Vivekanand College, Kolhapur (Autonomous)

B.Voc and Community College

Department of Foundry Technology

Revenue generate	d from Consultanay d	wwimer the many 2010 10	
Name of the Consultant(s) Department	Name of Consultancy Projects	uring the year 2018-19 Consulting/Sponsoring Agency	Revenue generated (amount in rupees)
Foundry Technology	Grain size measurement	Atlanta Metallurgical	3000/-
(B.Voc)	Microstructure of steel	Services.	1000/-
	Micro-Vickers Hardness	Shiroli MIDC.	1000/-
	Microstructure of SG Iron		1000/-
	Grain size & microstructure of steel		2000/-
	Grain size of steel		1000/-
	Grain size &		2000/-
N 201	microstructure of steel		-/
	Microstructure of SG Iron		1000/-
	Grain size & microstructure of steel		2000/-
70	Micro-Vickers Hardness		1000/-
ra ra	Microstructure of SG Iron		1000/-
	Micro-Vickers Hardness		1000/-
	Microstructure of Cast Iron		1000/-
	Micro-Vickers Hardness		1000/-
	Grain size &		2000/-
	microstructure of steel		12000
	Decarburization analysis		1550/-
	Inclusion Rating of Steel		3500/-
	Microstructure of SG Iron		1000/-
	Grain size of steel	*	1000/-
	Microstructure of SG Iron		1000/-
	Microstructure of		1500/-

	Hardened steel	
. 3	Grain size of steel	1000/-
	Microstructure of SG Iron	1000/-
	Microstructure of Hardened steel	1500/-
	Microstructure of SG Iron	1000/-
	Microstructure of SG Iron	1000/-
	Microstructure of Hardened steel	1500/-
A2	Microstructure of Cast Iron	1000/-
	Grain boundary oxidation analysis of hardened steel	3000/-
	Microstructure of Induction Hardened steel	2000/-
	Microstructure of Die steel	1500/-
	Microstructure of Hardened steel	1500/-
De.	Microstructure of Induction Hardened steel	2000/-
Total Revenue Ge		48,550/-





Consultancy Work for the year 2018-2019

Sr.	Name of Company	Test Required	No. of samples	Date	Amount
No.	Western Precicast Pvt. Ltd.	Grain Size measurement	3	05/06/2018	3000/-
1	Arrow Metallics	Microstructure of Steel	1	09/06/2018	1000/-
2	Param Industries	Micro-Vickers Hardness	1	10/06/2018	1000/-
3	Padmavati Auto Components	Microstructure of SG Iron	1	30/06/2018	1000/-
5	Unique Auto Shaft	Grain Size & microstructure of steel	1	05/07/2018	2000/-
	T. U. Castings	Grain Size of steel	1	06/07/2018	1000/-
7	Tulip Castings Dattachaya Chains	Grain Size & microstructure of steel	1	10/07/2018	2000/-
8	Padmavati Auto Components	Microstructure of SG Iron	1	18/07/2018	1000/-
9	Rolls Energy	Grain Size & microstructure of steel	1	27/07/2018	2000/-
10	Rocket Engg Corp	Transport 1		22/07/2018	1000/-
10	Maurya Industries	Microstructure of SG Iron	1	24/07/2018	1000/-
10	Cai Hdyng	Micro-Vickers Hardness	1	26/07/2018	1000/-
12	Sai Udyog Unique Auto Assemblies	Microstructure of Cast 1 Iron		29/07/2018	1000/-
	Arrow Metallics	Micro-Vickers Hardness	1	02/08/2018	1000/-
14	Menon Engg Services	Grain Size & microstructure of steel	1	04/08/2018	2000/-
16	Menon Engg Services	Decarburization Analysis	1	04/08/2018	1550/-
17	Menon Engg Services	Inclusion Rating of steel		04/08/2018	3500/-
18	Maurya Industries	Microstructure of SG Iron	1	31/08/2018	1000/-
19	Tulip Castings	Grain Size of steel	1	04/09/2018	
20	Padmavati Auto Components	Tulip Castings Grant 513		07/09/2018	
21	Arrow Metallics			23/09/2018	
200	Baramati Engg Pvt. Ltd.	Grain Size of steel	3	30/09/2018	
22 23	Padmavati Auto Components	222	1	02/10/2018	
24	Unique Auto Shaft	Microstructure of Hardened Steel	1	01/11/2018	3 1500/





25	Padmavati Auto Components	Microstructure of SG Iron	1	03/11/2018	1000/-
26	Trio Enterprises	Microstructure of SG Iron	1	27/11/2018	1000/-
27	Param Industries	Microstructure of Hardened Steel	1	01/01/2019	1500/-
28	Padmavati Auto Components	Microstructure of Cast Iron	1	04/01/2019	1000/-
29	Perfect pins	Grain Boundary oxidation analysis of hardened steel	1	19/01/2019	3000/-
30	Unique Auto Shafts	Microstructure of Induction Hardened Steel	1	20/01/2019	2000/-
31	Manugraph India Ltd	Microstructure of Die steel	1	20/02/2019	1500/-
32	Manugraph India Ltd-Unit-II	Microstructure of Hardened Steel	1	20/02/2019	1500/-
33	Unique Auto Shafts	Microstructure of Induction Hardened Steel	1	20/02/2019	2000/-
		1		Total Amount	48,550/-



Mr. Satisty O. Garlywad. Modal Officer, Dept - 4 B. Voc & Community College, Viveliand College, Kolhaper. Dited 31° March, 2019.

To, The Principal, Vinely arand college. Kolhapm Subject: About paynal of consultanoy.... The department of foundry technology under B. Hoe and community Collège schone offering consulfacy sovaces to bamas foundry industries located to the brother founding deuter. We have necessared the payment for 18550. 48550. as a countrary fee from Allanta Metallurgian Sorrices, Kolhapur. I request you to accept The payment of the sand mad give the receipt. Thanking you



Jours fathfully (Sation B. Jakurd B.Voc. & Community College Unit.

Vivekanand College, Kolhapur

RTGS / NEFT	SHAGIRATHI HEIGHTS,1116/D, "E" WAI HAPUR,KOLHAPUR-416001,MAHARASI "IFSC: HDFC0000164	Service Contract			Weekly Holidey on SUNDAY 3 1 0 3 2 0 1 9 D M M Y Y Y Y Y Y V Y V Y V Y V Y V Y V Y
Pay Th	e Principal. Viv	STATE OF THE PROPERTY.	Clarification of the second	Part of the last o	या धारक को
हुँ Rupees रुप	à Forty Eight Th	ousand fiv	e Hundred	& Fifty only	
9) CTS-				अदा करें	₹ 48.550 -
A/c. No.	50200036568577 Payable at par through clearing	Brn: 0164 Pdt:200 REGULAR CA transfer at all branches of F	(New Account)	Fol	ATLANTA METALLURGICAL SERVICES
					Authorised Signatories
					Please sign above /कृपया यहाँ हस्ताक्षर करें
	" " 0000	0 200 4 1 6 2	400021 0	951668# 29	



- Metallurgical Testing
- Failure Analysis
- Heat Treat Process Analysis
- Material Solutions
- ♠ Metallurgical Consulting

Date-01/06/2018

То

Nodal Officer

Dept. of Foundry Technology

Vivekanand College, Kolhapur

Subject- To provide collaborated testing and consultancy services

Dear sir,

We have metallurgical testing and consultancy setup in MIDC Shiroli, Kolhapur. We are collaborated with your department of foundry technology. We have requirement of metallurgical testing at your end.

As department of Foundry technology has established a testing setup which is very useful for industrial purpose, we are requesting you to provide necessary support regarding the same. We are attaching a list of samples and details of test requirements along with this letter.

Thanking you,

Yours Sincerely,

Director

Atlanta Metallurgical Services



- Metallurgical Testing
- Failure Analysis
- Heat Treat Process Analysis
- Material Solutions
- **★** Metallurgical Consulting

Details of work required-

Sr. No.	Name of Company	Test Required	No. of Samples
1	Western Precicast Pvt. Ltd.	Grain Size measurement	3
2	Arrow Metallics	Microstructure of steel	1
3	Param Industries	Micro-Vickers Hardness	1
4	Padmavati Auto Components	Microstructure of S.G. Iron	1



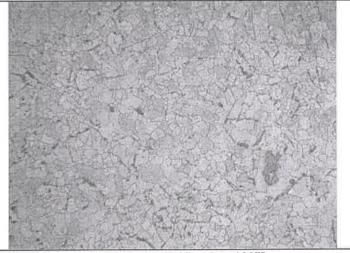




Test Report-Grain Size Measurement					
Test Certificate	No 05061813			Date	- 05/06/2018
		Western Precicast Pvt. Ltd.			
Custome	er Name	Gat No.170, 171/1, MIDC	Kupwad, Sangli.		
Date of Samp	ple Received	Date of Test Completion Sample Name			
03/06/	/2018	05/06/2018	Body-	-GTV-10"#900-L-S	Side
Challan Date	Challan No.	Test Method	Heat No.	Heat Lot No.	Grade
03/06/2018	029	ASTM-E-112:2013	P0656	N-180516-1	ASTM A216
		W.		T-180521-1	WCB
		Test Details		-111	

Test Details

Etchant- 4% Nital Etching Condition- Immersion-Etching



Total Magnification-100X				
Specimen Dimension-	Replica-L-Side			
Type of Grain Determined-	Equiaxed-Ferrito-Pearlitic-Type-A Grains, No Widmanstatten Ferrite.			
Grain Size Analysis Method- Manual Comparison Method				
ASTM Grain Size No. required	7.0 and above (as per customer standard)			
ASTM Grain Size No. observed	7.0-7.5			

For VCK Foundry Technology

Authorized Signature





Test Certificate	No05061814			Date	- 05/06/2013
		Western Precicast Pvt. Ltd.			
Custome	er Name	Gat No.170, 171/1, MIDC I	Kupwad, Sangli		
Date of Sample Received		Date of Test Completion	pletion Sample Name		
03/06/	2018	05/06/2018	Body-GTV-10"#900-B-Side		Side
Challan Date	Challan No.	Test Method	Heat No.	Heat Lot No.	Grade
03/06/2018	029	ASTM-E-112:2013	P0656	N-180516-1	ASTM A216
				T-180521-1	WCB

Etchant- 4% Nital Etching Condition- Immersion-Etching



Total Magnification-100X			
Specimen Dimension-	Replica-B-Side		
Type of Grain Determined-	Equiaxed-Ferrito-Pearlitic-Type-A Grains, No Widmanstatten Ferrite.		
Grain Size Analysis Method-	Manual Comparison Method		
ASTM Grain Size No. required	7.0 and above (as per customer standard)		
ASTM Grain Size No. observed	7.0-7.5		

For VCK Foundry Technology

Nodal Officer

ized Signature

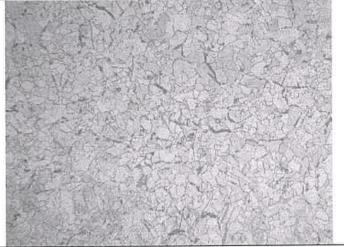




Test Report-Grain Size Measurement						
Test Certificate No05061815 Date- 05/06/2018						
Custome	r Name	Western Precicast I Gat No.170, 171/1,		Kupwad, Sangli		
Date of Samp	ple Received Date of Test Completion Sample Name					
03/06/	2018	05/06/2018	8 Body-GTV-10"#900-R-Side			Side
Challan Date	Challan No.	Test Method	ì	Heat No.	Heat Lot No.	Grade
03/06/2018	029	ASTM-E-112:2	013	P0656	N-180516-1 T-180521-1	ASTM A216 WCB
		Tost	Dotoils			!

