

Bureau Veritas (India) Private Limited	FIELD INSPECTION REPORT	FIR No: PCTL/BVKOL/ARC/6529/FIR/002
	BVIL REF: IND.K.4.18.0227,R1 Zig No. 6088529	Date: 30.04.2019

Project: COOLING TOWER PACKAGE FOR GURU GOVIND SINGH POLYMER ADDITION PROJECT	Manufacturer: ARC Insulation & Insulators (P) Ltd.
Supply intended for: HMEL, Bathinda Project	Order No: 18HPO6549, Dt. 05/10/2018
Inspection ordered by: M/s Paharpur Cooling Towers Limited, Kolkata	(M/s PCTL to M/s ARC)
Supplier: M/s ARC Insulation & Insulators (P) Ltd.	Supply / Item: GRP Pipes
Performing Office (PO): BVIL-Kolkata	Contracting Office (CO): BVIL – Kolkata
Drawing No: 18-2I-0005A/F/04 Rev.00 Dt.07.08.2018	QAP No: ARC/GRP PIPE/QAP/18-19/01-01 Rev.0 Dt.27.10.18

A] Measuring Instruments Used (including satisfactory verification of suitability):

Instrument Description (Type, Title, Mnfr)	Id / Serial No	Scale / Range	Certificate No	Calibration Due Date	Calibration Lab details (NABL, ISO17025 Acc, etc)
Steel Tape	ARC-16	0 to 15000mm	1808302/A392/02-kd	01.08.19	Essjay Technomeasure Pvt. Ltd.
Pie Tape	ARC-08	700 to 1100mm	1808302/A392/12-kd	01.08.19	Essjay Technomeasure Pvt. Ltd.
Vernier Caliper	GL802800	0 to 300mm	JSGC/ARC/CERT/02/01/GL802800/18-19	01.08.19	Jagnath Slip Gauges & Company
UTM	2010/1020	0-600kN	TMC/TS/603/19	05.03.2020	Testing Machine Corporation
Hardness Tester	VBZH	0 to 100 Shore D	1808124/A392/03-kd	01.08.2019	Essjay Technomeasure Pvt. Ltd.

Quantity offered:	Quantity accepted:	Quantity rejected (#):
22 nos. GRP Pipe	22 nos. GRP Pipe	NIL

B] Details of Inspection Carried out:

With respect to scope of work as per QAP, Final Inspection was performed for GRP pipe at M/s. ARC Insulation & Insulators Pvt. Ltd. work shop on 30.04.2019 and the attendees were :

1. Mr. Akhilesh Kr. Shrivastava – Bureau Veritas Ind. Pvt. Ltd., Kolkata.
2. Mr. Subhadip Roy– M/s- ARC Insulation & Insulators Pvt. Ltd.
3. Mr. Amit Shukla- M/s- ARC Insulation & Insulators Pvt. Ltd.
4. Mr. Abhishek Gond- M/s- ARC Insulation & Insulators Pvt. Ltd.

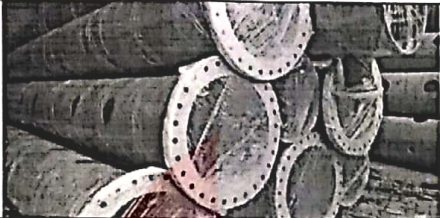

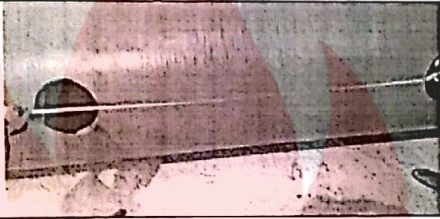
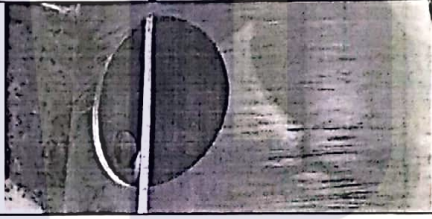
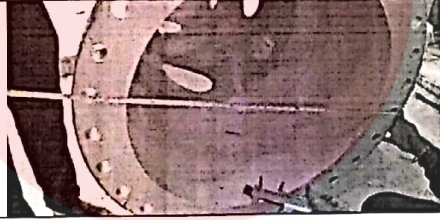


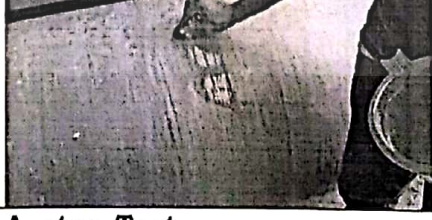
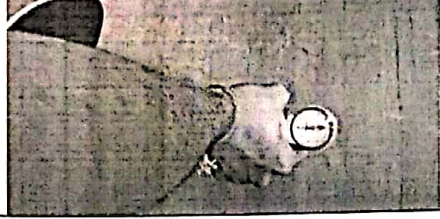

Observation:

- Reviewed the raw material test certificate of Resin –Unsaturated Polyester Resin, Isophthalic for the make & properties as QAP and material found satisfactory. (Report Attached)
- Reviewed the raw material test certificate of Fiber for make and properties as per QAP and material found as per Standard. (Report Attached)







- Reviewed the Chop Strand Mat 450 test certificate for make and properties as per QAP and material found satisfactory. (Report Attached)
- Reviewed the in process inspection for cutting, drilling and finishing and found satisfactory.
- Dimension Inspection Of Pipe(ARC/2I0005A/PCTL/BHATHINDA/DIMENSIONAL /01/22) is carried as per drawing, And the dimension found within the drawing tolerance.(Witness Report Attached)
- Longitudinal Tensile strength report reviewed and found satisfactory.
- Pipe stiffness, Pipe Hardness Test and Aceton Smear Test witness and found satisfactory.(Report Attached)
- HydroTest Report Reviewed (Ref Report No.-PCTL/BVKOL/ARC/6549/FIR/001 Dt.24.04.19) and found satisfactory.
- Reviewed the chemical test report and results found as per standard.
- Randomly checked the material and no surface defects observed.
- Identification No. Paper tag Stamped for BV Identification.

Photographs-

	
Offered Pipes	Offered Pipes
	
Dimensional Inspection	Dimensional Inspection
	
Dimensional Inspection	Dimensional Inspection
	
Stiffness Test	Aceton Test
	
Hardness Test	Identification mark



* Category: (1) Accepted (2) Conditionally Accepted (3) Re-Inspection Required (4) Rejected (5) Advice/Instruction from client required				
Inspection Date(s): 30.04.2019	* ANY NON CONFORMITY FOUND?	Yes	  Mr. Subhatrip Roy Supplier's Signature & Date Tele. No. 9748991152	  Akhilesh Kumar Shrivastava Surveyor's Signature, Stamp & Date Mobile no. 7903863050
		No		
Inspection Place(s): West Bengal	* ORDER STATUS	Complete	Balance	
* - Circle the relevant details OR strike out the non-relevant details				
# - Include the reasons for rejection in the 'details' of the report				Format FIR r5 - 19 th Aug 2015



ARC INSULATIONS AND INSULATORS PVT LTD

CLIENT	PAHARPUR COOLING TOWER LTD		DATE	30.04.2019	SHEET No.	1
TITLE	HEADER PIPE		PO NO	18HP06549		
PROJECT	COOLING TOWER PACKAGE GURU GOVIND SINGH POLYMER ADDITION PROJECT					
DRAWING NUMBER	18-21-0005A/F/04 REV - 0		TOTAL NO SETS	22	IDENTIFICATION NO. ARC/210005A/PCTL/BHATINDA/DIMENSIONAL/01/22	

DESCRIPTION		SIZE	OD(MM)	THICKNESS(MM)		LENGTH(MM)	
			SPECIFIED	OBSERVED	SPECIFIED	OBSERVED	
PIPE							
SET 1	OF 1	750	768	768	9	9.0	9629.0
SET 2	OF 1	750	768	769	9	9.5	8863.0

DESCRIPTION		PART 2 - WITNESS FLANGE DIMENSION REPORT												
		SPECIFIED					OBSERVED							
FLANGES		NB	OD	BCD	NOH	HOLE DIA	THK	THK	NB	OD	PCD	NO OF HOLES	HOLE DIA	THK
SET 1	FLANGE	750	984	914	28	35	62	62	750	984	864	28	35	62

DESCRIPTION		SIZE	OD(MM)	THICKNESS(MM)		LENGTH(MM)	
			SPECIFIED	OBSERVED	SPECIFIED	OBSERVED	
PIPE							
SET 1		200	212	212	6	6	2200

DESCRIPTION		PART -4 WITNESS VENT PIPE FLANGE DIMENSION REPORT												
		SPECIFIED					OBSERVED							
PIPE		NB	OD	BCD	NOH	HOLE DIA	THK	THK	NB	OD	PCD	NO OF HOLES	HOLE DIA	THK
SET 1	OF 1	200	342.9	298.5	8	23	26	26	200	343.7	298.5	8	24	26
SET 1	OF 2	200	342.9	298.5	8	23	26	26	200	342.9	298.5	8	23	26

DESCRIPTION		PART -5 WITNESS FRP COVER DIMENSION REPORT											
		SPECIFIED					OBSERVED						
PIPE		NB	STIFFNER LENGTH	THK	COVER THK	DISTANCE	DISTANCE	NB	STIFFNER LENGTH	THK	COVER THK	DISTANCE	DISTANCE
SET 1	OF 1	750	250	20	20	150	150	750	250	21	22	150	150

ALL THE ABOVE OBSERVED DIMENSIONS ARE WITHIN TOLERANCE LIMIT AS PER IS 14402


 MR. ABHISHEK KR. GOND (QC/QA)
 FOR, ARC INSULATION & INSULATORS PVT LTD.


