



Vadodara Gas Limited

Quality Assurance Plan [QAP]



Vadodara Gas Limited

Sl. No.	Description	
13	Quality Assurance Plan [QAP]	
13.1	QAP	PE / PNG Installation
13.2	QAP	PE Pipes
13.3	QAP	Electrofusion Fittings for PE Pipes
13.4	QAP	GI Pipes with Powder Coating
13.5	QAP	GI Fittings with Powder Coating
13.6	QAP	Brass Fittings with Head Chrome Plating
13.7	QAP	Warning Mat
13.8	QAP	Powder Coating of GI Pipes & Fitting



Vadodara Gas Limited

QUALITY ASSURANCE PLAN PE LAYING & PNG INSTALLATION						
S.NO.	Description	Inspection Methodology / Quantum of check	Acceptance Criteria	Format of Record	INSPECTION	
					Contractor	Remarks
1.0 PE Pipeline laying						
1.1	Excavation, PE Pipe laying and Backfilling			Inspection Report	P	Rm (10%)
1.2	Electrofusion Joining			Inspection Report	P	W
1.2.1	EF Joining on Main lines			Inspection Report	P	Rm (30%)
1.2.2	EF Joining on Service lines			Inspection Report	P	Rm (20%)
1.3	Service Regulator Installation			Inspection Report	P	W
1.4	Valve Chamber Installation			Inspection Report	P	Rm (20%)
1.5	Flushing / Pigging, Testing of PE pipeline			Inspection Report	P	W
1.6	Route marker Installation			Inspection Report	P	W
1.7	Commissioning of PE pipeline network			Inspection Report	P	W
2.0 Domestic Connection Installations						
2.1	Route Selection	As Per Approved Procedure w.r. to tender Specification.	Tender Specification.	Inspection Report	P	W
2.2	G.I. Pipe cutting and Threading			Inspection Report	P	Rm (10%)
2.3	G.I. Pipe Installations			Inspection Report	P	Rm (10%)
2.4	Valve, Meter and Regulator Installations			Inspection Report	P	Rm (10%)
2.5	Testing			Inspection Report	P	W
2.5.1	P.P.T.			Hydrotest Report	P	Rm (30%)
2.5.2	M.M.T.			Inspection Report	P	W
2.6	Ground Connection			Inspection Report	P	W
2.7	Conversions			Inspection Report	P	Rm (20%)
2.8	Meter Job Card			Inspection Report	P	W
2.9	Report preparation, Documentation including As Built			Compliance Certificate	P	H

LEGENDS: Rw - Review, W - Witness, Rm - Random Witness, H - Hold, P - Perform, TPJA - Third Party Inspection Agency appointed by Owner for inspection at site, EIC - Owner's representative

Notes: -

- The Above Testing and acceptance criteria are minimum requirements, however, Contractor shall ensure that the execution of works shall also comply to the additional requirements as per Particular Technical specifications(PTS)
- The contractor shall submit their own detailed QAP prepared on the basis of above / Technical specification for approval of Owner/Owner's representative.
- Owner/Owner representative shall review/approve all the documents related to QAP/Quality manuals/Drawings etc.submitted by Contractor.
- Contractor shall in coordination with detailed Plan and Inspection schedule indicating the dates and the locations to facilitate Owner/Owner's representative and TPJA to organise Inspection.
- Critical or Special works 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.
- Owner / Owner's representative including TPJA will have the right to inspect any activity of execution of works at any time.
- All reference Codes/ Standards, Documents shall be arranged by Contractor for reference of TPJA/ CA at the time of Inspection
- At the time of delivery from the manufacturer place and receipt of material in stores, Contractor will submit copy of all related document of inspection along with release note & MTC to TPJA / CA.