Test Details

Etchant- 4% Nital Etching Condition- Immersion-Etching



Total Magnification-100X			
Specimen Dimension-	Replica-R-Side		
Type of Grain Determined-	Equiaxed-Ferrito-Pearlitic-Type-A Grains, No Widmanstatten Ferrite.		
Grain Size Analysis Method- Manual Comparison Method			
ASTM Grain Size No. required	7.0 and above (as per customer standard)		
ASTM Grain Size No. observed	7.0-7.5		

For VCK Foundry Technology

Authorized Signature





	T	est Report- Micr	o Structu	ral Analysis	
Test Certificate	No09061820				Date- 09/06/2018
		Arrow Metallics.			
Custome	er Name	A-21, Five Star I	MIDC,Kaga	al, Kohapur	
Date of Sample Received		Date of Test C	ompletion	Sample Name	
08/06/2018		09/06/20)18	В	racket
Challan Date	Challan No.	Test Met	hod	Heat No.	Grade
	20000	ASTM-E-40	7:2015	18-E-131	IS1030 280-520W
	!! == ====	Test	Details		
Etchant- 4% Nit	al		Etching (Condition- Immersion	Etching
Tota	l Magnification-	100X Total Magi	nification-1	Total Magnificat	ion-500X
		T 0.000 TIYMET			
Specimen Dimer	nsion-				
_		Cut Piece EquiaxedFerrito-F	earlitic stru	acture is observed.	
Specimen Dimer Type of Structur Area Fraction-	re Observed	Cut Piece		acture is observed. Ferrite (%)	Other Phases (%)
	re Observed	Cut Piece EquiaxedFerrito-F			Other Phases (%) Nil

Authorized Signature





	Tes	t Report- Micro	-Vickers H	ardness Test	t	
Test Certificate	No10061842				Dat	e- 10/06/201
		Param Industries				-
Custom	er Name	Plot noA/80; L	axmi Ind. Es	tate, Hatkanan	gle, Kolhapur.	
Date of Sam	ple Received	Date of Test Completion		Sample Name		
08/06/2018		10/06/20	018	Plain	Balancer Shaft-	Middle
Challan Date	Challan No.	Test Met	thod	Inv. No.	Heat No.	Grade
08/06/2018	554	ASTM-E-3	884-17	-	1533	16MnCr
		Tes	t Details		i.	le-
Sample Checking	ng Area		O.D.			
Load			1.0Kgf			
Cutoff at HV			550 HV	24.1		
Effective Case 1	Depth (ECD)		0.93mm			
Sr. No	Di	stance (mm)	Hardness value in HV			
1		0.20		689		
2		0.40		641		
3		0.60		604		
4		0.80		577		
5		1.00		536		
6		1.20		473		
7		1.40		-		
8		1.60				
9		1.80			-	
10	V	2.00			-	
11		2.20			-	

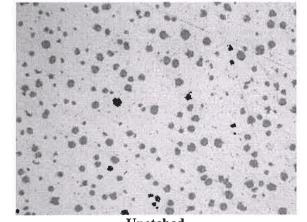
Authorized Signature



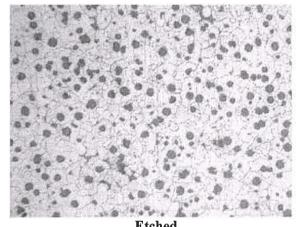


	Test Repor	t- Micro Structural Analys	sis of Nodular (Cast Iron	
Lab ID- M 674		Test Certificate No	Date- 30/06		
C -1	NT	Padmavati Auto Components	S		
Custome	r Name	2498, Vivekanand Nagar, Ko	orochi, Hatkanang	gle, Kolhapur.	=
Date of Samp	ole Received	Date of Test Completion	Sample Name		
29/06/	2018	30/06/2018		R.A. Support	
Challan Date	Challan No.	Test Method	Part No	Heat No	Grade
28/06/2018	149	IS-1865:2010	R542513 284		: :
		ASTM-E-562:2011			
		Test Results			

Etchant- 4% Nital	Etching Condition- Immersion-Etching		
The same and the same of the s	阿里尔克里公司开发制造的企业的市场		







т.	4 - '		- 4
H	re.	n	α

Total Magnification-100X						
Specimen Dimension-	Sample Cut Piece					
Observation (Etched)	Observation (Etched) Pearlitic matrix is observed with following percentage of Ferrite and Pearlite.					
GraphiteAnalysis	(Unetched Area)	Phase Analysis	s (Etched Area)			
Frame Area (mm²)	0.959 mm ²	Pearlite (%)	12.30			
Nodularity (%)	92 %	Ferrite (%)	87.70			
Nodule Count/mm ²	241	Other (%)	Nil			

Authorized Signature

-End of Report-



- Metallurgical Testing
- Failure Analysis
- Heat Treat Process Analysis
- Material Solutions
- **★** Metallurgical Consulting

Date-01/07/2018

To

Nodal Officer

Dept. of Foundry Technology

Vivekanand College, Kolhapur

Subject- To provide collaborated testing and consultancy services

Dear sir,

We have metallurgical testing and consultancy setup in MIDC Shiroli, Kolhapur. We are collaborated with your department of foundry technology. We have requirement of metallurgical testing at your end.

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Thanking you,

Yours Sincerely,

Director

Atlanta Metallurgical Services



- Metallurgical Testing
- Failure Analysis
- **★** Material Solutions
- **★** Metallurgical Consulting

Details of work required-

Sr. No.	Name of Company	Test Required	No. of Samples
1	Unique Auto Shafts	Grain Size & Microstructure of Steel	1
2	Tulip Castings Pvt. Ltd.	Grain Size analysis of steel	1
3	Dattachaya Chains Pvt. Ltd.	Grain Size & Microstructure of Steel	1







Lab ID- M 694		Test Certifica	te No05	5071868	Da	te- 05/07/2018
		Unique Auto Shafts				
Custome	r Name	Plot no87,88; Ichalka	aranji Ind	l. Co-Op Estate, S	hahapur, Ichalk	aranji.
Date of Sample Received Date 01/07/2018			te of Test Completion		Sample Name	
		05/07/2018		Dia-22.20mm-Omega Bright St. (Inv. No-837)		
Challan Date	Challan No.	Test Method		Heat No	Qty.	Grade
01/07/2018	10290	ASTM-E-1122:201	5	5807026	8.550 Kg.	45C8
		Test	Details	I		
Etchant- 4% N	ital		Etching	Condition- Imm	nersion-Etching	
		Total Magn	Seation.	100V		
C		Sample Cut P		-100A		
Specimen Dim		8.0-8.5	1666			
ASTM Grain S			!4 D !	lidia administrana i = -1	haamiad	
Type of Struct	ure Observed-	-		litic-structure is of observed in the sa		
Area Fraction	n-	Ferrite (%)	Pearlite (%	Othe	er Phases (%)
		38.20		61.80		Nil

Authorized Signature

---Endof Report---





		Test Report-Grain Size N	Ieasurement			
Lab ID- M 702		Test Certificate No06071	842	Date	e- 06/07/201	
		Tulip Castings Pvt. Ltd.				
Customer Name Date of Sample Received		Plot No29, MIDC Shiroli, Kolhapur-416122				
		Date of Test Completion		Sample Name		
06/07/	/2018	06/07/2018		8"#150-/300-Core		
Challan Date	Challan No.	Test Method	Heat No.	Heat Lot No.	Grade	
		ASTM-E-112:2013	T-4153	N-0244/18-19	ASTM A210	
				T-0245/18-19	WCC	
Qualifying	Heat Nos.		T-4154		I	
Qualifyii	ng Part-	6	5"#300-Bonnet/Upp	рег Сар		
		Test Details				
Etchant- 4% Nit	al	Etching	Condition- Ima	mersion-Etching		
Etchant- 4% Nit	cal	Etching	Condition- Image	mersion-Etching		
Etchant- 4% Nit	cal	Total Magnification		mersion-Etching		
				mersion-Etching		
Etchant- 4% Nit Specimen Dimer	nsion-	Total Magnification	-100X		ten Ferrite.	
Specimen Dime	nsion- Determined-	Total Magnification Replica	-100X tic-Type-A Grai		ten Ferrite.	

Authorized Signature

-End of Report----

Nodal-Officer





Lab ID- M 724		Test Certifica	ate No.	-10071850	Date	e- 10/07/2018
		Dattachaya Chains Pv	vt. Ltd.			
		D-12/2, MIDC Gokul	lShirga	on, Kolhapur.		
		Date of Test Completion Sa		imple Name		
10/07/2018		10/07/2018		Das M	etal (1 ½"X 1 ½	2")
Challan Date	Challan No.	Test Method		Part No.	Heat No.	Grade
(())		ASTM-E-407:201	15	342		EN 8
		Test D	Details			-
Etchant- 4% Ni	tal	E	Etching	Condition- Imme	ersion-Etching	
		Total Magnif	fication	-100 X		
		Sample Cut Piece	fication	-100X		
•		Sample Cut Piece 5.5-6.0				
ASTM Grain S	ize No	Sample Cut Piece 5.5-6.0 Equiaxed-Ferrito-P		structure is observ		
Specimen Dime ASTM Grain S Type of Structu Area Fraction	ize No ire Observed-	Sample Cut Piece 5.5-6.0				Phases (%)

Authorized Signature

--Endof Report-----

Nodal Officer



- Metallurgical Testing
- Failure Analysis
- Heat Treat Process Analysis
- Material Solutions
- **★** Metallurgical Consulting

Date-13/07/2018

To

Nodal Officer

Dept. of Foundry Technology

Vivekanand College, Kolhapur

Subject- To provide collaborated testing and consultancy services

Dear sir,

We have metallurgical testing and consultancy setup in MIDC Shiroli, Kolhapur. We are collaborated with your department of foundry technology. We have requirement of metallurgical testing at your end.

As department of Foundry technology has established a testing setup which is very useful for industrial purpose, we are requesting you to provide necessary support regarding the same. We are attaching a list of samples and details of test requirements along with this letter.

Thanking you,



Yours Sincerely,

Director

Atlanta Metallurgical Services



- Metallurgical Testing
- Failure Analysis
- Heat Treat Process Analysis
- Material Solutions
- **★** Metallurgical Consulting

• Details of work required-

Sr. No.	Name of Company	Test Required	No. of Samples
1	Padmavati Auto Components	Microstructure of S.G. Iron	1
2	Rolls Energy	Grain Size & Microstructure of Steel	1
3	Rocket Engg Corp. Pvt. Ltd.	Micro-Vickers Hardness	1
4	Maurya Industries	Microstructure of S.G. Iron	1
5	SaiUdyog	Micro-Vickers Hardness	1
6	Unique Auto Assemblies Pvt. Ltd.	Microstructure of Cast Iron	1



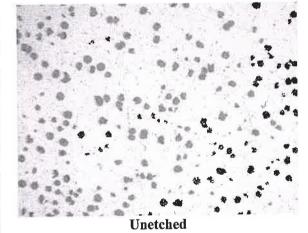


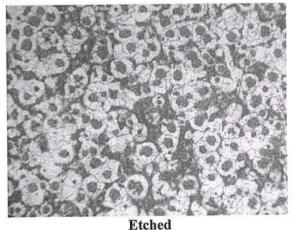


	Test Repor	t- Micro Structural Analysi	is of Nodular (Cast Iron	
Lab ID- M 766		Test Certificate No1807182	26 Date- 18/07/2		
		Padmavati Auto Components			
Custome	r Name	2498, Vivekanand Nagar, Kor	rochi, Hatkanang	le, Kolhapur.	
Date of Samp	le Received	Date of Test Completion	Sample Name		
17/07/	2018	18/07/2018		R.A. Support	
Challan Date	Challan No.	Test Method	Part No	Heat No	Grade
13/07/2018	161	IS-1865:2010 ASTM-E-562:2011	R542513	22	-10

Test Results

Etchant- 4% Nital Etching Condition- Immersion-Etching





Total Magnification-100X

Specimen Dimension-Sample Cut Piece **Observation (Unetched)** Pearlitic matrix is observed with following percentage of Ferrite and Pearlite. **Observation (Etched)** Phase Analysis (Etched Area) GraphiteAnalysis (Unetched Area) 34,40 0.959 mm^2 Pearlite (%) Frame Area (mm²) 65.60 Ferrite (%) 90% Nodularity (%) Carbide (%) Nodule Count/mm² 210