 MR. AKHILESH SRIVASTAVA
 FOR, BUREAU VERITAS INDIA



ARC INSULATIONS AND INSULATORS PVT LTD

CLIENT	PAHARPUR COOLING TOWER LTD		
TITLE	HEADER PIPE	DATE	09.02.2019
PROJECT	COOLING TOWER PACKAGE GURU GOVIND SINGH POLYMER ADDITION PROJECT	PO NO	18HFO6549
DRAWING NUMBER	18-21-0005A/F/04 REV - 0	TOTAL NO SETS	22
		IDENTIFICATION NO.	ARC/210005A/PCTL/BHATINDA/DIMENSIONAL/01/22

DESCRIPTION	SPECIFIED						OBSERVED						
	DIA	C/C DISTANCE	TYPE	DIA	C/C DISTANCE	TYPE	DIA	C/C DISTANCE	TYPE	DIA	C/C DISTANCE	TYPE	
SET 1	HOLE 1	224+/-1	638	BOTH SIDE	95+/-1	638	ONE SIDE	224	638	BOTH SIDE	95	638	ONE SIDE
	HOLE 2	224+/-1	762	BOTH SIDE	95+/-1	762	ONE SIDE	224	762	BOTH SIDE	96	762	ONE SIDE
	HOLE 3	224+/-1	1524	BOTH SIDE	95+/-1	1524	ONE SIDE	225	1524	BOTH SIDE	96	1524	ONE SIDE
	HOLE 4	224+/-1	762	BOTH SIDE	95+/-1	762	ONE SIDE	224	762	BOTH SIDE	96	762	ONE SIDE
	HOLE 5	224+/-1	1524	BOTH SIDE	95+/-1	1524	ONE SIDE	223	1524	BOTH SIDE	94	1524	ONE SIDE
	HOLE 6	224+/-1	762	BOTH SIDE	95+/-1	762	ONE SIDE	224	762	BOTH SIDE	94	762	ONE SIDE
	HOLE 7	224+/-1	1524	BOTH SIDE	95+/-1	1524	ONE SIDE	224.5	1524	BOTH SIDE	95	1524	ONE SIDE
	HOLE 8	224+/-1	1294	BOTH SIDE	95+/-1	1294	ONE SIDE	225	1294	BOTH SIDE	95	1294	ONE SIDE
	HOLE 9	224+/-1	460	BOTH SIDE	95+/-1	460	ONE SIDE	224	460	BOTH SIDE	95	460	ONE SIDE
	HOLE 10	224+/-1	1294	BOTH SIDE	95+/-1	1294	ONE SIDE	223.5	1294	BOTH SIDE	95	1294	ONE SIDE
	HOLE 11	224+/-1	1524	BOTH SIDE	95+/-1	1524	ONE SIDE	223	1524	BOTH SIDE	94	1524	ONE SIDE
	HOLE 12	224+/-1	762	BOTH SIDE	95+/-1	762	ONE SIDE	224	762	BOTH SIDE	94	762	ONE SIDE
	HOLE 13	224+/-1	1524	BOTH SIDE	95+/-1	1524	ONE SIDE	224	1524	BOTH SIDE	96	1524	ONE SIDE
	HOLE 14	224+/-1	762	BOTH SIDE	95+/-1	762	ONE SIDE	225	762	BOTH SIDE	96	762	ONE SIDE
	HOLE 15	224+/-1	1524	BOTH SIDE	95+/-1	1524	ONE SIDE	225	1524	BOTH SIDE	95	1524	ONE SIDE
	HOLE 16	224+/-1	762	BOTH SIDE	95+/-1	762	ONE SIDE	224	762	BOTH SIDE	95	762	ONE SIDE

ALL THE ABOVE OBSERVED DIMENSIONS ARE WITHIN TOLERANCE LIMIT AS PER IS 14402


 MR. ABHISHEK KR. GOND
 FOR, ARC INSULATION & INSULATORS PVT LTD


 MR. AKHILESH SRIVASTAVA
 FOR, BUREAU VERITAS INDIA

ARC INSULATIONS AND INSULATORS PVT LTD

CLIENT	PAHARPUR COOLING TOWER LTD		DATE	30.04.2019	SHEET.No	3
TITLE	HEADER PIPE		PO NO	18HPO6549		
PROJECT	COOLING TOWER PACKAGE GURU GOVIND SINGH POLYMER ADDITION PROJECT					
DRAWING NUMBER	18-2I-0005A/F/04 REV - 0		TOTAL SET	22 SET		

S.NO		LOCATION	SPECIFIED	OBSERVED
1	PIPE LINER		ABOVE 32	40
2	PIPE SURFACE			41

S.NO		LOCATION	SPECIFIED	OBSERVED
1	PIPE			NO SMEAR / SMLUG
2	PIPE			NO SMEAR / SMLUG
3	PIPE			NO SMEAR / SMLUG
4	FLANGE			NO SMEAR / SMLUG
5	FLANGE			NO SMEAR / SMLUG

S.NO		LOCATION	DIMENSION	SPECIFIED	OBSERVED
1	PIPE		750NB - 300MM WIDTH - 9MM THICKNESS	62 KPA (0.164 KN/M2)	1.01 KN

ALL THE ABOVE OBSERVED VALUES ARE WITHIN TOLERANCE LIMIT AS PER IS 14402 / BS6464


 MR. ABHISHEK KR. GOND JOC/OA
 FOR, ARC INSULATION & INSULATORS PVT LTD.


 MR. AKHILESH SRIVASTAVA
 FOR, BUREAU VERITAS INDIA



ARC INSULATIONS AND INSULATORS PVT LTD

CLIENT	PAHARPUR COOLING TOWER LTD		DATE	30.04.2019	SHEET No.	1
TITLE	HEADER PIPE		PO NO	18HPO6549		
PROJECT	COOLING TOWER PACKAGE GURU GOVIND SINGH POLYMER ADDITION PROJECT					
DRAWING NUMBER	18-21-0005A/F/04 REV - 0		TOTAL NO SETS	22		

PART - I PIPE DIMENSION REPORT									
DESCRIPTION	SIZE	OD(MM)		THICKNESS(MM)		LENGTH(MM)		OBSERVED	OBSERVED
		SPECIFIED	OBSERVED	SPECIFIED	OBSERVED	SPECIFIED	OBSERVED		
SET 1	SET 1 OF 1	750	768	9	9	9630	9630	9.0	9631.0
	SET 2 OF 1	750	768	9	9	8865	8865	9.1	8867.0
SET 2	SET 1 OF 2	750	768	9	9	9630	9630	9.1	9631.0
	SET 2 OF 2	750	768.4	9	9	8865	8865	9.2	8866.0
SET 3	SET 1 OF 3	750	768	9	9	9630	9630	9.1	9632.0
	SET 2 OF 3	750	768.2	9	9	8865	8865	9.1	8867.0
SET 4	SET 1 OF 4	750	768	9	9	9630	9630	9.1	9630.0
	SET 2 OF 4	750	768.2	9	9	8865	8865	9.0	8865.0
SET 5	SET 1 OF 5	750	768	9	9	9630	9630	9.1	9631.0
	SET 2 OF 5	750	768.2	9	9	8865	8865	9.1	8867.0
SET 6	SET 1 OF 6	750	768	9	9	9630	9630	9.0	9631.0
	SET 2 OF 6	750	768	9	9	8865	8865	9.0	8865.0
SET 7	SET 1 OF 7	750	768	9	9	9630	9630	9.1	9630.0
	SET 2 OF 7	750	768.2	9	9	8865	8865	9.1	8866.0
SET 8	SET 1 OF 8	750	768	9	9	9630	9630	9.1	9630.0
	SET 2 OF 8	750	768.2	9	9	8865	8865	9.1	8867.0
SET 9	SET 1 OF 9	750	768	9	9	9630	9630	9.1	9632.0
	SET 2 OF 9	750	768.4	9	9	8865	8865	9.2	8866.0
SET 10	SET 1 OF 10	750	768	9	9	9630	9630	9.1	9632.0
	SET 2 OF 10	750	768	9	9	8865	8865	9.0	8866.0
SET 11	SET 1 OF 11	750	768.2	9	9	9630	9630	9.1	9630.0
	SET 2 OF 11	750	768	9	9	8865	8865	9.0	8867.0

ALL THE ABOVE OBSERVED DIMENSIONS ARE UNDER TOLERANCE LIMIT AS PER IS 14402


Insulation & Insulators Pvt. Ltd.
 Kolkata
 MR. SUBHANKAR
 FOR, ARC INSULATION & INSULATORS PVT. LTD.