Vadodara Gas Limited

QUALITY ASSURANCE PLAN PE PIPES									
S.NO.	Description	Quantum of check		Acceptance Criteria	Inspection Methodology	Format of Record	INSPECTION		Remarks
1	Raw Material Inspection						Manuf. / Contractor	TPA	
1.1	Test result of PE compound			IS 14885PTS			P	Rw	
1.2	Conventional Density			>930at 27°C in Kg / M ³ +20% of value nominated by compound producer at 190 C & 5kg. Load in Gm / 10 Min.			P	Rw	
1.3	Melt mass flow rate			>20 min. at 200°C ≤350 m ³ /kg ≤ 3 grade			P	Rw	
1.4	Thermal Stability						P	Rw	
1.5	Volatiles Content						P	Rw	
1.6	Pigment dispersion						P	Rw	
1.7	Resistance to Gas Constituents						P	Rw	
1.8	Classification of PE compound						P	Rw	
2	Type approval test for long term hydrostatic strength			MRS- shall be 10 MPa at 20°C for 50 years and material designation PE 100			P	Rw	
3	Final / Physical Inspection						R	Rw	
3.1	Appearance			IS 14885PTS		Inspection Report			
3.1.1	a) Smoothness, cleanliness								
3.1.2	b) Surface Defects								
3.1.3	c) Cuttings								
3.1.4	d) Colour								
3.2	Dimensions								
3.2.1	a) Outside Diameter b								
3.2.2	b) Out Of Roundness (Ovality)								
3.2.3	c) Wall Thickness								
3.2.4	d) Length of Pipes								



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S.NO.	Description	Quantum of check	Acceptance Criteria	Inspection Methodology	Format of Record	INSPECTION		Remarks	
						Manuf. / Contractor	TPA		
3.3	Performance requirements								
3.3.1	Hydraulic Strength 20°C for 100hrs hrs (Acceptance test)	As Per PTS	NO sign of localized swelling, no leakage or bursting.			P	Rw		
3.3.2	Hydraulic Strength 80°C for 165 hrs hrs (Acceptance test)	As Per PTS	NO sign of localized swelling, no leakage or bursting.			P	Rw		
3.3.3	Hydraulic Strength 80°C for 1000 hrs hrs (Acceptance test)	As Per IS / PTS		MTC or Inspection Reports of supplier / manufacturer	MTC or Inspection Reports of supplier / manufacturer	P	Rw		
3.3.4	Heat Expansion	As per IS or PTS	≤3%, No effect on surface			P	Rw		
3.3.5	Conventional Density	As per IS or PTS	≥930 at 23° C in Kg/ Cm 3			P	Rw		
3.3.6	Melt mass flow rate	As per IS or PTS	+30 % of value nominated by pipe manufacturer at 190 C & 5 Kg Load in GM/ 10 Min.			P	Rw		
3.3.7	Thermal stability	As per IS or PTS	>20 min at 200° C			P	Rw		
3.3.8	Volatile Content	As per IS or PTS	≤350 mg/kg			P	Rw		
3.3.9	Tensile Yield strength	As per IS or PTS	Min 15 MPa			P	Rw		
3.3.10	Elongation at break	As per IS or PTS	≥350 %			P	Rw		
3.3.11	Squeeze off	As per IS or PTS	No sign of localized swelling, no leakage or bursting.			P	Rw		
4	Marking	As Per IS / PTS	a) Owner Trade mark/ Name or Brand (i.e. GSPC Gas) b) Material and designation (i.e. D-20N, SDR-9, PE-100). c) Manufacturer's identity name or trade name d) Purchase Order No. e) Code & Standard (i.e IS – 14885 : 2001) f) Batch no. or lot no g) Weight of coil and Length of Coil at every meters. h) Manufacturing Date	Visual	Inspection Report	P	Rv		
5	Packing	As Per IS / PTS	Pipe end shall clearly cut square with the axis of pipe and protected against shocks and ingress of foreign bodies by appropriate end caps.	Visual	Inspection Report	P	V		
6	Documentation	As Per IS / PTS	IS 14885:PTS	Visual	Compliance Certificate	P	H		



QUALITY ASSURANCE PLAN PE PIPES						
S.NO.	Description	Quantum of check	Acceptance Criteria	Inspection Methodology	Format of Record	REMARKS
				INSPECTION		
				Manuf. / Contractor	TP/A	
LEGENDS: Rv- Random Verification W - Witness, Rw - Review of Documents / Test certificates, H - Hold, P - Perform, TP/A - Third Party Inspection Agency appointed by Owner						
Notes: -						
1 The Above Testing and acceptance criteria are minimum requirements, however, Contractor shall ensure that the execution of works shall also comply to the additional requirements as per Particular Technical specifications(PTS)						
2 The contractor shall submit their own detailed QAP prepared on the basis of above / Technical 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 Contractor.						
4 Contractor shall in coordination with detailed Plan and Inspection schedule indicating the dates and the locations to facilitate Owner/Owner's representative and TP/A to organise Inspection.						
5 Critical or Special works 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 TP/A will have the right to inspect any activity of execution of works at any time.						
7 All reference Codes/Standards, Documents shall be arranged by Contractor for reference of TP/A/ Owner at the time of Inspection						
8 At the time of delivery from the manufacturer place and receipts of material in stores, Contractor will submit copy of all related documents of inspection along with release note & MTC to TP/A / CA.						
9 Contract / Manufacturer / Vendor shall be sent minimum 3 sample for Chemical & Physical testing of materials at his cost in a year.						