For VCK Foundry Technology

Authorized Signature

-End of Report--

Nodal Officer





Lab ID-M 864		Test Certificate No2707	1846	Dat	te- 27/07/201
		Rolls Energy	\		
Customer	r Name	W.No-17, Pujari Mala, Ich	nalakranji, Kolhapur	•	
Date of Samp	le Received	Date of Test Completion	Sam	ple Name	
19/07/2	2018	27/07/2018	Sample V	Γ-1 - Dia190r	nm
Challan Date	Challan No.	Test Method	Heat Code	Qty.	Grade
-		ASTM-E-407:2015		S ette S	EN8
		Test Details			
Etchant- 4% Nit	tal	Etchi	ng Condition- Immer	sion-Etching	
		Total Magnificatio	n-100X		
		Sample Cut Piece	n-100X		
ASTM Grain S	ize No	Sample Cut Piece 6.0-6.5			
ASTM Grain S	ize No	Sample Cut Piece 6.0-6.5 Equiaxed-Ferrito-Pea	arlitic-structure is obs		
ASTM Grain S	ize No	Sample Cut Piece 6.0-6.5	arlitic-structure is obset observed in the same	ple.	
Specimen Dime ASTM Grain S Type of Structu	ize No ire Observed-	Sample Cut Piece 6.0-6.5 Equiaxed-Ferrito-Pea	arlitic-structure is obs	ple.	r Phases (%)

--End of Report--



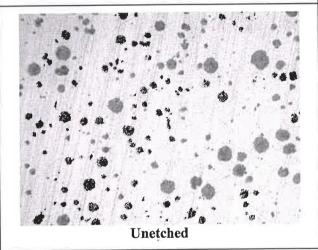


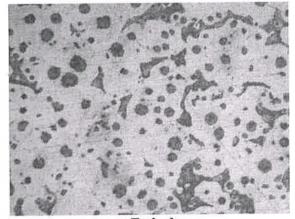
Test Repor	t- Micro Structural Analysi	s of Nodular Cas	t Iron		
	Test Certificate No24071853		853 Date- 24/07/2		
TAT	Maurya Industries				
r Name	A-12, MIDC GokulShirgaon,	GokulShirgaon, Kolhapur			
le Received	Date of Test Completion	Sample Name			
2018	24/07/2018	S	Spindle		
Challan No.	Test Method	Part No	Heat No	Grade	
732	IS-1865:2010 ASTM-E-562:2011	11087959M 293 (11087958)		450/12	
	r Name le Received 2018 Challan No.	Test Certificate No2407185 Maurya Industries A-12, MIDC GokulShirgaon, le Received Date of Test Completion 2018 Challan No. Test Method 732	Test Certificate No24071853 Maurya Industries A-12, MIDC GokulShirgaon, Kolhapur Ole Received Date of Test Completion Sam	Maurya Industries A-12, MIDC GokulShirgaon, Kolhapur	

Test Results

Etchant- 4% Nital

Etching Condition- Immersion-Etching





Etched

Total Magnification-100X

Specimen Dimension-	Sample Cut Piece				
Observation (Unetched)					
Observation (Etched)	Pearlitic matrix is observed with following percentage of Ferrite and Pearlite.				
GraphiteAnalysis (Unetched Area)		Phase Analysis (Etched Area)			
Frame Area (mm²)	0.959 mm ²	Pearlite (%)	76.40		
Nodularity (%)	89%	Ferrite (%)	23.60		
Nodule Count/mm ²	210	Carbide (%)			

For VCK Foundry Technology

Authorized Signature

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





	Tes	t Report- Micro	-Vickers H	ardness Test	,	
Lab ID- MH 119		Test Certificate No26071841		071841	Date- 26/07/20	
Customer Name		SaiUdyog				
		Plot noD-4/1; N	MDC Gokul	Shirgaon, Koll	hapur.	
Date of Sam	ple Received	Date of Test C	ompletion		Sample Name	
25/07	//2018	26/07/20	018		SU-3815	
Challan Date	Challan No.	Test Met	thod	Part No.	Heat No.	Grade
25/07/2018	220	ASTM-E-3	884-17	-	F3/07/07	-
		Test P	arameters			
Sample Checkin	ng Area		Inner Dia	meter		
Load			1.0Kgf			
Cutoff at HV			515 HV			
Effective Case I	Depth (ECD)		2.36mm			
		Tes	t Results			
Sr. No	Distanc	e (mm)	Hardness value in HV			
1	0.2	20	713			
2	0.5	50	707			
3	0.0	30	696			
4	1.1	10	685			
5	1.4	40	680			
6	1.70		631			
7	2.00		591			
8	2.30				525	
9	2.0				480	
10	2.9				•	
11	3.2	20			: - :	

Authorized Signature

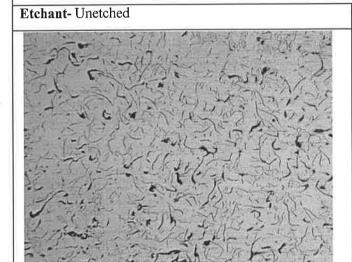
----End of Report-

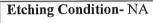


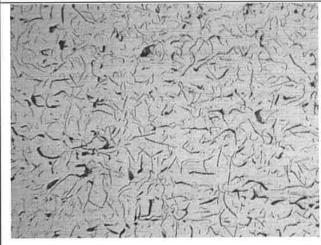


	Test Re	port- Microstructural An	alysis of Graphite in C	Cast Iron		
Lab ID- M 880		Test Certificate I	No29071844 Date- 29/07/2			
Unique Auto Assemblies Pvt. Ltd. (Unit-I)						
Custome	r Name	Plot no95,96; Ichalkaranji	ji Ind. Co-Op Estate, Shahapur, Ichalkaranji.			
Date of Samp	ole Received	Date of Test Completion	Sar	nple Name		
28/07/	2018	29/07/2018	O.P.H. Cove	er- Pragati Four	nders	
			(Inv. no-3	97-Date-21/07/	18)	
Challan Date	Challan No.	Test Method	Heat Code Qty. Grade			
28/07/2018	10070	ASTM-A-247:2016	.#.:	500	FG-260	

Test Details







Total Magnification-100X

Observation-Predominantly A type of Graphite flakes are observed with some B & C type are observed.

Sample-1 Average		ASTM Class 3-6			
Average	88.45	8.75	2.80	-	=2

Continued on next page



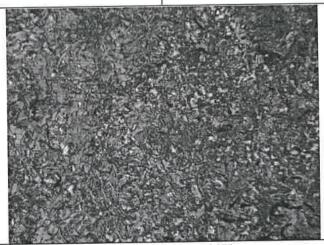


		Test Report- Volume F	raction of phases			
Lab ID- M 880)	Test Certificate No.	-29071844	I	Date- 29/07/2018	
		Unique Auto Assemblies Pvt.	Ltd. (Unit-I)			
Custome	r Name	Plot no95,96; Ichalkaranji Ir	i Ind. Co-Op Estate, Shahapur, Ichalkaranji.			
Date of Samp	ole Received	Date of Test Completion	on Sample Name			
28/07/	2018	29/07/2018	O.P.H. Cover- Pragati Founders			
			(Inv. no	-397-Date-21/07	7/18)	
Challan Date	Challan No.	Test Method	Heat Code	Qty.	Grade	
28/07/2018	10070	ASTM-A-247:2016	-	FG-260		

Test Details

Etchant- 4% Nital

Etching Condition- Immersion-Etching



Total Magnification-100X

Observation-Pearlitic matrix is observed with following percentage of Ferrite and Pearlite.

Frame Area(mm)	Pearlite (%)	Ferrite (%)	Steadite (%)
0.936	97.80	2.20	=
			Transcritten (mm)

For VCK Foundry Technology

Authorized Sign

----Endof Report--

Nodal Officer



- Metallurgical Testing
- **♠** Failure Analysis
- Heat Treat Process Analysis
- Material Solutions
- **★** Metallurgical Consulting

Date-01/08/2018

To

Nodal Officer

Dept. of Foundry Technology

Vivekanand College, Kolhapur

Subject- To provide collaborated testing and consultancy services

Dear sir,

We have metallurgical testing and consultancy setup in MIDC Shiroli, Kolhapur. We are collaborated with your department of foundry technology. We have requirement of metallurgical testing at your end.

As department of Foundry technology has established a testing setup which is very useful for industrial purpose, we are requesting you to provide necessary support regarding the same. We are attaching a list of samples and details of test requirements along with this letter.

Thanking you,

SERVICES *

**KOI HAPUR*

Yours Sincerely,

Director

Atlanta Metallurgical Services



- ★ Metallurgical Testing
- Failure Analysis
- Heat Treat Process Analysis
- Material Solutions
- Metallurgical Consulting

• Details of work required-

Sr. No.	Name of Company	Test Required	No. of Samples
1	Arrow Metallics	Micro-Vickers Hardness	1
2	MenonEngg Services	Grain Size & Microstructure of Steel	1
3	MenonEngg Services	Decarburization Analysis	1
4	MenonEngg Services	Inclusion rating Analysis	1
5	Maurya Industries	Microstructure of S.G. Iron	1







	Tes	t Report- Micro	-Vickers H	ardness Test			
Lab ID- MH 12	8	Test Certif	icate No02	081852	Date	- 02/08/2018	
		Arrow Metallics					
Custom	er Name	A-21, Five Star M	IDC,Kagal, K	ohapur			
Date of Sam	ple Received	Date of Test C	ompletion		Sample Name		
01/08	3/2018	02/08/20	018	LK-	405-Region-A (Ch	ina)	
Challan Date	Challan No.	Test Met	thod	Part No.	Heat No.	Grade	
<u> </u>	-	ASTM-E-3	384-17		- 4		
		Test I	Parameters			.!	
Sample Checking	g Area		Root Region	n			
Load			1.0 Kgf				
Cutoff at HV			450 HV				
Effective Case De	epth (ECD)		3.79mm				
		Tes	t Results				
Sr. No	Distanc	e (mm)	22	Hardnes	s value in HV	iii	
1 :	0.2	20		412			
2	0.5	50	457				
3	1.0	00	466				
4	1.5	50	478				
5	2.0	00	589				
6	2.5	50			571		
7	3.0	00			555		
8	3.5	50			503		
9	4.0	00			413		
10	4.:	50					
11	5.0	00					
12	5.3	50					
13	6.0	00					
14	6.:	5 0					

---End of Report---

Nodal Officer





	T	est Report- Gra	in Size Mea	surement		
Lab ID- M 908		Test Certifi	cate No040	081852	Dat	te- 04/08/2018
		Menon Engineer	ing Services			
Custom	er Name	Shiroli MIDC, K	olhapur.			
Date of Sam	ple Received	Date of Test Co	ompletion		Sample Name	
04/08	/2018	04/08/20)18		Piston CP-206	
Challan Date	Challan No.	Test Met	hod	Inv. No.	Heat No.	Grade
24/07/2018	718	ASTM-E-11	2:2013		GGN	AISI-4140
		Test	Details			
Etchant- 4% Ni	tal		Etching Co	ondition- Imm	ersion-Etching	
				104 104 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
		Total Mag	nification-10	00X		
Specimen Dime	nsion-	Total Magi		00X		
		ū	ce		ic Matrix.	
Specimen Dime Type of Grain I Grain Size Ana	Determined-	Piston Cut Pie	ece entite is obse	erved in Ferrit	ic Matrix.	

Authorized Signature

-Endof Report---

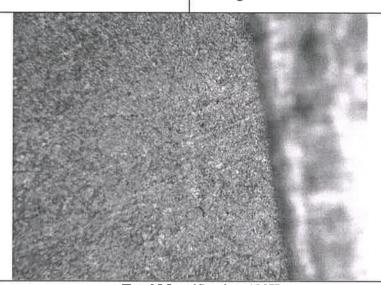




	Т	est Report- Micro Structur	al Analysis		
Lab ID- M 908		Test Certificate No04	4081853 Date- 04/08		
~ .	Menon Engineering Services				
Custom	er Name	Shiroli MIDC, Kolhapur.			
Date of Sam	ple Received	Date of Test Completion	Sample Name)
04/08	/2018	04/08/2018	Piston CP-206		
Challan Date	Challan No.	Test Method	Inv. No.	Heat No.	Grade
24/07/2018	718	ASTM-E-1077:2013		GGN	AISI-4140
		Test Details			

Test Details

Etchant- 4% Nital Etching Condition- Immersion-Etching



Total Magnification-100X

Specimen Dimension-	Piston Cut Piece- Location-C
Observation	Decarburization was not found near surface. There is no evidence Decarburization in forged area combustion bowl.

