISO 17484-1/PTS	TC	P	R	

LEGEND: R - Review, W - Witness, H - Hold, P - Perform, TPIA - Third Party Inspection Agency.

Notes: -

- 1 The above testing and acceptance criteria are minimum requirements; however, manufacturer shall ensure that the product shall also comply to the additional requirements as per PTS/ SS.
- 2 The TPIA shall use this QAP for inspection against subject tender and may consider this document as approved.
- 3 Special manufacturing procedures have to be specially approved or only previously approved procedures have to be used, in case of conflict between specifications more stringent condition shall be applicable.
- 4 Owner / Owner's representative including TPIA will have the right to inspect any activity of manufacturing at any time.
- 5 All reference Codes/ Standards, Documents, P.O. Copies shall be arranged by vendor / supplier for reference of TPIA at the time of Inspection
- 6 At the time of delivery of material in stores, vendor will submit copy of all related document of inspection along with release note & MTC.



**QUALITY ASSURANCE PLAN
ISOLATION VALVE**

QAP NO : 15792/03-CD-MC-QAP-001 Rev. 0
 Date : 09.03.2021
 Prepared by: RKY
 Checked by: RKT Approved by: HK

SR. NO.	INSPECTION AND TESTING	QUANTUM OF CHECK / TEST	PROCEDURE	ACCEPTANCE CRITERIA AND CERTIFICATE	FORMAT OF RECORD	INSPECTION BY		REMARKS
						Manufacturer	TPIA	
1.0	Raw Material							
1.1	Metallic Parts (Chemical / Physical Requirement)	One in each heat	As per ASTM B 283 (ALLOY UNS C37700) / EN 331	As per ASTM B 283 (ALLOY UNS C37700) / EN 331	MATERIAL TEST CERTIFICATE	P	R	
1.2	Seat & Stem Seal	One in each heat	As per EN 331 / Manufacturer's Standard	As per EN 331 / Manufacturer's Standard	MATERIAL TEST CERTIFICATE	P	R	
2.0	Final Product :							
2.1	Gas Tightness Test	100%	As per EN 331	As per EN 331	TEST REPORT	P	W = Ten nos. per size per Lot	
2.2	Bending Test	One no. per Heat per Size	As per EN 331	As per EN 331	TEST REPORT	P	W = One no. per size per Lot	
2.3	Turning Torque Test	One no. per Heat per Size	As per EN 331	As per EN 331	TEST REPORT	P	W = One no. per size per Lot	
2.4	Temperature Resistance Test	One no. per Heat per Size	As per EN 331	As per EN 331	TEST REPORT	P	W = One no. per size per Lot	
2.5	Flow Capacity Test	One no. per Heat per Size	As per EN 331	As per EN 331	TEST REPORT	P	W = One no. per size per Lot	
3.0	Visual Inspection (Free from defects)	100%	As per EN 331	As per EN 331	INSPECTION REPORT	P	W = Ten nos. per size per Lot	
4.0	Dimension Tolerances (Min. length of engagement , OD , wall thk.)	100%	As per Approved Drawing	As per Approved Drawing	INSPECTION REPORT	P	W = Ten nos. per size per Lot	
5.0	Marking	100%	As per EN 331	As per EN 331	INSPECTION REPORT	P	W = Ten nos. per size per Lot	
6.0	Final Documentation		As per P.O. / SS	As per P.O. / SS	EN 10204 3.2 CERTIFICATE	P	H	

LEGEND: R - Review, W - Witness, H - Hold, P - Perform, TPIA - Third Party Inspection Agency, CA - Control Authority (Owner / Owner's representative)

Notes: -



- 1 The Above Testing and acceptance criteria are minimum requirements, however, manufacturer shall ensure that the product shall also comply to the additional requirements as per Standard Specification (SS)
- 2 The supplier shall submit their own detailed QAP prepared on the basis of above / Standard specification for approval of Owner/Owner's representative.
- 3 Owner/Owner representative shall review/approve all the documents related to QAP/Quality manuals/Drawings etc. submitted by supplier.
- 4 Contractor shall in coordination with Supplier/Sub vendor shall issue detailed Production and Inspection schedule indicating the dates and the locations to facilitate Owner/Owner's representative and TPIA to organize Inspection.
- 5 Special manufacturing procedures have to be specially approved or only previously approved procedures have to be used, in case of conflict between specifications more stringent condition shall be applicable.
- 6 Owner / Owner's representative including TPIA will have the right to inspect any activity of manufacturing at any time
- 7 All reference Codes/ Standards, Documents, P.O. Copies shall be arranged by vendor / supplier for reference of TPIA/IGL at the time of Inspection
- 8 At the time of delivery of material in stores, vendor will submit copy of all related document of inspection along with release note & MTC.
- 9 All Tests shall be carried out as per EN-331 (Latest Edition).