Vadodara Gas Limited

QUALITY ASSURANCE PLAN ELECTROFUSION FITTINGS									
S.NO.	Description	Quantum of check		Acceptance Criteria	Inspection Methodology	Format of Record	INSPECTION		Remarks
							Manuf. / Contractor	TP/A	
1 Raw Material Inspection									
1.1	Test result of PE compound	Each Batch	As per PTS	EN 1555-3/PTS -940 at 27°C in kg / M 3, ISO 1183 Min. 0.2 to 0.4 at 190 C & 5kg Load in Gm / 10 Min. a per ISO 1183.	MTC	MTC of supplier / manufacturer	P	Rw	
1.2	Density						P	Rw	
1.3	Melt mass flow rate						P	Rw	
2 Final / Physical Inspection									
2.1	Appearance	Each Coil	Fittings shall be free from scoring, cavities and other surface defects and Fittings end shall be cut cleanly and square to the axis. Visual / Pipe should be smooth & clean or as specified in PTS Visual / should be free grooves, scoring etc. or as specified in PTS Visual / cleanly cut ends & square to axis or as specified in PTS EN 1555-3/PTS	EN 1555-3/PTS	Visual	Inspection Report	P	V	
2.1.1	a) Smoothness, cleanliness						P	V	
2.1.2	b) Surface Defects						P	V	
2.1.3	c) Cuttings						P	V	
2.1.4	d) Colour						P	V	
2.2	Dimensions	As PTS / IS	PTS / EN 1555-3 EN 1555-3 / PTS EN 1555-3 / PTS EN 1555-3 / PTS EN 1555-3 / PTS	EN 1555-3 / PTS EN 1555-3 / PTS SDR- 11 EN 1555-3/PTS	Venier Caliper Venier Caliper Venier Caliper Marking in mtr	Inspection Report Inspection Report Inspection Report Inspection Report	P	V	
2.2.1	a) Outside Diameter b						P	V	
2.2.2	b) Out of Roundness (Ovality)						P	V	
2.2.3	c) Wall Thickness						P	Rv	
2.2.4	d) Length						P	Rv	
2.3	Performance requirements	As Per IS / PTS	EN 1555-3 / PTS, ISO-1167 As per EN or PTS As per EN or PTS As per EN or PTS	-940 at 27°C in kg / M 3, ISO 1183 Min. 0.2 to 0.4 at 190 C & 5kg Load in Gm / 10 Min. a per ISO	MTC or Inspection Reports of supplier / manufacturer	MTC or Inspection Reports of supplier / manufacturer	P	Rw	
2.3.1	Density						P	Rw	
2.3.2	Melt mass flow rate						P	Rw	
2.3.3	Hydraulic Strength Test						P	Rw	
2.3.4	Electric Resistance						P	Rw	
2.3.5	Squeeze off		As per EN or PTS	No sign of localised swelling, no leakage or bursting			P	Rw	



QUALITY ASSURANCE PLAN ELECTROFUSION FITTINGS						
S.NO.	Description	Quantity of check	Acceptance Criteria	Inspection Methodology	Format of Record	Remarks
3	Marking	As Per IS / PTS	As per EN 1555-3 & PTS Clause 10.	Visual	Inspection Report	P Rv
			a) Number of the System Standard: EN 1555 b) Manufacturer's name and/or trademark c) Nominal outside diameter(s) of pipe, dn (i.e 20, 35, 110 etc) d) Material and designation (i.e PE 80 or PE 100) e) Design application series (i.e SDR - 9) f) SDR fusion range (i.e SDR 11 -SDR 26) g) Manufacturer's information h) Manufacturer (i.e. check for marking and its manufacturing)			
4	Packing	As Per IS / PTS	As per EN 1555-3 & PTS Clause 13	Visual	Inspection Report	P V
5	Documentation	As Per IS / PTS	As per the term & conditions of PTS	Visual	Compliance	P H
LEGENDS: H = Random Verification W = Witness, Rv = Review of Documents / test certificates, H - Hold, P - Perform, TPA - Third Party Inspection Agency appointed by Owner						
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3. Owner/Owner representative shall review/approve all the documents related to QAP/Quality manual/Drawing etc., submitted by Contractor.						
4. Contractor shall in coordination with detailed Plan and Inspection schedule indicating the dates and the locations to facilitate Owner/Owner's representative and TPA to organise Inspections.						
5. Critical or Special works, 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 TPA will have the right to inspect any activity of execution of works at any time.						
7. All reference Codes/ Standards, Documents shall be arranged by Contractor for reference of TPA/Owner at the time of Inspection						
8. At the time of delivery from the manufacturer place and receipt of material in stores, Contractor will submit copy of all related document of inspection along with release note & MTC to TPA / CA.						
9. Contract/Manufacturer / Vendor shall be sent minimum 3 sample for Chemical & Physical testing of materials at its cost in a year.						