For VCK Foundry Technology

Authorized Signature

----Endof Report--

Nodal Officer





24/07/2018	718	ASTM-E-1122	Details		GGN	AISI-4140		
Challan Date	Challan No.	Test Method		Inv. No.	Heat No.	Grade		
04/08/2018		04/08/2018		Piston CP-206				
Date of Samp	ole Received	Date of Test Completion		Sample Name				
Custome	r Name	Shiroli MIDC, Kolhapur.						
G (D.T.	Menon Engineering Services						
Lab ID- M 908 Test			Test Certificate No04081851			Date- 04/08/2018		

Total Magnification-100X

Specimen Dimension-	Piston Cut Piece							
Inclusion Rating	A Type		В Туре		С Туре		D Type	
	Thin	Thick	Thin	Thick	Thin	Thick	Thin	Thick
	0.0	0.0	0.5	1.0	0.5	0.0	1.5	1.5

Authorized Signature

-Endof Report-

Nodal Officer



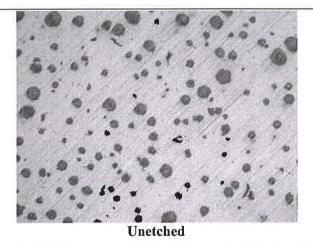


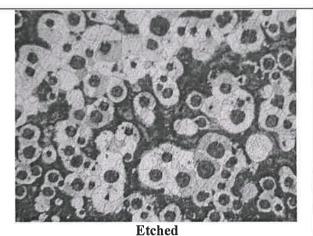
	Test Repor	t- Micro Structural Analysis	s of Nodular Ca	st Iron			
Lab ID- M 1024	ļ	Test Certificate No3108186 Date- 31/08.					
Custome	r Namo	Maurya Industries					
Custome	i ivaille	A-12, MIDC GokulShirgaon, 1	Kolhapur				
Date of Sample Received		Date of Test Completion	Sample Name				
29/08/	2018	31/08/2018	End Cap Radial				
Challan Date	Challan No.	Test Method	Part No	Heat No	Grade		
29/08/2018	1331	ASTM-E-2567-16a ASTM-E-1245:2016	11059730	8H7/7	65-45-12		

Test Results

Etchant- 4% Nital

Etching Condition- Immersion-Etching





Total Magnification-100X

Specimen Dimension-	Sample Cut Piece				
Observation (Unetched)	Regular Spheroidal Graphite is observed in the structure.				
Observation (Etched)	Pearlitic matrix is observed with following percentage of Ferrite and Pearlite.				
GraphiteAnalysis (Unetched Area)		Phase Analysis (Etched Area)			
Frame Area (mm²)	0.959 mm ²	Pearlite (%)	45.70		
Nodularity (%)	91%	Ferrite (%)	54.30		
Nodule Count/mm ²	155	Carbide (%)	-		

For VCK Foundry Technology

Authorized Signature

Format No.-AMS/TR/10-R.00-----

End of Report-

Nodal Officer



(06587) - M.I.D.C.(SHIROLI), KOLHAPUR PLOT NO.P/9, MIDC INDUSTRIAL ESTATE, DIST:KOLHAPUR, MAHARASHTRA 416122 Tel: 230-2468183 IFS Code: SBIN0006587

केवल 3 महीने के लिए वैच /VALID FOR 3 MONTHS ONLY

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PAY Vivekanand College Kolhapur

को या उनके आदेश पर OR ORDER

रुपये RUPEES Three Thousand Two Hundred out

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ATLANTA METALLURGICAL SERVICES

Gat No. 194, Hanuman nagar, Shiye, MIDC Shiroli, Kolhapur. 416 122 Email: atlantametalab@gmail.com Cell: +91-8421246069 +91-9595401694

- Metallurgical Testing
- Failure Analysis
- Heat Treat Process Analysis
- ♠ Material Solutions
- **★ Metallurgical Consulting**

Date-16/08/2018

To

Nodal Officer

Dept. of Foundry Technology

Vivekanand College, Kolhapur

Subject- To provide collaborated testing and consultancy services

Dear sir,

We have metallurgical testing and consultancy setup in MIDC Shiroli, Kolhapur. We are collaborated with your department of foundry technology. We have requirement of metallurgical testing at your end.

As department of Foundry technology has established a testing setup which is very useful for industrial purpose, we are requesting you to provide necessary support regarding the same. We are attaching a list of samples and details of test requirements along with this letter.

Thanking you,

Yours Sincerely,

Director

Atlanta Metallurgical Services



ATLANTA METALLURGICAL SERVICES

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- Metallurgical Testing
- **●** Failure Analysis
- ♠ Heat Treat Process Analysis
- ★ Metallurgical Consulting

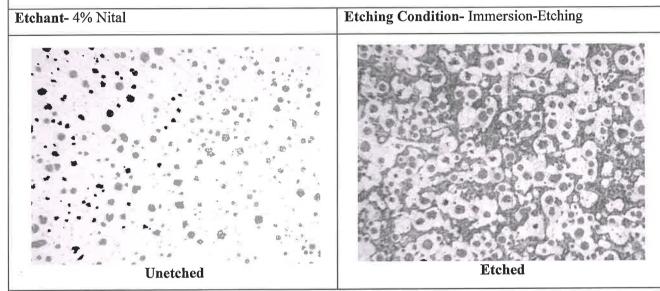
Sr. No.	Name of Company	Test Required	No. of Samples
1	Padmavati Auto Components	Microstructure of SG Iron	1
2	Arrow Metallics	Micro-Vickers Hardness	1
3	Arrow Metallics	Microstructure of Steel	1





	Test Repor	t- Micro Structural Analys	is of Nodular (Cast Iron	
Lab ID- M 975		Test Certificate No19081878 Date- 19/0			e- 19/08/2018
C 1	N.T.	Padmavati Auto Components			
Custome	r Name	2498, Vivekanand Nagar, Korochi, Hatkanangle, Kolhapur,			
Date of Samp	ole Received	Date of Test Completion	S	ample Name	
19/08/	2018	19/08/2018		R.A. Support	
Challan Date	Challan No.	Test Method	Part No	Heat No	Grade
19/08/2018	214	IS-1865:2010 ASTM-E-562:2011	R542513	262	550 B 06

Test Results



Total Magnification-100X

Specimen Dimension-	Sample Cut Piece					
Observation (Unetched)	==					
Observation (Etched)	Pearlitic matrix is obs	Pearlitic matrix is observed with following percentage of Ferrite and Pearlite.				
Graphite Analysi	s (Unetched Area)	Phase Analysis (Etched Area)				
Frame Area (mm²)	0.959 mm ²	Pearlite (%)	39.80			
Nodularity (%)	92%	Ferrite (%)	60.20			
Nodule Count/mm ²	255	Carbide (%)	£			

Tested By-

For VCK Foundry Technology Dept.

Authorized Signatory

--End of Report-----





	Tes	t Report- Micro	-Vickers H	ardness Tes	t	
Lab ID- MH 164		Test Certificate No19081839 Date- 19			- 19/08/2018	
		Arrow Metallics				
Custome	er Name	A-21, Five Star M	IDC,Kagal, K	ohapur		
Date of Sam	ple Received	Date of Test Co	Date of Test Completion Sample Name			
18/08	/2018	19/08/20	/08/2018 LK-405-Region-B			
Challan Date	Challan No.	Test Met	thod	Part No.	Heat No.	Grade
-	i i	ASTM-E-3	84-17		H-68	
	L.	Test P	arameters			-
Sample Checking	Area		Location-B			
Load			1.0 Kgf			
Cutoff at HV			450 HV			
Effective Case De	epth (ECD)		4.28mm	4		
		Tes	t Results			
Sr. No	Distance	e (mm)		Hardne	ss value in HV	
1	0.2	0		495		
2	0.5	0		529		
3	1.0	0			581	
4	1.5	60		561		
5	2.0	0		529		
6	2.5	50		500		
7	3.0	00		476		
8	3.5	50	457			
9	4.0	00	411			
10	4.5	50			-	
11	5.0	00			-	
12	5.5	50			-	
13	6.0	00			-	
14	6.5	50			-	

Tested By-

For VCK Foundry Technology Dept.

Authorized Signatory

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





For VCK Foundry Technology Dept.

Authorized Signatory

	Т	est Report-Micro)-structura	l Analysis			
Lab ID- M 976		Test Cert	ificate No1	19081867		Date- 19/08/2018	
		Arrow Metallics					
Custome	r Name	A-21, Five Star M	-21, Five Star MIDC, Kagal, Kohapur				
Date of Samp	le Received	Date of Test Co	mpletion	on Sample Name			
18/08/2	2018	19/08/20	18		LK-405-Re	egion-B	
Challan Date	Challan No.	Test Metl	hod	Part No.	Heat No	o. Grade	
######################################		ASTM-E-562	2:2011	-	H-68	-	
		Test	Details			· · · · · · · · · · · · · · · · · · ·	
Etchant- 4% Nital			Etching Co	ondition- Imn	nersion-Etch	ing	
Total Magni	fication-100X	Total Mag	nification-2	00X	Total Ma	gnification-500X	
Total Magnit		Total Mag		00X	Total Ma	gnification-500X	
	ion-	Cut Piece-Locat No Decarburiza	tion-B tion has bee	n found.			
Specimen Dimens	ion-	Cut Piece-Locat No Decarburiza	tion-B tion has bee	n found.		gnification-500X etained Austenite.	
Specimen Dimens	ion-	Cut Piece-Locat No Decarburiza	tion-B tion has bee ensite is obs	n found.	s than 5% R		

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

Tested By-



Gat No. 194, Hanuman nagar, Shiye, MIDC Shiroli, Kolhapur. 416 122 Email: atlantametalab@gmail.com Cell: +91-8421246069 +91-9595401694

- Metallurgical Testing
- Failure Analysis
- Heat Treat Process Analysis
- **★** Material Solutions
- Metallurgical Consulting

Date-01/09/2018

To

Nodal Officer

Dept. of Foundry Technology

Vivekanand College, Kolhapur

Subject- To provide collaborated testing and consultancy services

Dear sir,

We have metallurgical testing and consultancy setup in MIDC Shiroli, Kolhapur. We are collaborated with your department of foundry technology. We have requirement of metallurgical testing at your end.

As department of Foundry technology has established a testing setup which is very useful for industrial purpose, we are requesting you to provide necessary support regarding the same. We are attaching a list of samples and details of test requirements along with this letter.

Thanking you,

TALLURGICAL SERVICES

Yours Sincerely,

Director

Atlanta Metallurgical Services



ATLANTA METALLURGICAL SERVICES

Gat No. 194, Hanuman nagar, Shiye, MIDC Shiroli, Kolhapur. 416 122 Email: atlantametalab@gmail.com Cell: +91-8421246069 +91-9595401694

- Metallurgical Testing
- Failure Analysis
- **★** Material Solutions
- Metallurgical Consulting

• Details of work required-

Sr. No.	Name of Company	Test Required	No. of Samples
1	Tulip Castings Pvt. Ltd.	Grain Size of Steel	1
2	Padmavati Auto Components	Microstructure of S.G. Iron	1
3	Arrow Metallics	Detailed Analysis of heat treated steel casting	1
4	BaramatiEngg. Pvt. Ltd.	Grain Size of Steel	3







		Test Report-Grain S	Size Measurer	nent		
Lab ID- M 104	3	Test Certificate No04091821			Date- 04/09/202	
Customer Name		Tulip Castings Pvt. Ltd.				
Custome	r Name	Plot No29, MIDC Shir	roli, Kolhapur-4	16122		
Date of Samp	le Received	Date of Test Completion	o n	Sample Name		
02/09/	2018	04/09/2018	4"#300-Ex	panding (Gate Valve Bonn	et-O.D. Face
Challan Date	Challan No.	Test Method	Heat N	0.	Heat Lot No.	Grade
		ASTM-E-112:2013	T-4842	2	N-0458/18-19	ASTM A216
					T-0460/18-19	WCC
Qualifying	Heat Nos.					
Qualifyin	g Part-					
		Test Do				
Etchant- 4% N	ital	Et	Etching Condition- Immersion-Etching			
		Total Magnifi	ication-100X			
Specimen Dime	ension-	Replica-O.D. Fac	e			
		Replica-O.D. Fac Equiaxed-Ferrito-	e-Pearlitic-Type-	A Grains,	, No Widmanstat	ten Ferrite.
Specimen Dime Type of Grain I Grain Size Ana ASTM Grain S	Determined- llysis Method-	Replica-O.D. Fac	e-Pearlitic-Type-	A Grains,	No Widmanstat	ten Ferrite.