ARC INSULATORS PRIVATE LIMITED
 KOLKATA
 MR. AKHILESH SRIVASTAVA
 FOR, BUREAU VERITAS INDIA

ARC INSULATIONS AND INSULATORS PVT LTD

CLIENT	PAHARPUR COOLING TOWER LTD		DATE	30.04.2019	SHEET No.	2
TITLE	HEADER PIPE		PO NO	18HPO6549		
PROJECT	COOLING TOWER PACKAGE GURU GOVIND SINGH POLYMER ADDITION PROJECT					
DRAWING NUMBER	18-2I-0005A/F/04 REV - 0		TOTAL NO SETS	22		

DESCRIPTION		SIZE		OD(MM)		THICKNESS(MM)		LENGTH(MM)	
		SET	OF	SPECIFIED	OBSERVED	SPECIFIED	OBSERVED	SPECIFIED	OBSERVED
SET 12	SET 1	OF 12	750	768	768	9	9.0	9630	9631.0
	SET 2	OF 12	750	768	768.2	9	9.1	8865	8865.0
SET 13	SET 1	OF 13	750	768	768.2	9	9.1	9630	9630.0
	SET 2	OF 13	750	768	768.4	9	9.2	8865	8866.0
SET 14	SET 1	OF 14	750	768	768.2	9	9.1	9630	9630.0
	SET 2	OF 14	750	768	768.2	9	9.1	8865	8867.0
SET 15	SET 1	OF 15	750	768	768.2	9	9.1	9630	9630.0
	SET 2	OF 15	750	768	768	9	9.0	8865	8865.0
SET 16	SET 1	OF 16	750	768	768.2	9	9.1	9630	9631.0
	SET 2	OF 16	750	768	768.2	9	9.1	8865	8867.0
SET 17	SET 1	OF 17	750	768	768	9	9.0	9630	9631.0
	SET 2	OF 17	750	768	768	9	9.0	8865	8865.0
SET 18	SET 1	OF 18	750	768	768.4	9	9.2	9630	9630.0
	SET 2	OF 18	750	768	768.2	9	9.1	8865	8866.0
SET 19	SET 1	OF 19	750	768	768.2	9	9.1	9630	9630.0
	SET 2	OF 19	750	768	768.2	9	9.1	8865	8867.0
SET 20	SET 1	OF 20	750	768	768.2	9	9.1	9630	9630.0
	SET 2	OF 20	750	768	768.4	9	9.2	8865	8865.0
SET 21	SET 1	OF 21	750	768	768.2	9	9.1	9630	9631.0
	SET 2	OF 21	750	768	768	9	9.0	8865	8867.0
SET 22	SET 1	OF 22	750	768	768.2	9	9.1	9630	9631.0
	SET 2	OF 22	750	768	768	9	9.0	8865	8865.0

ALL THE ABOVE OBSERVED DIMENSIONS ARE UNDER TOLERANCE LIMIT AS PER IS 14402


 MR. SUBODIP ROY
 KOLKATA
 FOR, ARC INSULATION & INSULATORS PVT. LTD.

②
 11/04/2019

 MR. AKHILESH BHIVASTAVA
 KOLKATA
 FOR, BUREAU VERITAS INDIA

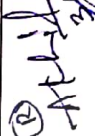
ARC INSULATIONS AND INSULATORS PVT LTD

CLIENT	PAHARPUR COOLING TOWER LTD		DATE	30.04.2019	SHEET No.	3
TITLE	HEADER PIPE		PO NO	18HPO6549		
PROJECT	COOLING TOWER PACKAGE GURU GOVIND SINGH POLYMER ADDITION PROJECT					
DRAWING NUMBER	18-2I-0005A/F/04 REV - 0		TOTAL NO SETS	22		

DESCRIPTION	SPECIFIED										OBSERVED			
	NB	OD	BCD	NOH	HOLE DIA	THK	NB	OD	PCD	NO OF HOLES	HOLE DIA	THK		
SET 1	750	984	914	28	35	62	750	985.5	864	28	36.5	63.5		
SET 2	750	984	914	28	35	62	750	984	864	28	35	62		
SET 3	750	984	914	28	35	62	750	984	864	28	35	62		
SET 4	750	984	914	28	35	62	750	984.5	864	28	35.5	62.5		
SET 5	750	984	914	28	35	62	750	984.5	864	28	35.5	62.5		
SET 6	750	984	914	28	35	62	750	984	864	28	35	62		
SET 7	750	984	914	28	35	62	750	984.5	864	28	35.5	62.5		
SET 8	750	984	914	28	35	62	750	984.8	864	28	35.8	62.8		
SET 9	750	984	914	28	35	62	750	984	864	28	35	62		
SET 10	750	984	914	28	35	62	750	984.5	864	28	35.5	62.5		
SET 11	750	984	914	28	35	62	750	984.8	864	28	35.8	62.8		
SET 12	750	984	914	28	35	62	750	984.5	864	28	35.5	62.5		
SET 13	750	984	914	28	35	62	750	984	864	28	35	62		
SET 14	750	984	914	28	35	62	750	984	864	28	35	62		
SET 15	750	984	914	28	35	62	750	984.5	864	28	35.5	62.5		
SET 16	750	984	914	28	35	62	750	984.8	864	28	35.8	62.8		
SET 17	750	984	914	28	35	62	750	984.5	864	28	35.5	62.5		
SET 18	750	984	914	28	35	62	750	984	864	28	35	62		
SET 19	750	984	914	28	35	62	750	984.5	864	28	35.5	62.5		
SET 20	750	984	914	28	35	62	750	984.8	864	28	35.8	62.8		
SET 21	750	984	914	28	35	62	750	984	864	28	35	62		
SET 22	750	984	914	28	35	62	750	984.5	864	28	35.5	62.5		

ALL THE ABOVE OBSERVED DIMENSIONS ARE UNDER TOLERANCE LIMIT AS PER IS 14402


 MR. DIP ROY
 FOR, ARC INSULATION & INSULATORS PVT LTD.


 MR. AKHILESH SRIVASTAVA
 FOR, BUREAU VERITAS/INDIA

ARC INSULATIONS AND INSULATORS PVT LTD

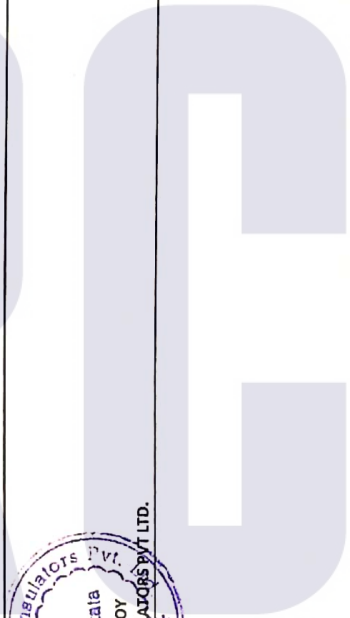
CLIENT	PAHARPUR COOLING TOWER LTD	DATE	30.04.2019	SHEET No.	4
TITLE	HEADER PIPE	PO NO	18HPO6549		
PROJECT	COOLING TOWER PACKAGE GURU GOVIND SINGH POLYMER ADDITION PROJECT				
DRAWING NUMBER	18-2I-0005A/F/04 REV - 0	TOTAL NO SETS	22		

DESCRIPTION	SIZE	OD(MM)		THICKNESS(MM)		LENGTH(MM)	
		SPECIFIED	OBSERVED	SPECIFIED	OBSERVED	SPECIFIED	OBSERVED
PIPE							
SET 1	200	212	212.2	6	6.1	2200	2201
SET 2	200	212	212.4	6	6.2	2200	2202
SET 3	200	212	212	6	6	2200	2203
SET 4	200	212	212.2	6	6.1	2200	2201
SET 5	200	212	212.2	6	6.1	2200	2201
SET 6	200	212	212.4	6	6.2	2200	2201
SET 7	200	212	212.6	6	6.3	2200	2202
SET 8	200	212	212	6	6	2200	2200
SET 9	200	212	212	6	6	2200	2200
SET 10	200	212	212	6	6	2200	2203
SET 11	200	212	212.2	6	6.1	2200	2200
SET 12	200	212	212	6	6	2200	2203
SET 13	200	212	212.2	6	6.1	2200	2201
SET 14	200	212	212.2	6	6.1	2200	2201
SET 15	200	212	212.4	6	6.2	2200	2201
SET 16	200	212	212.4	6	6.2	2200	2201
SET 17	200	212	212.6	6	6.3	2200	2202
SET 18	200	212	212	6	6	2200	2200
SET 19	200	212	212	6	6	2200	2200
SET 20	200	212	212	6	6	2200	2203
SET 21	200	212	212.2	6	6.1	2200	2201
SET 22	200	212	212.2	6	6.1	2200	2201

ALL THE ABOVE OBSERVED DIMENSIONS ARE UNDER TOLERANCE LIMIT AS PER IS 14402


 MR. ARHADIP ROY
 FOR, ARC INSULATIONS AND INSULATORS PVT LTD.