QUALITY ASSURANCE PLAN GI PIPES CONFORMING TO IS:1239 (PART-1):2004 (Latest edition) WITH POWDER COATING											
S.N.	COMPONENTS/OPERATIONS	CHARACTERISTICS	CLASSIFICATION	INSPECTION TYPE OF CHECK	QUANTITY OF CHECK	7	8	INSPECTION			
								FORMAT OF RECORD	MFG./CONTRACTOR	T.P.A.	REMARKS
1	2	3	4	5	6	7	8	9	10	11	12
1.0	Raw Material Inspection										
1.1	RAW MATERIAL	IDENTIFICATION	Major	Co-relation with MTC.	100%	IS:1239/PTS	IS:1239/PTS	MTC	P	R/w	
		CHEMICAL COMPOSITION	Major	Chem. Analysis / MTC	One / One	IS:1239 Part-II & IS:10746 (M.A., permissible variation for sulphur & phosphorus shall be 0.02% each)	IS:1239 / PTS	MTC	P	R/w	
		PHYSICAL PROPERTIES (T.S., Y.S., %Elong.)	Major	Lab. Test / MTC	One / One	IS:1239 Part-II & IS:10746 (M.A.) least 120 MPa	IS:1239 / PTS	MTC	P	R/w	
		VISUAL & DIMENSIONS	Major	Visual & Measure. / MTC	100%	IS:1239 (Part-I) & 10746 As per table shown below.	IS:1239 / PTS	MTC	P	R/w	
2.0	IN PROCESS INSPECTION										
2.1	PIPE MANUFACTURING	SURFACE FINISH / DEFECT	Major	Visual	100%	IS:1239/PTS	IS:1239/PTS	MTC	P	R/w	
		DIAMETER	Major	Measure	100%	IS:1239/PTS	IS:1239/PTS	MTC	P	R/w	
		WALL THICKNESS	Major	Measure	100%	IS:1239/PTS	IS:1239/PTS	MTC	P	R/w	
		END CUT	Major	Measure	100%	IS:1239/PTS	IS:1239/PTS	MTC	P	R/w	
2.2	END PREPARATION	MASS (Kgf/m ²)	Major	Measure	As Per Release Sd.	IS:1239/PTS	IS:1239/PTS	MTC	P	R/w	
		TENSILE, ELONGATION & BEND / FLAT TENSILE TEST AS APPLICABLE	Major	Visual & Measure.	100%	IS:1239/PTS	IS:1239/PTS	MTC	P	R/w	
2.3	PHYSICAL PROPERTIES		Major	Lab. Test	As Per Release Sd.	IS:1239/PTS	IS:1239/PTS	MTC	P	R/w	
2.4	PRESSURE LEAK TEST	HYDRAULIC	Critical	Leak Test	100%	IS:1239/PTS	IS:1239/PTS	MTC	P	R/w	
2.5	GALVANIZING	COATING UNIFORMITY & MASS	Major	Mass of Coating & Uniformity	3 Sample / Shift	IS:4736	IS:4736	MTC	P	R/w	
3.0	ZINC COATING										
3.1	Uniformity	IS:4736	IS:4736	IS:4736	IS:4736	IS:4736	IS:4736	MTC	P	R/w	
3.2	Adhesion Test	IS:4736	IS:4736	IS:4736	IS:4736	IS:4736	IS:4736	MTC	P	R/w	
4.0	POWDER COATING										
4.1	Curing Thickness	ISO 2560	ISO 2560	ISO 2560	ISO 2560	ISO 2560	ISO 2560	MTC	P	R/w	
5.0	MARKING										
5.1	FINISH PIPE	OVERALL TENSILE COATING & MARKING	Major	Visual	100%	IS:1239/PTS	IS:1239/PTS	MTC	P	R/w	