For VCK Foundry Technology

------Endof Report------Nodal Officer-----

B.Voc. & Community College Unit. Vivekanand College, Kolhapur





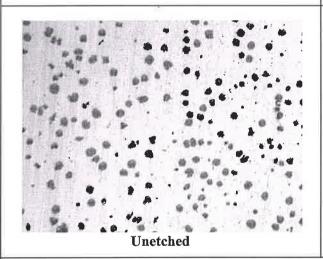
	Test Repor	t- Micro Structural Analy	sis of Nodular C	ast Iron		
Lab ID- M1068		Test Certificate No070918533		18533 Date- 07/09/203		
Padmavati Auto Components Customer Name						
Custome	r Name	2498, Vivekanand Nagar, K	2498, Vivekanand Nagar, Korochi, Hatkanangle, Kolhapur.			
Date of Samp	le Received	Date of Test Completion	Sa	mple Name		
07/09/	2018	07/09/2018	R	.A. Support		
Challan Date	Challan No.	Test Method	Part No Heat No Grade			
06/09/2018	316	IS-1865:2010 ASTM-E-562:2011	R542513	16	550 B 06	

Test Results

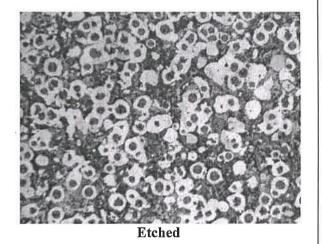
Etchant- 4% Nital

Specimen Dimension-

Etching Condition- Immersion-Etching



Sample Cut Piece



Total Magnification-100X

Observation (Unetched))					
Observation (Etched)	Pearlitic matrix is obs	Pearlitic matrix is observed with following percentage of Ferrite and Pearlite.				
Graphite Analys	sis (Unetched Area)	Phase Ai	nalysis (Etched Area)			
Frame Area (mm²)	0.959 mm ²	Pearlite (%)	50.60			
Nodularity (%)	92%	Ferrite (%)	49.40			
Nodule Count/mm ²	235	Carbide (%)	i=:			

For VCK Foundry Technology

Authorized Signature

-End of Report----

Nodal Officer

B.Voc. & Community College Unit. Vivekanand College, Kolhapur



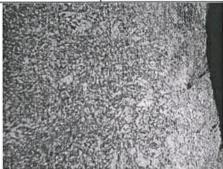


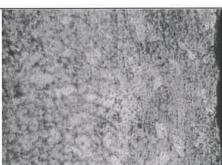
	7	Test Report-Micro-structura	al Analysis		
Lab ID- M 2051		Test Certificate No2309181 Date- 23/09/			
Custome	n Nome	Arrow Metallics			
Custome	r Name	A-21, Five Star MIDC, Kagal	, Kohapur		
Date of Samp	le Received	Date of Test Completion		Sample Name	
22/09/	2018	23/09/2018		LK-405-Location-	В
Challan Date	Challan No.	Test Method	Part No.	Heat No.	Grade
		ASTM-E-1245:2016 IS-6396:2018	N#	18-I-74-2	-

Etchant- 4% Nital

Etching Condition- Immersion-Etching







Total Magnification-100X	Total Magnification-200X Total Magnification-50				
Specimen Dimension-	Cut Piece-Location-B				
Type of Structure Observed-	Decarburization has been found (0.641mm). Tempered Martensite is observed with less than 5% Retained Austenite.				
Area Fraction-	m 125 - 1 (0/) P - 1		Other Phases (%)		
	97.90	2.10	Nil		

For VCK Foundry Technology

Authorized Signature

-End of Report--

Nodal Officer

B.Voc. & Community College Unit. Vivekanand College, Kolhapur

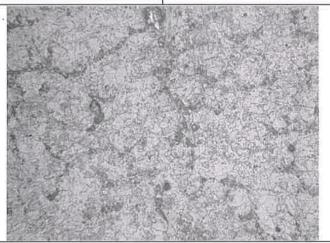




77 4 CT 4 CT 4 TAT 200			
Test Certificate No30			
Baramati Engineering Pvt. Ltd			
C-8-11,24; Baramati Co-Op. 1	Ind. Estate, Bl	nigwan Road, Barai	nati.
Date of Test Completion		Sample Name	
30/09/2018	4#6	600-GTV Body-R-	Side
Test Method	Heat No.	Heat Lot No.	Grade
ASTM-E-112:2013	B-9546	N-501	ASTM A216
	T-502 WC		WCC
Qualifying Heat Nos			
Qualifying Part-			
	C-8-11,24; Baramati Co-Op. I Date of Test Completion 30/09/2018 Test Method ASTM-E-112:2013 Qualifying Heat Nos	Date of Test Completion 30/09/2018 4#6 Test Method Heat No. ASTM-E-112:2013 B-9546 Qualifying Heat Nos Qualifying Part-	C-8-11,24; Baramati Co-Op. Ind. Estate, Bhigwan Road, Baran Date of Test Completion 30/09/2018 4#600-GTV Body-R-S Test Method Heat No. Heat Lot No. ASTM-E-112:2013 B-9546 N-501 T-502 Qualifying Heat Nos Qualifying Part-

Etchant- 4% Nital

Etching Condition- Immersion-Etching



Total Magnification-100X

Specimen Dimension-	Replica-R-Side
Type of Grain Determined-	Equiaxed-Ferrito-Pearlitic-Type-A Grains, No Widmanstatten Ferrite.
Grain Size Analysis Method-	Manual Comparison Method
ASTM Grain Size No	8.0-8.5

For VCK Foundry Technology

Authorized Signature

--End of Report---

Nedal Officer

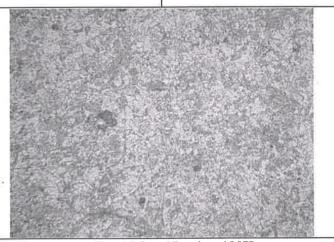
B. Voc. & Community College Unit. Vivekanand College, Kolhapur





	ר	Test Report- Grain Size Mea	asurement			
Lab ID- M 2097	ab ID- M 2097 Test Certificate No30091823 Date- 30		- 30/09/2018			
		Baramati Engineering Pvt. Ltd	Baramati Engineering Pvt. Ltd.			
Custome	er Name	C-8-11,24; Baramati Co-Op. 1	Ind. Estate, Bl	nigwan Road, Bara	mati.	
Date of Sam	ple Received	Date of Test Completion	Sample Name			
29/09	/2018	30/09/2018	4#600-GTV Body-B-Side			
Challan Date	Challan No.	Test Method	Heat No.	Heat Lot No.	Grade	
29/09/2018	63	ASTM-E-112:2013	B-9546	N-501	ASTM A216	
3				T-502	WCC	
		Qualifying Heat Nos	Nos			
		Qualifying Part-				
		Test Details				

Etchant- 4% Nital Etching Condition- Immersion-Etching



Total Magnification-100X

Specimen Dimension-	Replica-B-Side
Type of Grain Determined-	Equiaxed-Ferrito-Pearlitic-Type-A Grains, No Widmanstatten Ferrite.
Grain Size Analysis Method-	Manual Comparison Method
ASTM Grain Size No	8.0-8.5

For VCK Foundry Technology

Authorized Signature

-End of Report--

Nodal Officer

B.Voc. & Community College Unit. Vivekanand College, Kolhapur

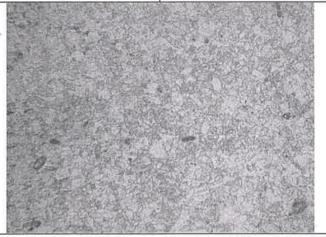




	7	Test Report- Grain Size Mea	asurement			
Lab ID- M 2096		Test Certificate No30	091822	Date	- 30/09/2018	
\$		Baramati Engineering Pvt. Ltd	Baramati Engineering Pvt. Ltd.			
Customer Name		C-8-11,24; Baramati Co-Op. 1	; Baramati Co-Op. Ind. Estate, Bhigwan Road, Baramati.		mati.	
Date of Sam	ple Received	Date of Test Completion	Sample Name			
29/09	/2018	30/09/2018	4#600-GTV Body-L-Side		Side	
Challan Date	Challan No.	Test Method	Heat No.	Heat Lot No.	Grade	
29/09/2018	63	ASTM-E-112:2013	B-9546	N-501	ASTM A216	
i"				T-502	WCC	
		Qualifying Heat Nos				
		Qualifying Part-		11		

Etchant- 4% Nital

Etching Condition- Immersion-Etching



Total Magnification-100X

Specimen Dimension-	Replica-L-Side
Type of Grain Determined-	Equiaxed-Ferrito-Pearlitic-Type-A Grains, No Widmanstatten Ferrite.
Grain Size Analysis Method-	Manual Comparison Method
ASTM Grain Size No	8.0-8.5

For VCK Foundry Technology

Authorized Signature

-----End of Report--

Nodal Officer

B.Voc. & Community College Unit. Vivekanand College, Kolhapur





	Tes	t Report- Micro	-Vickers Ha	ardness Test	t	
Lab ID- MH114		Test Certif	Test Certificate No22071825 Da		te- 22/07/2018	
	Rocket Engineering Corp. Pvt. Ltd.		.td.			
Custon	ner Name	D-19, MIDC Shire	oli, Kolhapur-4	116122		
Date of Sar	nple Received	Date of Test C	ompletion		Sample Name	
19/0	7/2018	22/07/20)18	G	ov. Weight-Sample	÷-1
Challan Date	Challan No.	Test Met	hod	Part No.	Heat No.	Grade
18/07/2018	6917	ASTM-E-3	84-17	-	; # 3	-
		Test F	arameters			
Sample Checkin	g Area		Root Region	1		
Load			1.0Kgf			
Cutoff at HV			450 HV			
Effective Case D	Depth (ECD)		-			
		Tes	t Results		7:	
Sr. No	Distanc	e (mm)	Hardness value in HV			
1	0.1	10		811		
2	0.5	50		785		
3	0.9	90		781		
4	1.3	30		775		
5	1.7	70		769		
6	2.1	10		763		
7	2.5	50			759	
8	2.9	90			756	
9	3.3	30	34		747	
10	3.7	70	744			
11	4.10		738			
12	4.50				724	
13	4.90		713			
14	5.30				707	
15	5.7	70			701	
16	6.1	10			701	

For VCK Foundry Technology

Authorized Signature

--End of Report--

Nodal Officer

B.Voc. & Community College Unit,
Vivekanand College, Kolhapur



Gat No. 194, Hanuman nagar, Shiye, MIDC Shiroli, Kolhapur. 416 122
Email: atlantametalab@gmail.com Cell: +91-8421246069 +91-9595401694

- Metallurgical Testing
- Failure Analysis
- Heat Treat Process Analysis
- Material Solutions
- Metallurgical Consulting

Date-30/09/2018

To

Nodal Officer

Dept. of Foundry Technology

Vivekanand College, Kolhapur

Subject- To provide collaborated testing and consultancy services

Dear sir,

We have metallurgical testing and consultancy setup in MIDC Shiroli, Kolhapur. We are collaborated with your department of foundry technology. We have requirement of metallurgical testing at your end.

As department of Foundry technology has established a testing setup which is very useful for industrial purpose, we are requesting you to provide necessary support regarding the same. We are attaching a list of samples and details of test requirements along with this letter.