 MR. AKHILESH SRIVASTAVA
 FOR, BUREAU VERITAS INDIA



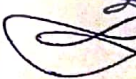
ARC INSULATIONS AND INSULATORS PVT LTD

CLIENT	PAHARPUR COOLING TOWER LTD			DATE	30.04.2019	SHEET No.	5
TITLE	HEADER PIPE			PO NO	18IIP06549		
PROJECT	COOLING TOWER PACKAGE GURU GOVIND SINGH POLYMER ADDITION PROJECT						
DRAWING NUMBER	18-2I-0005A/F/04 REV - 0			TOTAL NO SETS	22		


PART-4 VENT PIPE FLANGE DIMENSION REPORT

DESCRIPTION	SPECIFIED						OBSERVED						
	PIPE	NB	OD	BCD	NOH	HOLE DIA	THK	NB	OD	PCD	NO OF HOLES	HOLE DIA	THK
SET 1	SET 1 OF 1	200	342.9	298.5	8	23	26	200	343.7	298.5	8	24	27.5
	SET 2 OF 1	200	342.9	298.5	8	23	26	200	342.9	298.5	8	23	26
	SET 1 OF 2	200	342.9	298.5	8	23	26	200	343.4	298.5	8	23	26
	SET 2 OF 2	200	342.9	298.5	8	23	26	200	343.7	298.5	8	24	26.5
SET 3	SET 1 OF 3	200	342.9	298.5	8	23	26	200	342.9	298.5	8	24	28
	SET 2 OF 3	200	342.9	298.5	8	23	26	200	343.4	298.5	8	23	26
	SET 1 OF 4	200	342.9	298.5	8	23	26	200	343.7	298.5	8	24	26.5
SET 4	SET 2 OF 4	200	342.9	298.5	8	23	26	200	344.4	298.5	8	24	26.8
	SET 1 OF 5	200	342.9	298.5	8	23	26	200	343.7	298.5	8	23	26
SET 5	SET 2 OF 5	200	342.9	298.5	8	23	26	200	342.9	298.5	8	23	26.5
	SET 1 OF 6	200	342.9	298.5	8	23	26	200	343.4	298.5	8	24	26.8
SET 6	SET 2 OF 6	200	342.9	298.5	8	23	26	200	344.4	298.5	8	24	27.5
	SET 1 OF 7	200	342.9	298.5	8	23	26	200	343.7	298.5	8	23	27
SET 7	SET 2 OF 7	200	342.9	298.5	8	23	26	200	342.9	298.5	8	23	27
	SET 1 OF 8	200	342.9	298.5	8	23	26	200	343.4	298.5	8	24	27.5
SET 8	SET 2 OF 8	200	342.9	298.5	8	23	26	200	343.7	298.5	8	24	27
	SET 1 OF 9	200	342.9	298.5	8	23	26	200	342.9	298.5	8	23	26.8
SET 9	SET 2 OF 9	200	342.9	298.5	8	23	26	200	342.9	298.5	8	23	26
	SET 1 OF 10	200	342.9	298.5	8	23	26	200	342.9	298.5	8	23	27
SET 10	SET 2 OF 10	200	342.9	298.5	8	23	26	200	343.9	298.5	8	23	27
	SET 1 OF 11	200	342.9	298.5	8	23	26	200	342.9	298.5	8	23	27.5
SET 11	SET 2 OF 11	200	342.9	298.5	8	23	26	200	343.9	298.5	8	23	27


ALL THE ABOVE OBSERVED DIMENSIONS ARE UNDER TOLERANCE LIMIT AS PER IS 14402




FOR, ARC INSULATIONS AND INSULATORS PVT LTD.



MR. SHAHIDIP ROY
Kolkata



FOR, BUREAU VERITAS INDIA



MR. ARHILESH SRIVASTAVA
FOR, BUREAU VERITAS INDIA

ARC INSULATIONS AND INSULATORS PVT LTD

CLIENT	PAHARPUR COOLING TOWER LTD		
TITLE	HEADER PIPE	DATE	30.04.2019
PROJECT	COOLING TOWER PACKAGE GURU GOVIND SINGH POLYMER ADDITION PROJECT	PO NO	18HPO6549
DRAWING NUMBER	18-21-0005A/F/04 REV - 0	SHEET No.	6


TOTAL NO SETS 22

PART - 4 VENT PIPE FLANGE DIMENSION REPORT

DESCRIPTION	SPECIFIED										OBSERVED				
	PIPE	NB	OD	BCD	NOH	HOLE DIA	THK	NB	OD	PCD	NO OF HOLES	HOLE DIA	THK		
SET 12	SET 1	OF 12	200	342.9	8	298.5	8	23	26	200	343.7	298.5	8	24	26.5
	SET 2	OF 12	200	342.9	8	298.5	8	23	26	200	342.9	298.5	8	23	26.8
SET 13	SET 1	OF 13	200	342.9	8	298.5	8	23	26	200	343.4	298.5	8	23	26
	SET 2	OF 13	200	342.9	8	298.5	8	23	26	200	343.7	298.5	8	24	26.5
SET 14	SET 1	OF 14	200	342.9	8	298.5	8	23	26	200	342.9	298.5	8	24	26.8
	SET 2	OF 14	200	342.9	8	298.5	8	23	26	200	343.4	298.5	8	23	27.5
SET 15	SET 1	OF 15	200	342.9	8	298.5	8	23	26	200	343.7	298.5	8	24	27
	SET 2	OF 15	200	342.9	8	298.5	8	23	26	200	344.4	298.5	8	24	27
SET 16	SET 1	OF 16	200	342.9	8	298.5	8	23	26	200	343.7	298.5	8	23	26
	SET 2	OF 16	200	342.9	8	298.5	8	23	26	200	342.9	298.5	8	23	26
SET 17	SET 1	OF 17	200	342.9	8	298.5	8	23	26	200	343.4	298.5	8	24	26.8
	SET 2	OF 17	200	342.9	8	298.5	8	23	26	200	344.4	298.5	8	24	27.5
SET 18	SET 1	OF 18	200	342.9	8	298.5	8	23	26	200	343.7	298.5	8	23	27
	SET 2	OF 18	200	342.9	8	298.5	8	23	26	200	342.9	298.5	8	23	27
SET 19	SET 1	OF 19	200	342.9	8	298.5	8	23	26	200	343.4	298.5	8	24	27.5
	SET 2	OF 19	200	342.9	8	298.5	8	23	26	200	343.7	298.5	8	24	27
SET 20	SET 1	OF 20	200	342.9	8	298.5	8	23	26	200	342.9	298.5	8	23	26.8
	SET 2	OF 20	200	342.9	8	298.5	8	23	26	200	344.4	298.5	8	23	27.5
SET 21	SET 1	OF 21	200	342.9	8	298.5	8	23	26	200	342.9	298.5	8	23	27
	SET 2	OF 21	200	342.9	8	298.5	8	23	26	200	343.9	298.5	8	23	27
SET 22	SET 1	OF 22	200	342.9	8	298.5	8	23	26	200	342.9	298.5	8	23	27
	SET 2	OF 22	200	342.9	8	298.5	8	23	26	200	343.9	298.5	8	23	27

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 FOR, BUREAU VERITAS INDIA



ARC INSULATIONS AND INSULATORS PVT LTD

CLIENT	PAHARPUR COOLING TOWER LTD		
TITLE	HEADER PIPE	DATE	30.04.2019
PROJECT	COOLING TOWER PACKAGE GURU GOVIND SINGH POLYMER ADDITION PROJECT	PO NO	18HPO6549
DRAWING NUMBER	18-21-0005A/F/04 REV - 0	TOTAL SET	22 SET
		SHEET.No	7

PIPE HYDRO TEST			
S.NO	LOCATION	DIMENSION	OBSERVED
1	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK AT 10 bar
2	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK AT 10 bar
3	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK AT 10 bar
4	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK AT 10 bar
5	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK AT 10 bar
6	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK AT 10 bar
7	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK AT 10 bar
8	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK AT 10 bar
9	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK AT 10 bar
10	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK AT 10 bar
11	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK AT 10 bar
12	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK AT 10 bar
13	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK AT 10 bar

ALL THE ABOVE OBSERVED DIMENSIONS ARE UNDER TOLERANCE LIMIT AS PER IS 14402


 MR. SUBHOJIT ROY
 FOR, ARC INSULATIONS & INSULATORS PVT. LTD.