QUALITY ASSURANCE PLAN GI PIPES CONFORMING TO IS:1239 (PART-1):2004 (Latest edition) WITH POWDER COATING										
COMPONENTS/OPERATIONS		CHARACTERISTICS	CLASSIFICATION	INSPECTION TYPE OF CHECK	QUANTITY OF CHECK	ACCEPTANCE CRITERIA	FORWARD OF RECORD	INSPECTION	REMARKS	
1	2	3	4	5	6	7	8	9	10	
11	12									
6.0 PACKING										
6.1	FINISH PIPE	ALL FINISH PRODUCT	Major	Visual	100%	IS:1239/PTS	IS:1239/PTS	MTC	P	Row
7.0 FINAL INSPECTION										
7.1	FINISHED PRODUCT / PHYSICAL PROPERTIES	FINISH DIMENSIONS	Major	Visual & Measure	Random As Per IS:4711	IS:1239/PTS	IS:1239/PTS	MTC	P	Row
7.1	REVIEW OF ALL TEST CERTIFICATE/REPORTS & DOCUMENTATIONS		Major	Review	-	IS:1239/PTS	IS:1239/PTS	MTC	P	Row
8.0	DOCUMENTATION	-	-	-	-	IS:1239/PTS	IS:1239/PTS	Compliance certificate	P	U

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QUALITY ASSURANCE PLAN GI FITTINGS WITH POWDER COATING									
SR. No	DESCRIPTION	COMPONENT	CHARACTERISTICS	INSPECTION TYPE OF CHECK	QUANTUM OF CHECK	ACCEPTANCE NORMS	FORMAT OF RECORD	INSPECTION	
								MTC./ CONTRACTOR	TIFA
1	2	3	4	5	6	7	8	9	10
1	Chemical Composition of raw material	Test bar	Marking and Correlation with TC	Chem. Analysis/Lab. Test Car./MTC	TS 14329 Grade BM 330	TS 14329/TS 1239 PTS	MHTC	R	Rw
2	Chemical Composition of final product	Tuning	Chemical properties	Chem. Analysis/Lab. Test Car./MTC	TS 14329 Grade BM 330	TS 14329/TS 1239 PTS	TC	P	Rw
3	Cleaning and Finishing	Tuning	Decoiling	Visual	100%	TS 14329/TS 1239 PTS	Inspection Report	P	Rv
4	Dimensional Testing (Tensile, Elongation & Hardness)	Tuning	Mechanical Properties	Lab. Test/MTC	TS 14329	TS 14329/TS 1239 PTS	Lab report	P	Rw
5	Compression Test	-	Malleability	MTC	Time sample per lot	TS 1879/PTS	Inspection report	P	Rw
6	Pressure Test	-	-	MTC	TS 1879	TS 1879/PTS	Inspection report	P	Rw
7	Alignments of thread	-	-	Checking	TS 1879	TS 1879/PTS	Inspection report	P	Rv
8	Galvanizing	Tuning	Integrity of galvanized coating	Test certificate	As fixed in TS 4759	TS 4756/PTS	Inspection / Lab report	P	Rw
9	Powder Coating	Tuning	Integrity of galvanized coating	Test certificate	ISO 2380	ISO 2380/PTS	Inspection / Lab report	P	Rw
10	Final inspection	Things	Visual Dimensions, Finish, Test 1, Bore.		TS 1879	TS 1879/PTS	Inspection report	P	Rv
11	Marking	-	-	Physical Or Marking or Finish Tested	100%	PTS	Inspection report	P	Rv
12	Documentation	-	-		-	PTS	Compliance certificate	P	H

REVISIONS: R - Random Verification W - Witness, Ror - Review of Documents / test certificates. H - Hdd, P - Perform, TIFA - Third Party Inspection Agency appointed by Owner