Thanking you,

Yours Sincerely,

Director

Atlanta Metallurgical Services



ATLANTA METALLURGICAL SERVICES

Gat No. 194, Hanuman nagar, Shiye, MIDC Shiroli, Kolhapur. 416 122 Email: atlantametalab@gmail.com Cell: +91-8421246069 +91-9595401694

- Metallurgical Testing
- Failure Analysis
- ♠ Heat Treat Process Analysis
- ♠ Material Solutions
- Metallurgical Consulting

Details of work required-

Sr. No.	Name of Company	Test Required	No. of Samples
		f	
1	Padmavati Auto Components	Microstructure of S.G. Iron	1





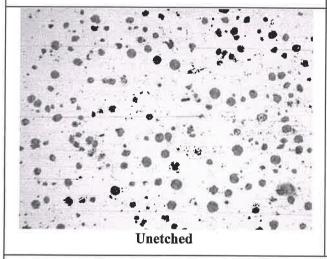


	Test Repor	t- Micro Structural Analy	sis of Nodular C	Cast Iron	
Lab ID- M 2112	2	Test Certificate No02101859 Date- 02/10			e- 02/10/2018
		Padmavati Auto Components			
Custome	r Name	2498, Vivekanand Nagar, Korochi, Hatkanangle, Kolhapur.			
Date of Samp	ole Received	Date of Test Completion	est Completion Sample Name		
02/10/	2018	02/10/2018	F	R.A. Support	
Challan Date	Challan No.	Test Method	Part No	Heat No	Grade
30/09/2018 150		ASTM-E-2567-16a	D2-106407	180	550 B 06
		ASTM-E-1245;2016			

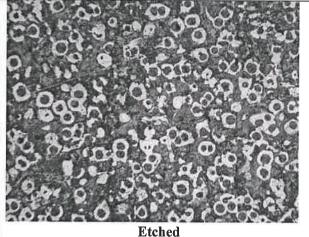
Test Results

Etchant- 4% Nital

Etching Condition- Immersion-Etching



Sample Cut Piece



Total Magnification-100X

Observation (Unetched)	=			
Observation (Etched)	Pearlitic matrix is observed with following percentage of Ferrite and Pearlite.			
Graphite Analysis (Unetched Area)		Phase Analysis (Etched Area)		
Frame Area (mm²)	0.959 mm ²	Pearlite (%)	64.40	
Nodularity (%)	93%	Ferrite (%) 33.60		
Nodule Count/mm ²	234	Carbide (%)	-	

For VCK Foundry Technology

Specimen Dimension-



Gat No. 194, Hanuman nagar, Shiye, MIDC Shiroli, Kolhapur. 416 122
Email: atlantametalab@gmail.com Cell: +91-8421246069 +91-9595401694

- Metallurgical Testing
- **●** Failure Analysis
- Heat Treat Process Analysis
- Material Solutions
- Metallurgical Consulting

Date-30/10/2018

To

Nodal Officer

Dept. of Foundry Technology

Vivekanand College, Kolhapur

Subject- To provide collaborated testing and consultancy services

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Thanking you,

ALLURGICAL SERVICES

Yours Sincerely,

Director

Atlanta Metallurgical Services



ATLANTA METALLURGICAL SERVICES

Gat No. 194, Hanuman nagar, Shiye, MIDC Shiroli, Kolhapur. 416 122 Email: atlantametalab@gmail.com Cell: +91-8421246069 +91-9595401694

- Metallurgical Testing
- Failure Analysis
- **♠** Heat Treat Process Analysis
- ♠ Material Solutions
- Metallurgical Consulting

• Details of work required-

Sr. No.	Name of Company	Test Required	No. of Samples
1	Unique Auto Shafts	Microstructure of Hardened Steel	1
2	Padmavati Auto Components	Microstructure of S.G. Iron	1
3	Trio Enterprises	Microstructure of S.G. Iron	1



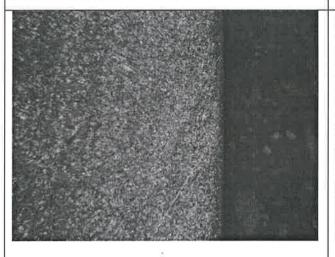


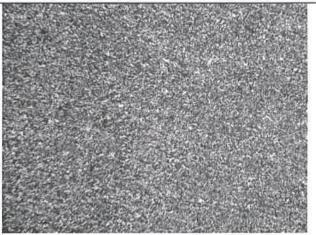


	T	est Report- Micro Structu	ral Analysis			
Lab ID- M-2356	ó	Test Certificate No01111841 Date- 01/1				
C	NT	Unique Auto Shafts				
Custom	er Name	Plot no87,88; Ichalkaranji Ind. Co-Op Estate, Shahapur, Ichalkaranji.				
Date of Sam	ple Received	Date of Test Completion	Completion Sample Name			
30/10	/2018	01/11/2018	Reverse Idler Shaft-5823 2635 7903		2635 7901	
Challan Date	Challan No.	Test Method	Batch Code Qty. Grade		Grade	
30/10/2018	10542	ASTM-E-1245:2016 J-1				
	(*)	Test Details				

Etchant- 4% Nital

Etching Condition- Immersion-Etching





Case region-Total Magnification-100X		Core Region-Total Magnification-100X		
Specimen Dimension-	Sample Cut Piece			
Type of Structure Observed	In case region, Tempered Martensite is observed Nil Carbides and less that 5% Retained Austenite. Core region shows Low carbon tempered Martensite with some amount of Bainite and Ferrite.			
Area Fraction-Case Region	Tempered Martensite (%)	Retained Austenite (%)	Carbides (%)	
	98.20	1.80	Nil	
	4	For VCK Foundry	Tachnology	

For VCK Foundry Technology

Authorized Signature

--End of Report--



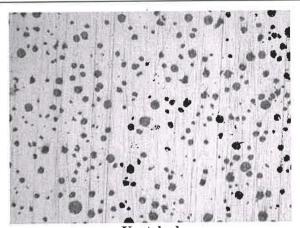


	Test Repor	t- Micro Structural Analy	sis of Nodular C	ast Iron	
Lab ID- M 2395	5	Test Certificate No03111865 Date- 03/11/201			e- 03/11/2018
		Padmavati Auto Components			
Custome	r Name	2498, Vivekanand Nagar, Korochi, Hatkanangle, Kolhapur.			
Date of Samp	ole Received	Date of Test Completion	Sample Name		
03/11/	2018	03/11/2018	R.A. Support		
Challan Date	Challan No.	Test Method	Part No Heat No Grade		
02/11/2018	24	ASTM-E-2567-16a ASTM-E-1245:2016	R 542513	77	550 B 06
		A51W-E-1243.2010			

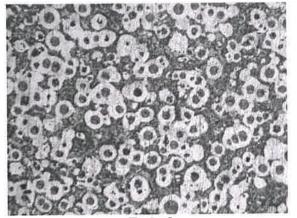
Test Results

Etchant- 4% Nital

Etching Condition- Immersion-Etching



Unetched



Etched

Total Magnification-1002	Y.
--------------------------	----

Specimen Dimension-	Sample Cut Piece				
Observation (Unetched)	(33)				
Observation (Etched)	Pearlitic matrix is observed with following percentage of Ferrite and Pearlite.				
Graphite Analysis (Unetched Area) Phase Analysis (Etched Area)			alysis (Etched Area)		
Frame Area (mm²)	0.959 mm ²	Pearlite (%)	44.60		
Nodularity (%)	92%	Ferrite (%)	55.40		
Nodule Count/mm ²	235	Carbide (%)	-		

For VCK Foundry Technology

Authorized Signature

Nodal Officer

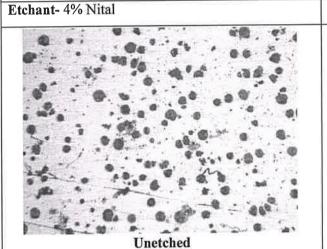
Format No.-AMS/TR/10-R.00------------------End of Report--B.Voc. & Community College Unit. Vivekanand College, Kolhapur

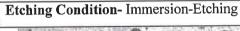


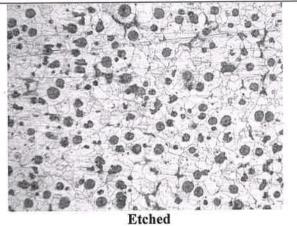


Test Repor	t- Micro Structural Analys	is of Nodular (Cast Iron	
	Test Certificate No	2711185	Dat	e- 27/11/2018
r Name	Trio Enterprises B-4, Shiroli MIDC, Kolhap	our		
le Received	Date of Test Completion	on Sample Name		
2018	27/11/2018	Belt Wheel		
Challan No.	Test Method	Part No	Heat No	Grade
1965	ASTM-E-2567-16a ASTM-E-1245:2016	A STATE	21M18	SG 400/12
	r Name le Received 2018 Challan No.	Test Certificate No Trio Enterprises B-4, Shiroli MIDC, Kolhar le Received Date of Test Completion 2018 Challan No. Test Method ASTM-E-2567-16a	Test Certificate No2711185 Trio Enterprises B-4, Shiroli MIDC, Kolhapur Ie Received Date of Test Completion Security	Trio Enterprises B-4, Shiroli MIDC, Kolhapur le Received Date of Test Completion Sample Name 2018 27/11/2018 Belt Wheel Challan No. Test Method Part No Heat No 1965 ASTM-E-2567-16a 21M18

Test Results







Total Magnification-100X

Specimen Dimension-	Sample Cut Piece			
Observation (Unetched)) ()			
Observation (Etched)	Pearlitic matrix is observed with following percentage of Ferrite and Pearlite.			
Graphite Analysis (Unetched Area)		Phase Analysis (Etched Area)		
Frame Area (mm²)	0.959 mm ²	Pearlite (%)	81.50	
Nodularity (%)	93%	Ferrite (%)	18.50	
Nodule Count/mm ²	218	Carbide (%)	-	

For VCK Foundry Technology

B.Voc. & Community College Unit.

Vivekanand College, Kolhaput



Gat No. 194, Hanuman nagar, Shiye, MIDC Shiroli, Kolhapur. 416 122 Email: atlantametalab@gmail.com Cell: +91-8421246069 +91-9595401694

- Metallurgical Testing
- **♠** Failure Analysis
- ◆ Heat Treat Process Analysis
- Material Solutions
- **★** Metallurgical Consulting

Date-30/12/2018

To

Nodal Officer

Dept. of Foundry Technology

Vivekanand College, Kolhapur

Subject- To provide collaborated testing and consultancy services

Dear sir,

We have metallurgical testing and consultancy setup in MIDC Shiroli, Kolhapur. We are collaborated with your department of foundry technology. We have requirement of metallurgical testing at your end.

As department of Foundry technology has established a testing setup which is very useful for industrial purpose, we are requesting you to provide necessary support regarding the same. We are attaching a list of samples and details of test requirements along with this letter.

Thanking you,

SERVICES *

Yours Sincerely,

Director

Atlanta Metallurgical Services



- Metallurgical Testing
- ♠ Failure Analysis
- ♠ Heat Treat Process Analysis
- **■** Material Solutions
- **★** Metallurgical Consulting

• Details of work required-

Sr. No.	Name of Company	Test Required	No. of Samples
1	Param Industries	Microstructure of Hardened Steel	1
2	Padmavati Auto Components	Microstructure of Cast Iron	1
3	Perfect Pins	Grain Boundary Oxidation analysis of hardened Steel	1
4	Unique Auto Shafts	Microstructural Analysis of Induction Hardened steel	1



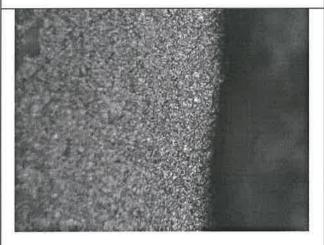


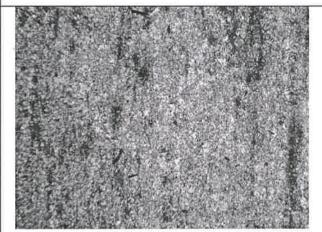


		Test Report- Micro Struct	tural Analysis		
Lab ID- M 2704	ļ	Test Certificate No	01011910	D	ate- 01/01/2019
C /	NI	Param Industries			
Custome	r Name	Plot noA/80; Laxmi Ind. Es	state, Hatkanangle,	Kolhapur.	
Date of Samp	le Received	Date of Test Completion	Sample Name		
30/12/	2018	01/01/2019	Plain Balancer Shaft-Top		:-Тор
Challan Date	Challan No.	Test Method	Heat Code Qty. Gra		
30/12/2018	171	ASTM-E-1245:2016		72	16MnCr5
		ASTM-E-562:2011			

Etchant- 4% Nital

Etching Condition- Immersion-Etching





Case region-Total Magnification-200X		Core Region-Total Magn	nification-100X		
Specimen Dimension-	Sample Cut Piece				
Type of Structure Observed	In case region, Tempered Martensite is observed with some amount of Carbides and less than 5 % Retained Austenite. Core region shows Low carbon tempered Martensite with some amount of Bainite and Ferrite.				
Area Fraction-Case Region	Tempered Martensite (%) Retained Austenite (%) Carbides (%)				
	95.85 2.50 1.65				

For VCK Foundry Technology

Format No.-AMS/TR/11-R.00-----End of Report--

Nodal Officer

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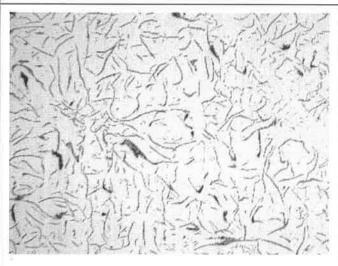




	Test Repor	t- Microstructural Analys	is of Graphite i	in Cast Iron	
Lab ID- M 2720		Test Certificate No	No. -04011917 Date - 04/01/20		
Contant	NI	Padmavati Auto Components	S	I	
Custome	r Name	2498, Vivekanand Nagar, Ko	orochi, Hatkanang	gle, Kolhapur,	
Date of Samp	le Received	Date of Test Completion	Sample Name		
04/01/2	2019	04/01/2019	Cover Thermostat		
Challan Date	Challan No.	Test Method	Part No Heat No Grade		
02/01/2019	106	IS-7754:2018	R 505727	185	3 444 3
		ASTM-E-562:2011			

Etchant- Unetched Etching Condition- NA





Total Magnification-100X

Observation-Predominantly A types of Graphite flakes are observed with some B type are observed.