QUALITY CONTROL TABLES
GI PIPES CONFORMING TO IS:1239 (PART-1):2004 (Latest edition)



S.NO.	COMPONENTS /OPERATIONS	CHARACHTERISTICS	CLASSIFICATION	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORD	VENDOR	TPIA
1	2	3	4	5	6	7	8	9	10	11
1	Raw Material Inspection									
1.1	RAW MATERIAL (Steel Tube Heavy Duty Class C)	IDENTIFICATION	Major	Co-relation with MTC.	100%	IS: 1239 / P.O. Spec./PTS	IS: 1239 / P.O. Spec./PTS	T.C.	p	R
		CHEMICAL COMPOSITION	Major	Chem. Analysis	One Per Heat	IS: 1239 / P.O. Spec./PTS	IS: 1239 / P.O. Spec./PTS	T.C.	p	R
		PHYSICAL PROPERTIES (T.S., Y.S., % Elongation)	Major	Lab. Test	One Per Heat	IS: 1239 / P.O. Spec./PTS	IS: 1239 / P.O. Spec./PTS	T.C.	p	R
		VISUAL & DIMENSIONS	Major	Visual & Measurement	100%	IS: 1239 / P.O. Spec./PTS	IS: 1239 / P.O. Spec./PTS	T.C.	p	R
2	IN PROCESS INSPECTION									
2.1	PIPE MANUFACTURING	SURFACE DEFECT	Major	Visual	100%	IS: 1239 / P.O. Spec./PTS	IS: 1239 / P.O. Spec./PTS	IIR	p	R
		DIMENSIONS (O.D., THK., LENGTH etc.)	Major	Measurement	As Per Relevant Std.	IS: 1239 / P.O. Spec./PTS	IS: 1239 / P.O. Spec./PTS	IIR	p	R
		MASS (Kg/ Mtr .)	Major	Measurement	As Per Relevant Std.	IS: 1239 / P.O. Spec./PTS	IS: 1239 / P.O. Spec./PTS	IIR	p	R
2.2	END PREPARATION	END TYPE & DIMENSIONS	Major	Visual & Measurement	100%	IS: 1239 / P.O. Spec./PTS	IS: 1239 / P.O. Spec./PTS	IIR	p	R
2.3	PHYSICAL PROPERTIES	TENSILE STRENGTH , ELONGATION & BEND TEST/ FLATTENING TEST AS APPLICABLE	Major	Lab. Test	As Per Relevant Std.	IS: 1239 / P.O. Spec./PTS	IS: 1239 / P.O. Spec./PTS	IIR	p	R
2.4	LEAK TEST	HYDRAULIC	Critical	Leak Test	100%	IS: 1239 / P.O. Spec./PTS	IS: 1239 / P.O. Spec./PTS	IIR	p	w
2.5	GALVANIZING	ZINC COATING UNIFORMITY & MASS	Major	Mass of Zinc Coating & Uniformity	One sample at every hour & As per relevant Stand.	IS: 4736	IS: 4736 & IS: 2633	IIR	p	w
2.6	FINISH, PAINTING & MARKING	OVERALL FINISH, PAINTING & MARKING	Major	Visual	100%	IS: 1239 / P.O. Spec./PTS	IS: 1239 / P.O. Spec./PTS	IIR	p	R

		QUALITY CONTROL TABLES GI PIPES CONFORMING TO IS:1239 (PART-1):2004 (Latest edition)								
S.No.	COMPONENTS OPERATIONS	CHARACTERISTICS	CLASSIFICATION	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORD	VENDOR	TPIA
1	2	3	4	5	6	7	8	9	10	11
3	POWDER COATING TEST									
3.1	POWDER COATING TEST	SALT SPRAY RESISTANCE	Major	Visual	1000 Hrs (MIN.)	IS: 13871	IS: 13871	IIR	P	R
3.2		POROSITY	Major	Visual	-	IS: 13871	IS: 13871	IIR	P	R
3.3		HUMIDITY RESISTANCE	Major	Visual	1000 Hrs (MIN.)	IS: 13871	IS: 13871	IIR	P	R
3.4		WEATHERING GLOSS RETENTION AFTER 1000 Hrs.(Sun Test with Water Impression , Xenon 150 K lux)	Major	Visual	60 - 70%	IS: 13871	IS: 13871	IIR	P	R
3.5		COLOUR	Major	Visual	CANARY YELLOW	IS: 13871	IS: 13871	IIR	P	R
4	FINAL INSPECTION									
4.1	FINISHED PRODUCT	FINISH DIMENSIONS	Critical	Visual & Measurement.	Random As Per IS:4711	IS:1239/P.O. Spec./PTS	IS:1239/P.O. Spec./PTS	Dimensional IR	P	W
		PHYSICAL PROPERTIES (TENSILE STRENGTH, ELONGATION & BEND TEST/ FLATTENING TEST AS APPLICABLE)	Critical	Lab Test	Random As Per IS 4711	IS:1239/P.O. Spec./PTS	IS:1239/P.O. Spec./PTS	Physical IR	P	W
		MASS OF ZINC COATING, UNIFORMITY & ADHESION TEST	Critical	GALV. TEST(LAB Test)	AS PER IS: 4736	IS 4736	IS 4736	GALV. REPORT	P	W
		LEAK TEST (HYDRAULIC TEST)	Critical	Leak Test	100% by MFR.	IS:1239/P.O. Spec./Tender Spec	IS:1239/P.O. Spec./Tender Spec	IR	P	RW (Min 10% per lot by TPIA)
		REVIEW OF ALL TEST CERTIFICATE I REPORTS & VENDOR'S IIR	Major	Review	All TC	IS:1239/P.O. Spec./Tender Spec., EN 10204	IS:1239/P.O. Spec./Tender Spec , EN 10204	R	P	R
		Coating Thickness	Major	Visual	Random as per IS: 13871	IS: 13871/ PTS	IS: 13871/ PTS	IIR	P	W