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Vadodara Gas Limited

QUALITY ASSURANCE PLAN BRASS FITTING WITH HEAD CHROME PLATING									
SR. NO.	INSPECTION AND TESTING	QUANTITY OF CHECK	INSPECTION TYPE OF CHECK	PROCEDURE	ACCEPTANCE CRITERIA AND CERTIFICATE	FORMAT OF RECORD	MTC / CONTRACTOR	INSPECTION	
								TUA/CLIENT	REMARKS
1	2	3	4	5	6	7	8	9	10
1	Raw material Testing: (Chemical / Physical Requirement)	One in each heat	Document	As per IS 319	As per IS 319 / PTS	MTC	P	P	11
2	Final product :								
2.1	Visual inspection (Free from defects)	100%	Visual	As per EN 1254	As per EN 1254 / PTS	TEST REPORT	P	P	
2.2	Dimension tolerances (Min. length of engagement (ID, wall thickness, Threading)	100%	Dimension verification by GO - NO GO Gauge	As per EN 1254	As per EN 1254 / PTS	TEST REPORT	P	P	
2.3	Machining	100%	Visual	As per EN 1254	As per EN 1254		P	P	
3	Final Documentation	-	-	PTS	PTS	DOCUMENT	P	P	

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- Critical or Special works procedures have to be specially approved/only previously approved procedures have to be used, in case of conflict between specifications from original condition shall be applicable.
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- Contract / Manufacturer / Vendor shall be sent minimum 3 sample for Chemical & Physical testing of materials at his cost in a year.



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QUALITY ASSURANCE PLAN WARNING MAT									
S. No	DESCRIPTION	QUANTUM OF CHECK	ACCEPTANCE CRITERIA	INSPECTION METHODOLOGY	DOCUMENTATION	INSPECTION		REMARKS	
						MFG. / CONTRACTOR	TPIA		
1	Raw Material Inspection	Each Batch	AS Per IS / PTS	Polyvinyl Chloride or Polyethylene	Material Test report	H	Rw		
2	Final Inspection								
2.1	Chemical Analysis	Each Batch	AS Per IS / PTS	PTS	Material Test report	P	Rw		
2.2	Width	Three sample per Lot	PTS	Scale	Inspection report	P	Rv		
2.3	Thickness	Three sample per Lot	PTS	Venier / Micro meter	Inspection report	P	Rv		
2.4	Colour Bleeding	Three sample per Lot	PTS	Cl. No. 8, (s) of PTS	Material Test report	P	Rw		
2.5	Ultimate Tensile Strength at Break	One sample per Lot	AS Per IS / PTS	Minimum 12 N / mm ²	Material Test report	P	Rw		
3	Colour	Each	PTS	Bright Yellow Colour	Inspection report	P	Rv		
4	Marking / Art Work	Per Meter	Cl. No. 8, (s) of PTS	Marking on the Mat shall be approved by owner at every 1 Meter of Warning Mat	Inspection report	P	Rv		
5	Packaging	-	Cl. No. 9 of PTS	Visual	Inspection Report	P	Rv		
6	Documentation	-	PTS	PTS	Compliance certificate	P	H		

LEGENDS: RW - Random Verification W - Witness, RW - Review of Documents, H - Hold, P - Perform, TPJA - Third Party Inspection Agency appointed by Owner

Notes: -

- The Above Testing and acceptance criteria are minimum requirements. However, Contractor shall ensure that the execution of works shall also comply to the additional requirements as per Particular Technical specifications (PTS)
- The contractor shall submit their own detailed QAP prepared on the basis of above / Technical specification for approval of Owner/Owner's representative.
- Owner/Owner representative shall review/approve all the documents related to QAP/Quality manuals/Drawings etc submitted by Contractor.
- Contractor shall in coordination with detailed Plan and Inspection schedule indicating the dates and the locations to facilitate Owner/Owner's representative and TPJA to organise inspection.
- Critical or Special works 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.
- Owner / Owner's representative including TPJA will have the right to inspect any activity of execution of works at any time.
- All reference Codes/ Standards, Documents shall be arranged by Contractor for reference of TPJA, Owner at the time of inspection
- At the time of delivery from the manufacturer place and receipt of material in stores, Contractor will submit copy of all related document of inspection along with release note & MTC to TPJA / CA.