Sample-1 Average		ASTM Class			
		4-6			
Graphite type distribution	Type A(%)	Type B(%)	Type C(%)	Type D(%)	Type E(%)
Average	87 to 89	11 to 13			3)
				Continued o	n nevt nage





		Test Report- Volume Frac	tion of phases		
Lab ID- M 2720		Test Certificate No	-04011917	D	ate- 04/01/2019
a	NT	Padmavati Auto Components			
Custome	er Name	2498, Vivekanand Nagar, Kor	ochi, Hatkanangle,	Kolhapur.	
Date of Samp	ole Received	Date of Test Completion	Sample Name		
04/01/	2019	04/01/2019	Cover Thermostat		
Challan Date	Challan No.	Test Method	Part No	Heat No	Grade
02/01/2019	106	ASTM-E-1245:2016	R 505727	185	==
		ASTM-E-562:2011			

Etchant- 4% Nital

Etching Condition- Immersion-Etching



Total Magnification-100X

Observation- Segregated Ferrite is observed in the structure. Pearlitic matrix is observed with following percentage of Ferrite and Pearlite.

Sample-1	Frame Area(mm)	Pearlite (%)	Ferrite (%)	Steadite (%)
Average	0.936	76.90	23.10	7 == :

For VCK Foundry Technology

Authorized Signature

Nodal Officer

B.Voc. & Community College Unit.

Vivekanand College, Kolhapur

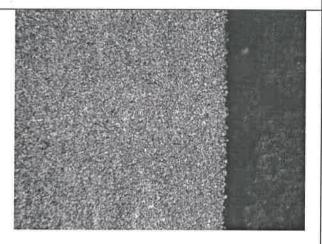


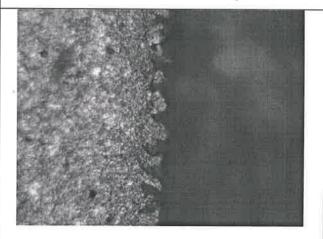


	Т	est Report- Micro Structu	ral Analysis		
Lab ID- M 2785		Test Certificate No	1901193	D	ate- 19/01/2019
~		Perfect Pins			
Custome	er Name	D-3, MIDC Shiroli, Kolhapu	ır,		
Date of Sample Received 19/01/2019		Date of Test Completion Sample Nam		e	
		19/01/2019	Te	Telcon Pin-12360	
Challan Date	Challan No.	Test Method	Heat Code	Qty.	Grade
		ASTM-E-1245:2016		-	
		ASTM-E-562:2011			ľ

Etchant- 4% Nital

Etching Condition- Immersion-Etching





O	B.E. 10 11 400ET
L age region- Lotal	Vigonification-IIIIX
Cube region-rotar	Magnification-100X

Case Region-Total Magnification-500X

Sample Cut Piece			
In case region, Tempered Martensite is observed with some amount of			
Carbides and more than 10% Retained Austenite.			
Grain Boundary Oxidation was observed (Avg16 μm) in the structure.			
Tempered Martensite (%)	Retained Austenite (%)	Carbides (%)	
86.45	10.85	2.70	
	Carbides and more than 10 Grain Boundary Oxidation Tempered Martensite (%)	In case region, Tempered Martensite is observed we Carbides and more than 10% Retained Austenite. Grain Boundary Oxidation was observed (Avg16 μm Tempered Martensite (%) Retained Austenite (%)	

For VCK Foundry Technology

Authorized Signature

--End of Report-----

Nodal Officer

B.Voc. & Community College Unit. Vivekanand College, Kolhapur



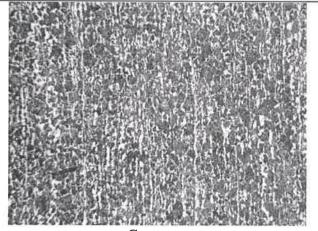


	Te	est Report- Micro Structur	ral Analysis		
Lab ID- M 2796		Test Certificate No2	20011916	Da	ite- 20/01/2019
Customer Name		Unique Auto Shafts			
Custome	i Name	Plot no87,88; Ichalkaranji Ind. Co-Op Estate, Shahapur, Ichalkara			chalkaranji.
Date of Sample Received 19/01/2019		Date of Test Completion	5	Sample Name	
		20/01/2019 Shaft B-		-C-Range-R-138533	
Challan Date	Challan No.	Test Method	Batch Code	Qty.	Grade
19/01/2019	10676	ASTM-E-1245:2016 ASTM-E-562:2011	A1 U-19	STATE OF THE PARTY.	

Etchant- 4% Nital

From 2.5 to 3.5mm

Etching Condition- Immersion-Etching



Core area

Total Magnification-100	Total Magnification-100X
Specimen Dimension-	Sample Cut Section
50% Martensitic Depth	50% Martensitic area is observed at 2.80mm.
Type of Structure Observed-	Core region shows Banded-Ferrito-Pearlitic structure.
(Core Region) Ferrite-36.20 % & Pearlite-63.80 %.	

For VCK Foundry Technology

Authorized Signature

Format No.-AMS/TR/07-R.00----

-----End of Report--

Nedal Officer

B.Voc. & Community College Unit. Vivekanand College, Kolhapur



Gat No. 194, Hanuman nagar, Shiye, MIDC Shiroli, Kolhapur, 416 122 Email: atlantametalab@gmail.com Cell: +91-8421246069 +91-9595401694

- Metallurgical Testing
- Failure Analysis
- Heat Treat Process Analysis
- Material Solutions
- **★** Metallurgical Consulting

Date-18/01/2019

To

Nodal Officer

Dept. of Foundry Technology

Vivekanand College, Kolhapur

Subject- To provide collaborated testing and consultancy services

Dear sir,

We have metallurgical testing and consultancy setup in MIDC Shiroli, Kolhapur. We are collaborated with your department of foundry technology. We have requirement of metallurgical testing at your end.

As department of Foundry technology has established a testing setup which is very useful for industrial purpose, we are requesting you to provide necessary support regarding the same. We are attaching a list of samples and details of test requirements along with this letter.

Thanking you,

Yours Sincerely,

Director

Atlanta Metallurgical Services



ATLANTA METALLURGICAL SERVICES

Gat No. 194, Hanuman nagar, Shiye, MIDC Shiroli, Kolhapur. 416 122 Email: atlantametalab@gmail.com Cell: +91-8421246069 +91-9595401694

- Metallurgical Testing
- Failure Analysis
- Heat Treat Process Analysis
- Material Solutions
- Metallurgical Consulting

Name of Company	Test Required	No. of Samples
Unique Auto Shaft	Microstructure of Hardened Steel	1
Unique Auto Shaft	ITP Analysis	1
Unique Auto Shaft	ITP Analysis	1
	Unique Auto Shaft	Unique Auto Shaft Microstructure of Hardened Steel Unique Auto Shaft ITP Analysis

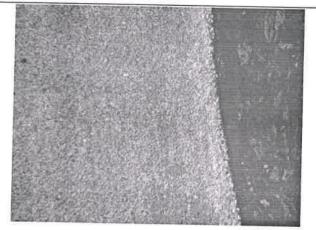


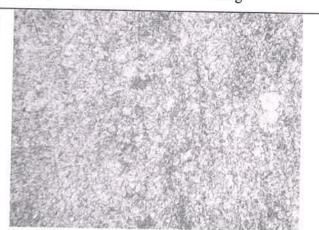


	Test Report- Micro Structu	TEHNING		
	Test Certificate No2	20011917	D	ate- 20/01/2019
	Unique Auto Shafts			
ше	Plot no87,88; Ichalkaranji	Ind. Co-Op Estate	, Shahapur, Io	chalkaranji.
eceived	Date of Test Completion	on Sample Name		
	20/01/2019	5 th & Reverse Shift Rail-3361320		I-3361320
allan No.	Test Method	70		Grade
10676	ASTM-E-1245:2016	M1		
	allan No.	Unique Auto Shafts Plot no87,88; Ichalkaranji i eccived Date of Test Completion 20/01/2019 Test Method	Plot no87,88; Ichalkaranji Ind. Co-Op Estate eccived Date of Test Completion S 20/01/2019 5 th & Reve allan No. Test Method Batch Code 10676 ASTM-E-1245:2016 M1	Unique Auto Shafts Plot no87,88; Ichalkaranji Ind. Co-Op Estate, Shahapur, Ideceived Date of Test Completion Sample Name 20/01/2019 5 th & Reverse Shift Rail allan No. Test Method Batch Code Qty. 10676 ASTM-E-1245:2016 M1

Test Details

Etchant- 4% Nital Etching Condition-Immersion-Etching





Core Region-Total Magnification-100X

		Core Region-Total Magnification-100X		
Specimen Dimension-	Sample Cut Piece			
Type of Structure Observed	In case region, Tempered Martensite is observed Nil Carbides and less than 5% Retained Austenite. Core region shows Low carbon tempered Martensite with some amount of Bainite and Ferrite.			
Area Fraction-Case Region	Tempered Martensite (%)	Retained Austenite (%)	Carbides (%)	
	98.50	1.50	Nil	
70 (1 1)				

Tested By-

For VCK Foundry Technology Dept.

Authorized Signatory

Format No.-AMS/TR/11-R.00------End of Report-----

Nodal Officer

B.Voc. & Community College Unit.

Vivekanand College, Kolhapur

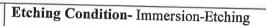


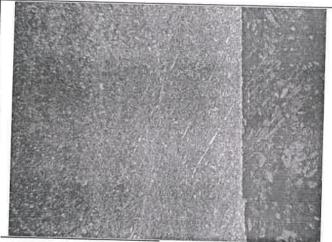


	T	Cest Report-Micro Struct	tural Analysis		
Lab ID- M 2796		Test Certificate No	-20011916		Date- 20/01/2019
Customer Name		Unique Auto Shafts			
		Plot no87,88; Ichalkaranji Ind. Co-Op Estate, Shahapur, Ichalkaranji.			
Date of Sample Received		Date of Test Completion		Sample Name	
19/01/2019		20/01/2019	Shaft B-C-Range-R-138533		
Challan Date	Challan No.	Test Method	Batch Code	Qty.	Grade
19/01/2019	10676	ASTM-E-1245:2016	A1 U-19		
		ASTM-E-562:2011			

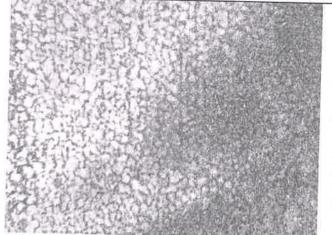
Test Details

Etchant- 4% Nital





Near Surface



From 1.5mm to 2.5mm

Total Magnification-100X				
Specimen Dimension-	Sample Cut Section			
Type of Structure Observed-	Fine Tempered Martensite is observed near surface with 1.25 % Retained Austenite.			
(Case Region)	Carbides are not observed in the structure. Decarburization was not observed.			
5% ITP Depth-	Intermediate Transformation Product is observed near surface at 2.20mm (around 5%).			
M				

Tested By-

For VCK Foundry Technology Dept.