 MR. AKHILESH SRIVASTAVA
 FOR, BUREAU VERITAS INDIA




ARC INSULATIONS AND INSULATORS PVT LTD


CLIENT	PAHARPUR COOLING TOWER LTD		
TITLE	HEADER PIPE	DATE	30.04.2019
PROJECT	COOLING TOWER PACKAGE GURU GOVIND SINGH POLYMER ADDITION PROJECT	PO NO	18HPO6549
DRAWING NUMBER	18-2I-0005A/F/04 REV - 0	SHEET.No	8


		TOTAL SET	
		22 SET	
PIPE HYDRO TEST			
S.NO	LOCATION	DIMENSION	TEST RESULT
14	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK FOUND AT 10 BAR
15	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK FOUND AT 10 BAR
16	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK FOUND AT 10 BAR
17	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK FOUND AT 10 BAR
18	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK FOUND AT 10 BAR
19	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK FOUND AT 10 BAR
20	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK FOUND AT 10 BAR
21	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK FOUND AT 10 BAR
22	PIPE	750 NB - 9630 MM LENGTH OF PIPE	NO LEAK AT 10 bar
	PIPE	750 NB - 8865 MM LENGTH OF PIPE	NO LEAK FOUND AT 10 BAR

PIPE TENSILE TEST			
S.NO	LOCATION	DIMENSION	TEST RESULT
1	STIP	750 NB	NO LEAK AT 10 bar

ALL THE ABOVE OBSERVED DIMENSIONS ARE UNDER TOLERANCE LIMIT AS PER IS 14402


 MR. SUBHADIP ROY
 FOR, ARC INSULATION & INSULATORS PVT. LTD.



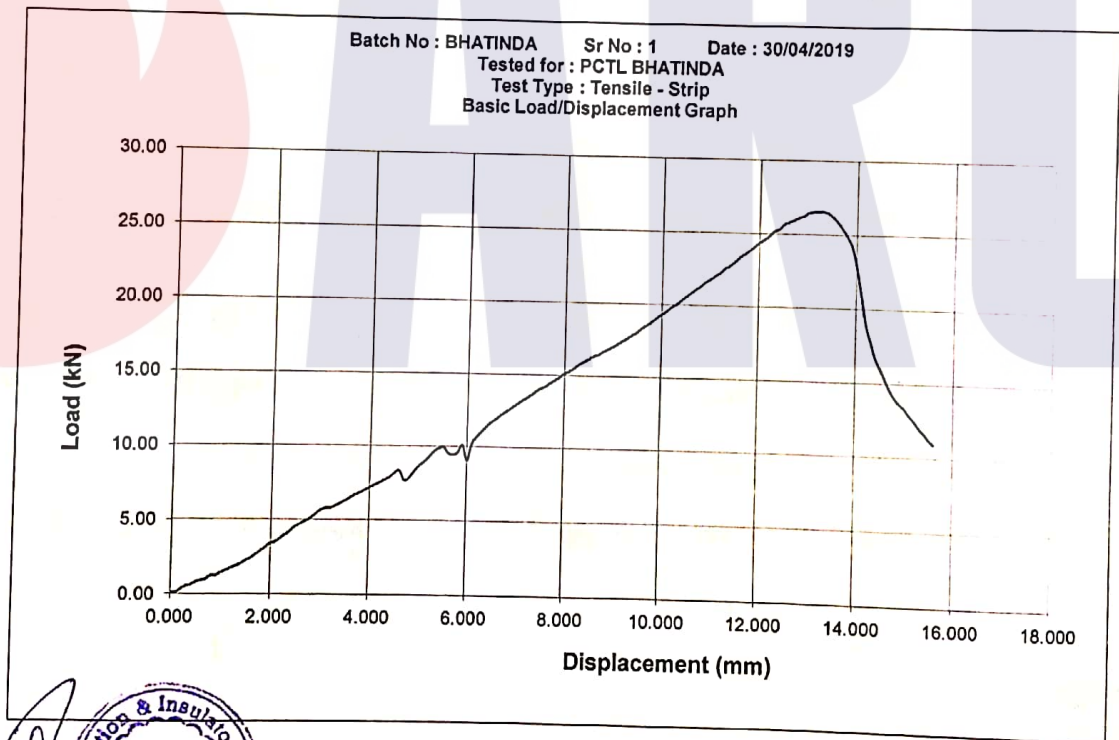


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A. PARTICULARS OF SAMPLE			
01. Customer's Name	PCTL BHATINDA	06. Sample Id	1
02. Material	FRP STRIP	07. Date of Test	30.04.2019
03. Test Type	Tensile	08. Batch No	BHATINDA
04. Speciment Type	Strip	09. No of Samples	1
05. Operator	SR	10. Other Details	

B. TEST PARAMETERS			
01. Guage Length FOR A	150.0000 mm	07. Final Guage Length	150.0000 mm
02. Width	20.0000 mm	08. Final Width	20.0000 mm
03. Breadth	9.7000 mm	09. Final Breadth	9.7000 mm
04. Area	186.2400 mm ²		
05. Sensor Type	ENCODER		
06. Ext.Guage Length Fc	0 mm		

C. RESULTS	
01. Maximum Load	28.880 kN
02. U.T.S. Value	155.000 N / mm ²
03. Elongation	0.000 mm
04. % Elongation	0.000 %
05. % Area Reduction	0.000 %
06. Yield Load	0.000 kN
07. Yield Stress	0.000 N / mm ²



Tested/By	Verified By	Approved By
Date		

Test	:	Long Term Strain Corrosion Test/Chemical Resistance properties As Per IS 14402 / ASTM D 3262 / D3681 /3754
Test Standard	:	ASTM D 3681
Purpose	:	To Evaluate Strain Corrosion / chemical resistance properties of fiberglass pipe in a deflected condition
Document No.	:	SQ-RTRP-HDB-750-03
Document Date	:	19-11-2017
Test Start Date	:	30-07-2016
Test End Date	:	22-10-2017

STRAIN CORROSION TEST / CHEMICAL RESISTANCE PROPERTIES AS PER IS 14402/ ASTM D 3262 / D3681 /3754

A unique and important performance requirement for GRP gravity pipes used in sewer applications, is the chemical testing of the pipe in a deflected or strained condition. The strain corrosion testing is carried out in accordance with IS 14402 as well as ASTM D3681, and requires a minimum of 18 ring samples of the pipe to be deflected to various levels and held constant. These strained rings are then exposed at the invert of the interior surface to 1.0N (5% by weight) sulphuric acid (see Figure below). This is intended to simulate a buried septic sewer condition. This has been shown to be representative of the worst sewer conditions including those found in the Middle East, where many ARC-GRP pipes have been successfully installed.

The time to failure (leakage) for each test sample is measured. The minimum extrapolated failure strain at 50 years, using a least squares regression analysis of the failure data, must equal the values shown for each stiffness class. The value achieved is then relatable to the pipe design to enable prediction of safe installation limitations for GRP-pipes used for this type of service. Typically this is 5% in-ground long-term deflection.



Correspondence:
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ARC

Insulations & Insulators (P) Ltd.