Vadodara Gas Limited

QUALITY ASSURANCE PLAN POWDER COATING OF GI PIPES & FITTINGS											
SR. NO.		INSPECTION AND TESTING		QUANTUM OF CHECK	INSPECTION TYPE OF CHECK	PROCEDURE	REF. No.	ACCEPTANCE CRITERIA AND CERTIFICATE	FORMAT OF RECORD	INSTRUCTION	
										MTC./ CONTRACTOR	TPHA / CLIENT
1		2		3	4	5	6	7	8	9	10
1.0		Powder coating material		One per Batch	Document	As per ISO/EN or PTS	As per ISO/EN or PTS	As per ISO/EN or PTS	MTC	P	Rw
2.0		Application requirement									
2.1		Equipment		100%	Document	Vendor Procedure	PTS	Electrostatic Spraying (40-80 KV manual or Automatic)	MTC	P	Rw
2.2		Baking Schedule		100%	Document	Vendor Procedure	PTS	180 °C to 200 ° C for 10min of initial temperature	MTC	P	Rw
3.0		Performance test									
3.1		Resistance to Weathering		Per Batch / Lot	Document	ISO/EN/PTS	ISO/EN/PTS	conform to EN 12206-1	MTC	P	Rw
3.2		Resistance to Humidity		Per Batch / Lot	Document	ISO/EN/PTS	ISO/EN/PTS	ISO 6270 (ref)	MTC	P	Rw
3.3		Resistance to Montar		Per Batch / Lot	Document	ISO/EN/PTS	ISO/EN/PTS	ASTM C 207 and ASTM D 3260	MTC	P	Rw
3.4		Resistance to Corrosion		Per Batch / Lot	Document	ISO/EN/PTS	ISO/EN/PTS	ISO 12944-6	MTC	P	Rw
3.5		Coating Thickness		Per Batch / Lot	Document	ISO/EN/PTS	ISO/EN/PTS	ISO 2360 (ref)	MTC	P	Rw
3.6		Adhesion		Per Batch / Lot	Document	ISO/EN/PTS	ISO/EN/PTS	ASTM D 5870	MTC	P	Rw
3.7		Porosity Density		Per Batch / Lot	Document	ISO/EN/PTS	ISO/EN/PTS	DIN 55 670	MTC	P	Rw
3.8		Film Type		Per Batch / Lot	Document	ISO/EN/PTS	ISO/EN/PTS	Glossy / Satin	MTC	P	Rw
3.9		Gloss at 60° c		Per Batch / Lot	Document	ISO/EN/PTS	ISO/EN/PTS	80-95 %	MTC	P	Rw
4.10		Cross-hatch Adhesion (ASTM D-5870)		Per Batch / Lot	Document	ISO/EN/PTS	ISO/EN/PTS	Classification -0 (GT=0/100)	MTC	P	Rw
4.11		Pencil Hardness (min.)		Per Batch / Lot	Document	ISO/EN/PTS	ISO/EN/PTS	2 H	MTC	P	Rw
4.12		Scratch Resistance (Kg. Min.)		Per Batch / Lot	Document	ISO/EN/PTS	ISO/EN/PTS	3	MTC	P	Rw
5.0		FINAL INSPECTION									
5.1		Visual inspection (Free from defects)		100%	Visual	PTS	PTS	PTS	MTC	P	Rw
5.2		Colour		100%	Visual	PTS	PTS	PTS	MTC	P	Rw
6.0		Final Documentation		PTS	PTS	PTS	PTS	PTS	COMPLIANCE	P	H

Notes :-

1. The Above Testing and acceptance criteria are minimum requirements. However, Contractor shall ensure that the execution of works shall also comply to the additional requirements as per Particular Technical specifications (PTS).

2. The contractor shall submit their own detailed QAP prepared on the basis of above / Technical specification for approval of Owner/Owner's representative.

3. Owner/Owner representative shall review/approve all the documents related to QAP/Quality manuals/quality etc. submitted by Contractor.

4. Contractor shall in coordination with detailed Plan and Inspection schedule indicating the dates and the locations to facilitate Owner/Owner's representative and TPHA to organize inspection.

5. Critical or Special work procedures have to be specially approved (or only previously approved procedures have to be used. In case of certified between specification more stringent condition shall be applicable.

6. Owner / Owner's representative including TPHA will have the right to inspect any quality of execution of works at any time.

7. All reference Codes/ Standards, Documents shall be arranged by Contractor for reference of TPHA/Owner at the time of inspection.

8. At the time of delivery from the manufacturer place and receipt of material in series, Contractor will submit copy of all related document of inspection along with release note & MTC to TPHA / C.A.

9. Contractor / Manufacturer / Vendor shall be sent minimum 3 sample for Chemical & Physical testing of materials at its cost in a year.