Authorized Signatory

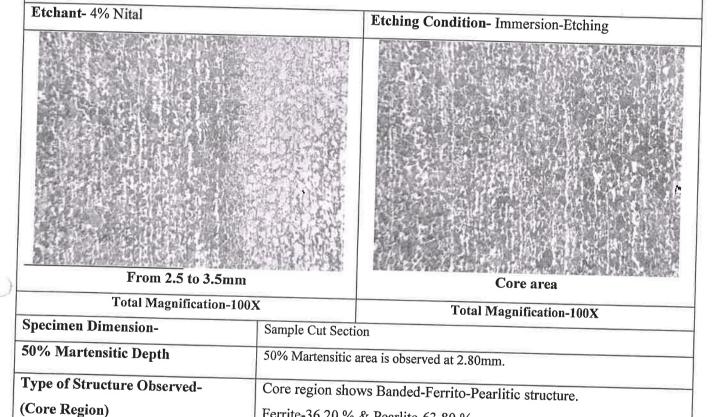
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The state of the s				1704
T	est Report- Micro Structu	ral Analysis		
	Test Certificate No	20011916	D	ate- 20/01/201
er Name	Unique Auto Shafts			
a range	Plot no87,88; Ichalkaranji	Ind. Co-Op Estate	e, Shahapur, I	chalkaranji.
ole Received	Date of Test Completion			
2019	20/01/2019	Shaft B-C-Range-R-138533		
Challan No.	Test Method	Batch Code	Qty.	Grade
10676	ASTM-E-1245:2016 ASTM-E-562:2011	A1 U-19	(MARKA)	
	or Name Die Received 2019 Challan No.	Test Certificate No Unique Auto Shafts Plot no87,88; Ichalkaranji Dle Received Date of Test Completion 2019 20/01/2019 Challan No. Test Method 10676 ASTM-E-1245:2016	Plot no87,88; Ichalkaranji Ind. Co-Op Estate Date of Test Completion 2019 20/01/2019 Shaft B Challan No. Test Method Batch Code 10676 ASTM-E-1245:2016 A1 U-19	Test Certificate No20011916 Unique Auto Shafts Plot no87,88; Ichalkaranji Ind. Co-Op Estate, Shahapur, Idele Received Date of Test Completion Sample Name 2019 20/01/2019 Shaft B-C-Range-R-1 Challan No. Test Method Batch Code Qty.

Test Details



Ferrite-36.20 % & Pearlite-63.80 %.

Tested By-

For VCK Foundry Technology Dept.

Authorized Signatory

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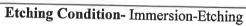


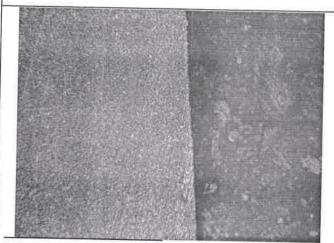


	Т	est Report- Micro Struct	ural Analysis		
Lab ID- M 2798		Test Certificate No	20011918]	Date- 20/01/2019
Customer	r Nama	Unique Auto Shafts			
Customer Name		Plot no87,88; Ichalkaranji	i Ind. Co-Op Esta	te, Shahapur, I	chalkaranji.
Date of Samp	le Received	Date of Test Completion		Sample Name	e
19/01/2	2019	20/01/2019 Shifter Shaft (Reverse) 2691 2651 7918		91 2651 7918	
Challan Date	Challan No.	Test Method	Batch Code	Qty.	Grade
19/01/2019	10676	ASTM-E-1245:2016	A1 U19		92045
		ASTM-E-562:2011			

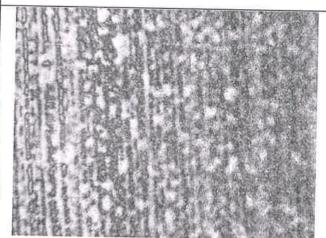
Test Details

Etchant- 4% Nital





Near Surface



From 2.5mm to 3.5mm

Total Magnification-100X		
Specimen Dimension-	Sample Cut Section	
Type of Structure Observed-	Fine Tempered Martensite is observed near surface with 1.05 % Retained Austenite.	
(Case Region)	Carbides are not observed in the structure. Decarburization was not observed.	
5% ITP Depth-	Intermediate Transformation Product is observed near surface at 3.10mm (around 5%).	
T-4. ID		

Tested By-

For VCK Foundry Technology Dept.

Authorized Signatory

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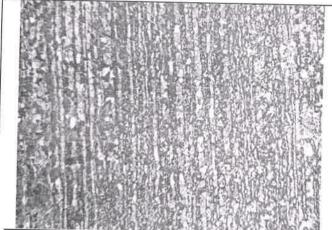




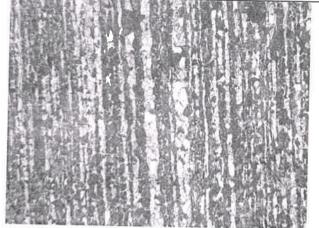
					1001
	T	est Report- Micro Structu	ral Analysis		
Lab ID- M 2798		Test Certificate No	20011918	D	ate- 20/01/201
Customer Name		Unique Auto Shafts			
	or i (alife	Plot no87,88; Ichalkaranji	Ind. Co-Op Estate	e, Shahapur, I	chalkaranji.
Date of Sam	ple Received	Date of Test Completion	S	Sample Name	
19/01/	/2019	20/01/2019	Shifter Shaft	(Reverse) 269	1 2651 7918
Challan Date	Challan No.	Test Method	Batch Code	Qty.	Grade
19/01/2019	10676	ASTM-E-1245:2016	A1 U19	,====	WWW.
		ASTM-E-562:2011			

Test Details

Etchant- 4% Nital Etching Condition-Immersion-Etching



From 3.5 to 4.5mm



Core area

Total Magnification-100X Total Magnification-100X Specimen Dimension-Sample Cut Section 50% Martensitic area is observed at 3.80mm. 50% Martensitic Depth Type of Structure Observed-Core region shows Banded-Ferrito-Pearlitic structure. (Core Region) Ferrite-35.80 % & Pearlite-64.20 %.

Tested By-

For VCK Foundry Technology Dept.

Authorized Signatory

Format No.-AMS/TR/07-R.00------End of Report-----



Gat No. 194, Hanuman nagar, Shiye, MIDC Shiroli, Kolhapur. 416 122
Email: atlantametalab@gmail.com Cell: +91-8421246069 +91-9595401694

- Metallurgical Testing
- Failure Analysis
- Heat Treat Process Analysis
- Material Solutions
- Metallurgical Consulting

Date-17/02/2019

To

Nodal Officer

Dept. of Foundry Technology

Vivekanand College, Kolhapur

Subject- To provide collaborated testing and consultancy services

Dear sir,

We have metallurgical testing and consultancy setup in MIDC Shiroli, Kolhapur. We are collaborated with your department of foundry technology. We have requirement of metallurgical testing at your end.

As department of Foundry technology has established a testing setup which is very useful for industrial purpose, we are requesting you to provide necessary support regarding the same. We are attaching a list of samples and details of test requirements along with this letter.

Thanking you,

Yours Sincerely,

Director

Atlanta Metallurgical Services



ATLANTA METALLURGICAL SERVICES

Gat No. 194, Hanuman nagar, Shiye, MIDC Shiroli, Kolhapur. 416 122 Email: atlantametalab@gmail.com Cell: +91-8421246069 +91-9595401694

- Metallurgical Testing
- **●** Failure Analysis
- Heat Treat Process Analysis
- ♠ Material Solutions
- **★** Metallurgical Consulting

• Details of work required-

Sr. No.	Name of Company	Test Required	No. of Samples
		·	
1	Manugraph India Ltd.	Microstructure of Die Steel	1
2	Manugraph India LtdUnit-II	Microstructural Analysis of Hardened steel	1
3	Unique Auto Shafts	Microstructural Analysis of Induction Hardened steel	1



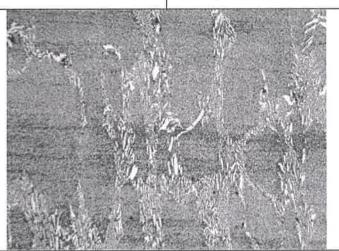




		Test Report- Micro Stru	ctural Analysis		
Lab ID- M 2781		Test Certificate No	 20021914	D	ate- 20/02/2019
~ ·		Manugraph India Ltd.			
Custome	r Name	Unit No2, Kodoli, Panhala, Kolhapur.			
Date of Sample Received		Date of Test Completion	San	nple Name	
18/02/2019		20/02/2019	Test Piece-D3-Tool Steel		eel
Challan Date	Challan No.	Test Method	Heat Code	Qty.	Grade
17/02/2019	117098	ASTM-E-1245:2016	<u> </u>	-	AISI-D-3
		ASTM-E-562:2011			

Etchant- 4% Nital

Etching Condition- Immersion-Etching



Total Magnification-100X

Specimen Dimension-	Sample Cut Piece			
Type of Structure Observed-	Un-dissolved, medium coarse Carbides are observed in the matrix of			
	Tempered Martensite with a small amount of Retained Austenite.			
Area Fraction-Case Region	Tempered Martensite (%)	Retained Austenite (%)	Carbides (%)	
	85.50	2.20	12.30	

For VCK Foundry Technology

Authorized Signature

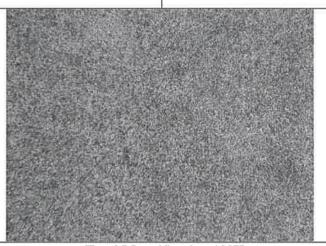
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Page 1 of 1





		Test Report- Micro	Structural Analysis		
Lab ID- M 278	2	Test Certifica	te No20021915	Da	ite- 20/02/2019
		Manugraph India Ltd.			
Custome	r Name	Unit No2, Kodoli, Panl	nala, Kolhapur.		
Date of Sample Received		Date of Test Completio	on Sample Name		
18/02/	2019	20/02/2019	Test Piece-EN-31		
Challan Date	Challan No.	Test Method	Heat Code	Qty.	Grade
17/02/2019	117098	ASTM-E-1245:2016	.5:	-	EN-31
		ASTM-E-562:2011			
		Test D	etails	h)	
Etchant- 4% Nital			Etching Condition- Imme	ersion-Etching	



Total Magnification-100X

Specimen Dimension-	Sample Cut Piece			
Type of Structure Observed-	Tempered Martensite is observed with less than 5% Retained Austenite.			
Area Fraction-Case Region	Tempered Martensite (%)	Retained Austenite (%)	Carbides (%)	
it.	97.65	2.35	Nil	

For VCK Foundry Technology

Johnson

Authorized Signature

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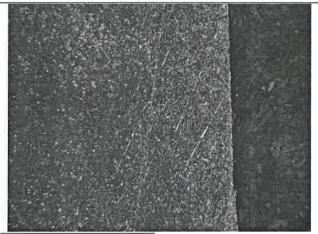




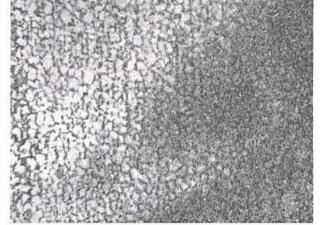
	T	est Report- Micro Struct	ural Analysis	×	
Lab ID- M 2796		Test Certificate No	20021916	D	Pate- 20/02/2019
Customer Name		Unique Auto Shafts			
Customer	Name	Plot no87,88; Ichalkaranji Ind. Co-Op Estate, Shahapur, Ichalkaranji.			halkaranji.
Date of Sample Received		Date of Test Completion	Sample Name		
19/02/2019		20/02/2019 Shaft B-C-Range-R-138533		38533	
Challan Date	Challan No.	Test Method	Batch Code	Qty.	Grade
19/02/2019	10676	ASTM-E-1245:2016	A1 U-19	33 4 (344) (344)) *****);
		ASTM-E-562:2011			

Etchant- 4% Nital

Etching Condition- Immersion-Etching



Near Surface



From 1.5mm to 2.5mm

Total Magnification-100X		
Specimen Dimension-	Sample Cut Section	
Type of Structure Observed-	Fine Tempered Martensite is observed near surface with 1.25 % Retained Austenite.	
(Case Region)	Carbides are not observed in the structure. Decarburization was not observed.	
5% ITP Depth-	Intermediate Transformation Product is observed near surface at 2.20mm (around 5%).	

For VCK Foundry Technology

Toke

Authorized Signature

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