GSTIN - 19AAHCA6355Q1ZX

CIN No.: U18109WB2008PTC129263

M a n u f a c t u r e r o f F i b e r g l a s s C o m p o s i t e s

Stiffness class

Scv. Strain, %

SN 2500

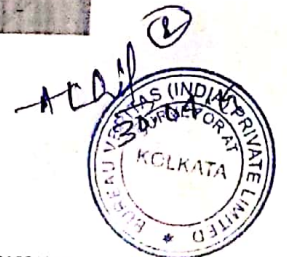
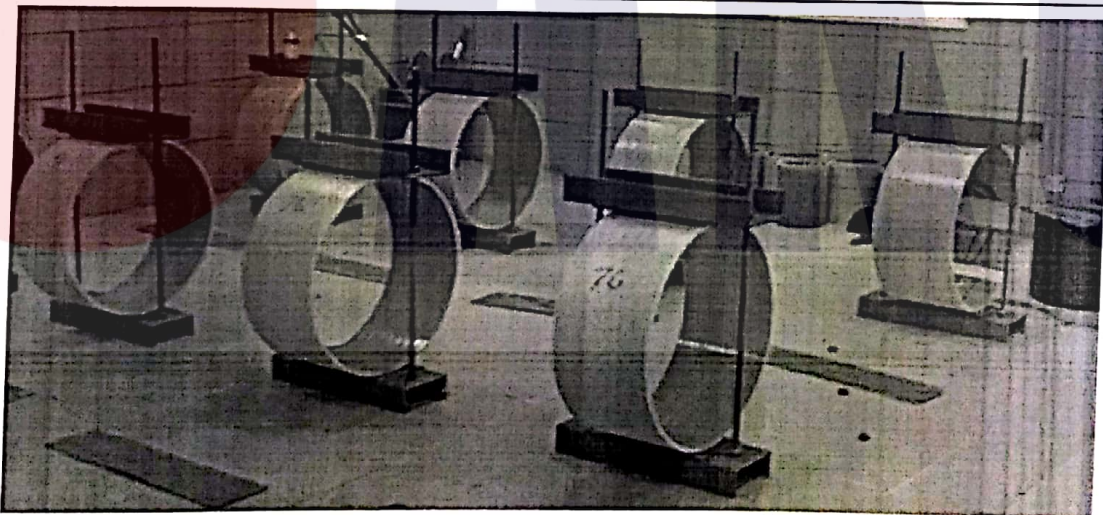
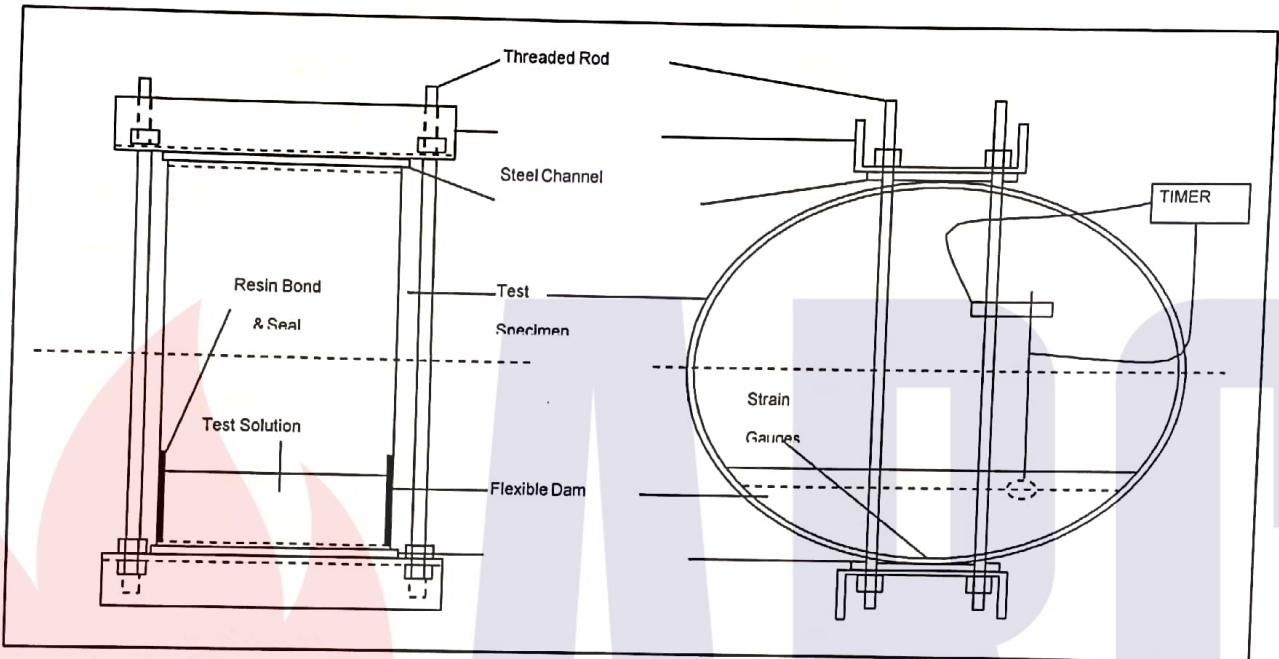
.49 (t/d)

SN5000

.41 (t/d)

SN10000

.34 (t/d)



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ARC

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GSTIN - 19AAHCA6355Q1ZX

CIN No.: U18109WB2008PTC129263

M a n u f a c t u r e r o f F i b e r g l a s s C o m p o s i t e s

Summary

A series of strain corrosion tests have been conducted to establish the long-term resistance to acid strain corrosion of ARC-GRP pipe. Testing was conducted following the guidelines of IS 14402, ASTM D3681, [Chemical Resistance of Fiberglass (Glass- Fiber-Reinforced Thermosetting Resin) Pipe in a Deflected Condition] as well as ISO/FDIS 10952 and EN 1120 [Plastic piping systems – Glass-reinforced thermosetting plastics (GRP) pipes and fittings – Determination of the resistance to chemical attack from the inside of a section in a deflected condition].

The test data was analyzed by log-log linear least squares regression to establish the 50-year predicted failure strain as 0.66%.

Test Procedure

The test procedure followed the guide-lines of IS 14402 as well as ASTM D3681-96 as well as EN1120 and ISO/FDIS 10952. The testing consists of exposing the interior of a minimum of 18 specimens of pipe to 5% sulfuric (1N) acid while the pipe is maintained in a fixed deflected condition. The deflection levels are selected to induce varying tensile bending strain levels in the invert of the pipe specimens. Time to failure was measured as leakage through the pipe wall of the test fluid.

A minimum of 18 samples must be tested with failure times spread over several decades and including at least one sample tested for over 10,000 hours.

Figure 1 is a sketch of the strain corrosion test setup.

A total of 25 pipe samples were tested. All samples were instrumented with strain gages to measure the bending strain for the selected deflection level. Test temperature was 23°C +/- 2°C.



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GSTIN - 19AAHCA6355Q1ZX

CIN No.: U18109WB2008PTC129263

M a n u f a c t u r e r o f F i b e r g l a s s C o m p o s i t e s

Test Samples

Each test sample was a ring section of pipe 300mm in length. The test pipes were 750mm diameter, stiffness SN5000, and pressure class PN16. Pipes were produced on the ARC-GRP Helical filament winding machine. The pipe was constructed using polyester resin, glass fiber reinforcements.

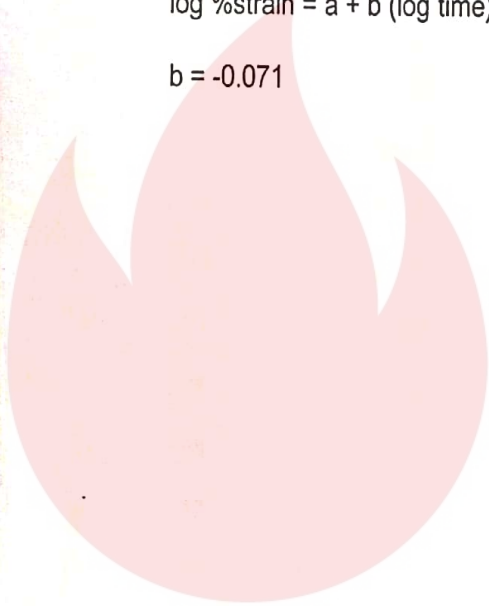
Test Data

The results of the testing are given in Table 1. Analysis of the data was the least squares regression procedures in IS 14402 & ASTM D3681. The coefficient of correlation r was 0.909 versus the minimum allowed of 0.489. The plot of the regression data and the analysis is given in Figure 2.

The regression equation is :

$$\log \% \text{strain} = a + b (\log \text{time}) \quad a = 0.220$$

$$b = -0.071$$



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M a n u f a c t u r e r o f F i b e r g l a s s C o m p o s i t e s

Specimen	Specimen Number	DN X Length	Thickness	Time	Initial Strain
		(mm)	(mm)	Hours	%
1	ARC-750-01	Ø 750 mm X 300 mm	9.00 mm	1225.0	1.2050
2	ARC-750-02	Ø 750 mm X 300 mm	9.55 mm	222.4	1.1533
3	ARC-750-03	Ø 750 mm X 300 mm	9.51 mm	58.3	1.1969
4	ARC-750-04	Ø 750 mm X 300 mm	9.50 mm	43.5	1.2184
5	ARC-750-05	Ø 750 mm X 300 mm	9.53 mm	47.1	1.2395
6	ARC-750-06	Ø 750 mm X 300 mm	9.52 mm	629.0	1.0010
7	ARC-750-07	Ø 750 mm X 300 mm	9.51 mm	9428.0	1.0511
8	ARC-750-08	Ø 750 mm X 300 mm	9.58 mm	652.0	1.0094
9	ARC-750-09	Ø 750 mm X 300 mm	9.51 mm	13487*	0.8991
10	ARC-750-10	Ø 750 mm X 300 mm	9.50 mm	5946.0	25,375
11	ARC-750-11	Ø 750 mm X 300 mm	9.56 mm	977.0	24,505
12	ARC-750-12	Ø 750 mm X 300 mm	9.51 mm	1820.0	23,925
13	ARC-750-13	Ø 750 mm X 300 mm	9.53 mm	29.0	23,490
14	ARC-750-14	Ø 750 mm X 300 mm	9.56 mm	41.0	23,055
15	ARC-750-15	Ø 750 mm X 300 mm	9.59 mm	1269.0	22,475
16	ARC-750-16	Ø 750 mm X 300 mm	9.52 mm	1504.0	21,605
17	ARC-750-17	Ø 750 mm X 300 mm	9.55 mm	978.0	20,880
18	ARC-750-18	Ø 750 mm X 300 mm	9.53 mm	8008.0	20,445



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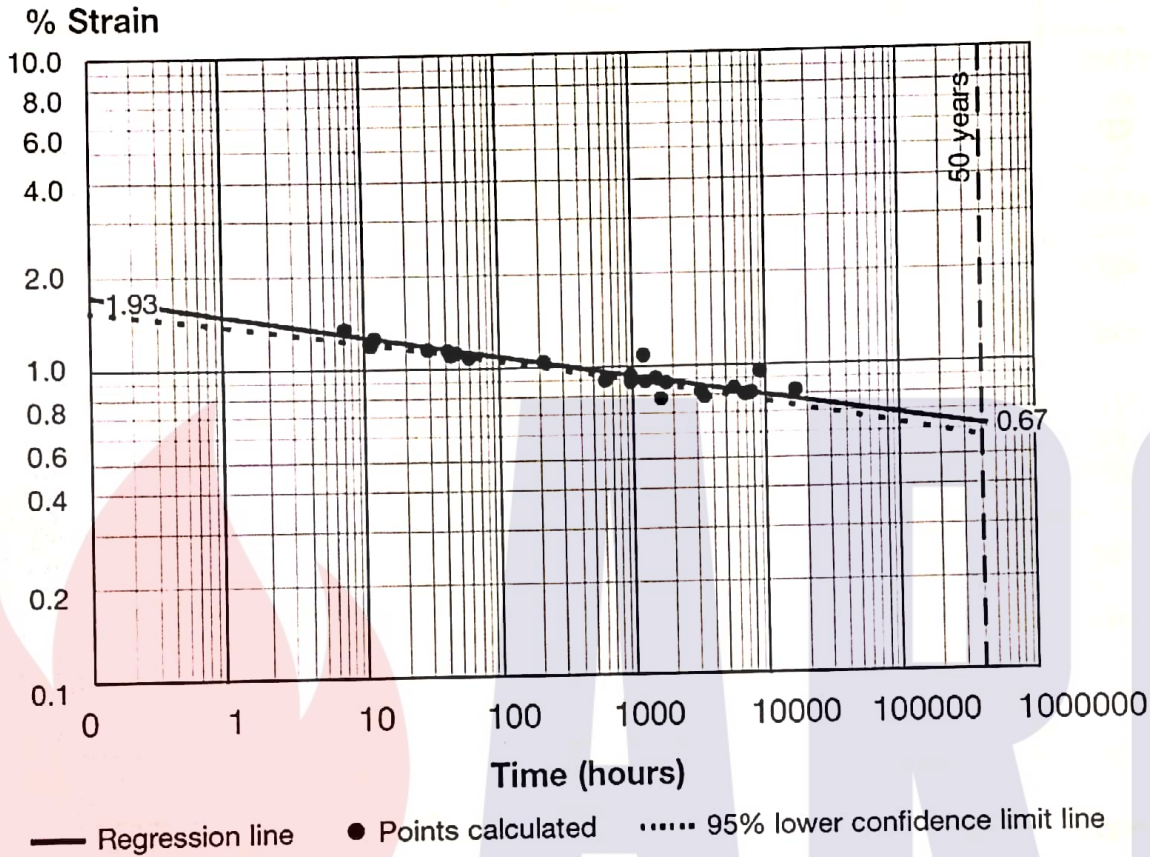
GSTIN - 19AAHCA6355Q1ZX

CIN No.: U18109WB2008PTC129263

M a n u f a c t u r e r o f F i b e r g l a s s C o m p o s i t e s

Figure 2

Strain Corrosion ARC-GRP Pipe



Correspondence :
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GSTIN - 19AAHCA6355Q1ZX

CIN No.: U18109WB2008PTC129263

Manufacturer of Fiberglass Composites
Calculation of Regression Data

Specimen	x_i	y_i	$x-x \text{ bar}$	$y-y \text{ bar}$	$(x-x \text{ bar})(y-y \text{ bar})$	$(x-x \text{ bar})^2$	$(y-y \text{ bar})^2$	$(y-a-bx_i)^2$
	Log Time	Log Strain						
1	2.0000	4.3571	-1.10170	0.04447	-4.89942E-02	1.21375E+00	1.97770E-03	0.00001
2	2.3010	4.3523	-0.80067	0.03960	-3.17080E-02	6.41075E-01	1.56830E-03	0.00003
3	2.3979	4.3469	-0.70376	0.03425	-2.41054E-02	4.95280E-01	1.17321E-03	0.00001
4	2.4771	4.3415	-0.62458	0.02884	-1.80104E-02	3.90100E-01	8.31512E-04	0.00000
5	2.6021	4.3360	-0.49964	0.02335	-1.16673E-02	2.49641E-01	5.45281E-04	0.00000
6	2.6990	4.3305	-0.40273	0.01780	-7.16718E-03	1.62193E-01	3.16713E-04	0.00000
7	2.8129	4.3248	-0.28879	0.01217	-3.51444E-03	8.33985E-02	1.48100E-04	0.00000
8	2.9031	4.3191	-0.19861	0.00647	-1.28481E-03	3.94465E-02	4.18474E-05	0.00000
9	2.9542	4.3134	-0.14746	0.00069	-1.02110E-04	2.17441E-02	4.79505E-07	0.00003
10	3.1461	4.3087	0.04443	-0.00392	-1.74278E-04	1.97373E-03	1.53886E-05	0.00000
11	3.2553	4.3041	0.15357	-0.00859	-1.31882E-03	2.35841E-02	7.37484E-05	0.00000
12	3.3222	4.2994	0.22052	-0.01330	-2.93359E-03	4.86282E-02	1.76975E-04	0.00001
13	3.4771	4.2946	0.37542	-0.01807	-6.78402E-03	1.40940E-01	3.26542E-04	0.00000
14	3.6532	4.2898	0.55151	-0.02289	-1.26245E-02	3.04165E-01	5.23982E-04	0.00000
15	3.6990	4.2849	0.59727	-0.02776	-1.65831E-02	3.56730E-01	7.70893E-04	0.00000
16	3.9542	4.2800	0.85254	-0.03269	-2.78735E-02	7.26826E-01	1.06893E-03	0.00002
17	4.0000	4.2750	0.89830	-0.03768	-3.38486E-02	8.06940E-01	1.41984E-03	0.00000
18	4.1761	4.2699	1.07439	-0.04272	-4.59032E-02	1.15431E+00	1.82542E-03	0.00001




Correspondence:
South City Apartments, T-1, Flat- 25B, 375, P.A. Shah Road, Kolkata - 700088, Behind South City Mall, M : 9748708809 / 9831031917

Works & Regd. Office :
Village Ramdevpur, P.O. Bawali, P.S. Bishnupur, 24 Pgs. (S), Pin - 743384, West Bengal, Tel: +91 33 2485 4231, Fax: 2485 4233

ARC INSULATIONS & INSULATORS PVT LTD.,						
INPROCESS QUALITY CONTROL REPORT						
ITEM	SET	MANUFACTURING	FABRICATION	CUTTING	DRILLING	FINISHING

HEADER	SET 1	01-04-19	OK	02-04-19	OK	03-04-19	OK	04-04-19	OK	13-04-19	OK
	SET 2	01-04-19	OK	02-04-19	OK	03-04-19	OK	04-04-19	OK	13-04-19	OK
	SET 3	02-04-19	OK	03-04-19	OK	04-04-19	OK	05-04-19	OK	16-04-19	OK
	SET 4	02-04-19	OK	03-04-19	OK	04-04-19	OK	05-04-19	OK	16-04-19	OK
	SET 5	03-04-19	OK	04-04-19	OK	05-04-19	OK	06-04-19	OK	17-04-19	OK
	SET 6	03-04-19	OK	04-04-19	OK	05-04-19	OK	06-04-19	OK	17-04-19	OK
	SET 7	04-04-19	OK	05-04-19	OK	06-04-19	OK	07-04-19	OK	18-04-19	OK
	SET 8	04-04-19	OK	05-04-19	OK	06-04-19	OK	08-04-19	OK	18-04-19	OK
	SET 9	05-04-19	OK	06-04-19	OK	07-04-19	OK	08-04-19	OK	19-04-19	OK
	SET 10	05-04-19	OK	06-04-19	OK	08-04-19	OK	09-04-19	OK	19-04-19	OK
	SET 11	06-04-19	OK	07-04-19	OK	08-04-19	OK	09-04-19	OK	20-04-19	OK
	SET 12	06-04-19	OK	08-04-19	OK	09-04-19	OK	10-04-19	OK	20-04-19	OK
	SET 13	07-04-19	OK	08-04-19	OK	09-04-19	OK	10-04-19	OK	22-04-19	OK
	SET 14	08-04-19	OK	09-04-19	OK	10-04-19	OK	11-04-19	OK	22-04-19	OK
	SET 15	08-04-19	OK	09-04-19	OK	10-04-19	OK	11-04-19	OK	23-04-19	OK
	SET 16	09-04-19	OK	10-04-19	OK	11-04-19	OK	12-04-19	OK	23-04-19	OK
	SET 17	09-04-19	OK	10-04-19	OK	11-04-19	OK	12-04-19	OK	24-04-19	OK
	SET 18	10-04-19	OK	11-04-19	OK	12-04-19	OK	13-04-19	OK	24-04-19	OK
	SET 19	10-04-19	OK	11-04-19	OK	12-04-19	OK	13-04-19	OK	25-04-19	OK
	SET 20	11-04-19	OK	12-04-19	OK	13-04-19	OK	16-04-19	OK	25-04-19	OK
	SET 21	11-04-19	OK	12-04-19	OK	13-04-19	OK	16-04-19	OK	26-04-19	OK
	SET 22	12-04-19	OK	13-04-19	OK	14-04-19	OK	17-04-19	OK	26-04-19	OK



 FOR ARC INSULATION & INSULATORS PVT. LTD.




Test Certificate No.	Report Date	Item	Status
1015054	10-Oct-2018	Fibrebond-901.	Passed

Report Header	
Customer : A.R.C. Insulations & Insulator Pvt. Ltd.	Invoice Quantity : 3000.000 Kgs
Invoice No. : 1902	Invoice Date : 10-Oct-2018
Note 1 : Confirm To I.S. 6746-1994 & A.S.T.M. D790	Remarks : Filament Winding Resin

Test Observations			
Test Description	Specification	Unit	Observation
Appearance	Pale yellow liquid		Pale Yellow Liquid
Specific Gravity@25.C	1.11+/-0.02		1.11
Viscosity @25c	400+/-100	cps	340
Acid Value	10 +/- 2	mgKOH/gm	10.5
Gel Time @25 C	15 max	min	10
S.P.I. Gel Time @82 C	9 - 13	min	10
S.P.I. Total Time @ 82 C	15 max	min	13
Peak Exotherm @82 C	190 - 200	deg C	200
Barcol Hardness	40 +/- 2		42
Heat Distortion Temperature	70 +/- 3	deg C	72
Volatile Content	45 +/- 2	%	45.1



Report Footer	
Inspected By : Amit Ghar	Note 2 : Test Certificate Number Is The Same As Batch Number

This is a computer generated report and requires no signature

TEST CERTIFICATE

T.C.No.: 1058
Date: 22.09.2018

Product Description : DR SE 1043 24-2400 BP48D
Glass : " ECR "
Material : 609472
Packing List No. : 90081252 dtd. 22.09.2018
Quantity : 898.84Kgs.

TEST RESULTS

Sl. No.	Test	Standard Value	Observed Value
1.	Filament diameter, micrometer	From 23.5 up to but not including 24.5	24.2
2.	Tex (gms/Km)	2400 ± 8%	2420
3.	As per clause 6.3 of IS 11320	The glass fibre rovings shall have proper stiffness of strands and disperslon property and shall be free from unevenness of binder, contamination, combination of monofilaments with larger diameters etc.	Conforms
4.	Tensile breaking load, N	Over 940	1058
5.	As per clause 6.5 of IS 11320	The rovings shall be free from oil and grease spots and any other contamination and shall be uniform in colour.	Conforms
6.	Moisture content (% by Mass)	0.3 % Max	0.04
7.	Loss on ignition, (% by Mass)	0.5 ± 0.20	0.53
8.	Cross breaking strength, reinforced polyester rod, MPa	Dry-585 Minimum Wet-490 Minimum	764 674
9.	Conductivity of water extract, mS/m	12.5 Max	0.78

The above tests conform to IS – 11320:1997
for GOA GLASS FIBRE LTD;


Dy. Manager - QA

F18 - 34 – 3

Goa Glass Fibre Ltd.

218/ 220, NH – 17, Colvale Village, Bardez, Goa – 403513.
Tel: +91-832-2299884/ 85 / 86 | FAX: +91 – 832 – 2299887 | Email:-info@binaniglassfibre.com/ia@binani.com
Binani_goa@sancharnet.in/www.binani.com

CIN:U26102WB1996PLC 080099

Consignee:-

ARC Insulation & Insulators Pvt.Ltd.
Sanjua Maheshtala Road,
Village Ramdevpur

P.O.Bawali,P.S.Bishnupur
24 Parganas 743394, West Bengal.

Invoice No: RV2018001559 Dated 22.09.2018
91068291

LC No: 0505218LC0000282 Dated. 20.09.2018
PI NO-GGFL/SA-GOA/2018-19/120 Dated. 17.09.2018

Bank : State Bank of India- Kolkata.



TEST CERTIFICATE

T.C.No.: 1059
Date: 22.09.2018

Product Description : DR SE 1043 24-2400 BP64D
Glass : " ECR "
Material : 609473
Packing List No. : 90081252 dtd. 22.09.2018
Quantity : 1155.25 Kgs.

TEST RESULTS

Sl. No.	Test	Standard Value	Observed Value
1.	Filament diameter, micrometer	From 23.5 up to but not including 24.5	24.2
2.	Tex (gms/Km)	2400 ± 8%	2460
3.	As per clause 6.3 of IS 11320	The glass fibre rovings shall have proper stiffness of strands and dispersion property and shall be free from unevenness of binder, contamination, combination of monofilaments with larger diameters etc.	Conforms
4.	Tensile breaking load, N	Over 940	1056
5.	As per clause 6.5 of IS 11320	The rovings shall be free from oil and grease spots and any other contamination and shall be uniform in colour.	Conforms
6.	Moisture content (% by Mass)	0.3 % Max	0.04
7.	Loss on ignition, (% by Mass)	0.5 ± 0.20	0.58
8.	Cross breaking strength, reinforced polyester rod, MPa	Dry-585 Minimum Wet-490 Minimum	766 675
9.	Conductivity of water extract, mS/m	12.5 Max	0.76

The above tests conform to IS – 11320:1997
for GOA GLASS FIBRE LTD;


Luciano Lobo
Dy. Manager - QA

F18 - 34 - 3

Goa Glass Fibre Ltd.

218/ 220, NH – 17, Colvale Village, Bardez, Goa – 403513.
Tel: +91-832-2299884/ 85 / 86 | FAX: +91 – 832 – 2299887 | Email:-info@binaniglassfibre.com /
Binani_goa @sancharnet.in | www.binani.com

CIN:U26102WB1996PI.C 080099

Consignee:-

ARC Insulation & Insulators Pvt.Ltd.
Sanjua Maheshtala Road,
Village Ramdevpur
P.O.Bawali, P.S.Bishnupur

24 Parganas 743394, West Bengal.

Invoice No: RV2018001559 Dated 22.09.2018
91068291

LC No: 0505218LC0000282 Dated. 20.09.2018
PI NO-GGFL/SA-GOA/2018-19/120 Dated. 17.09.2018

Bank : State Bank of India- Kolkata.



Arvind PD Composites Pvt. Ltd.



Certificate of Conformity

Manufacturer	:	Arvind PD Composites Pvt Ltd
Customer	:	P. K. INDUSTRIES
Invoice No	:	GDP8000297
Customer Order Qty (Kgs)	:	1500.00
Date of Delivery	:	8/20/18 12:00:00 AM
Quantity Delivery (Kgs)	:	1438.50
Product Name	:	MA-541-450/7---125-76-S-.-.-
Batch No	:	201808M2
Glass Type	:	E-GLASS
Finish, Coupling Agent	:	Polyester & Vinlyester
Stitch Pattern	:	TRICOT
Mass per unit area ISO 3374		462.00 g/m2
GSM of Yarn Chop		450 GSM

We certify that the above mentioned fabrics was tested and complied with the customer requirement.
Arvind PD Composites Pvt Ltd.
Quality Assurance

This is computer generated document & does not require signature.
VAT : 24072803094
PO. Moti Bhojan, Tal. Kalol, Dist. Gandhinagar 382721, Gujarat, India Tel: 02764 395000

