



**BENCHMARK  
FOR INDIAN  
BRIGHT STEEL  
MANUFACTURING**



**ARKKAYS**



[www.arkkays.com](http://www.arkkays.com)



**BRIGHT  
STEEL  
BARS**





**ARKKAYS**

**BRIGHT STEEL BARS**



Arkkays National Engineering and Foundry Company was established in the year 1964 by Ramchand K. Bulchandani and is currently headed by Ashok R. Bulchandani

We are the largest manufacturer of bright steel bars in India with a production capacity of over 72000 metric tons per annum.

Our manufacturing plant is located in Irrungattukottai, Sriperumbudur in the heart of the fastest growing industrial zone in South India, in close proximity to the Ennore and Chennai ports.

Arkkays has the distinction of being the first bright steel bar company in the country to be certified ISO 9000:1994 in November, 1998.

With a vast array of bright steel products ranging from carbon to stainless steel, we manufacture over a 100 grades of bright steel bars in various shapes and sizes for our discerning customers.



A qualified and dedicated workforce with a strong focus on quality, expertise in production and a Customer First Policy have helped Arkkays enjoy a continuous and sustained growth over the last 50 years.

We look forward to being your proactive supply chain partner.





ARIK

FACTORY







Spread over 5  $\frac{1}{2}$  acres, our 140,000 square foot plant is the largest and most sophisticated bright steel manufacturing facility in the country, boasting state of the art equipment supplied by world class OEMs from around the globe.

In addition, as part of our commitment to complete transparency and integration between all functions within the company, we run on SAP ECC 6.0, online since April 2011.

Process	Capacity(MTPA)
Cold drawing	54,000
Centreless peeling	18,000
Centreless grinding	6,000



We follow a comprehensive methodology of testing, from incoming raw materials to shipment of finished products.

Our laboratory is fully equipped with advanced instrumentation to provide the most efficient and reliable testing services.



Metals Analysis

Optical emission spectrometer



Metallography

Metallurgical Microscope  
with image analyser



Mechanical Testing

Universal Testing Machine  
Brinell Hardness Tester  
Rockwell Hardness Tester  
Vickers Hardness Tester



## Surface Testing

Finished products must pass through a rigorous non-destructive testing for surface defects according to **DIN EN 10277-1:1999-10<sup>1</sup>** class 2/3 for cold drawn bars and **DIN EN 10277:1999-10<sup>1</sup>** class 4 for centreless peeled and centreless ground bars.

## Internal Testing

Ultrasonic testing on bright steel bars can be carried out according to **DIN EN 10308:2002-03<sup>2</sup>**.

1 - refer to annexure A: Table 1  
2 - refer to annexure A: Table 2



Magnetic Particle Inspection Test Bench



Multimac Eddy Current Tester



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**PRODUCTS**





We produce high quality bright steel bars in cold drawn, centerless peeled, centerless ground and heat treated conditions as primary input for various

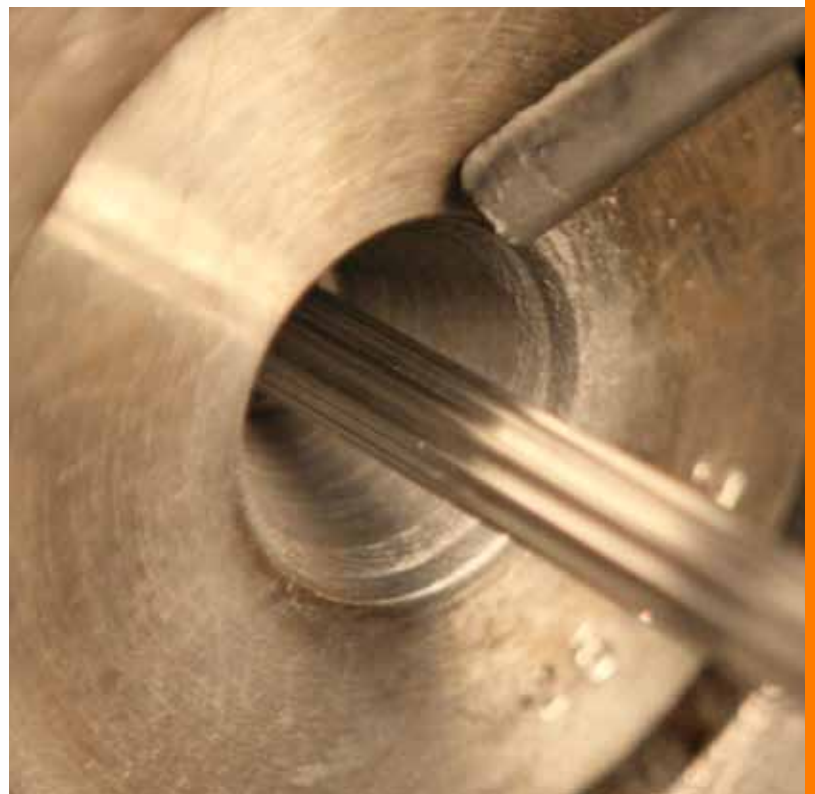
processes such as machining, cold forging, case hardening, quenching and tempering according to various international standards.

Product	Shape	Size (mm)		Length (mm)		Tolerance
		min	max	min	max	as per en10278
Cold Drawn	Round	5	80	10	6000	h9
	Hexagon	5	70	10	6000	h11
	Square	5	56	10	6000	h11
	Profile	Diagonal max 80		10	6000	h8
Centerless Peeled	Round	15	80	10	6000	h9
Centerless Ground	Round	5	56	10	6000	h7

Arkkays' bright steel bars are used in every sector of manufacturing right from automotive to aerospace.

We bring our 50 years of bright steel manufacturing experience to our exacting customers with an outstanding quality of product, service and knowledge.

Our excellent relationship with our suppliers gives us access to virtually every steel grade required for any application.







Our production of carbon steel bright bars covers the entire range of applications, from general engineering products to highly specialised components.

Special applications include steering columns, stabilizer bars and alternator shafts.



## POPULAR GRADES

GRADE	COUNTRY	GRADE	COUNTRY	GRADE	COUNTRY
C10	GERMANY (DIN EN)	C45R	GERMANY (DIN EN)	SAE 1043	USA (AISI SAE)
C10R		C50		SAE 1045	
C15		C50E		SAE 1055	
C15R		C60		SAE 1065	
C16		C60E		S15C	JAPAN (JIS)
C16R		C60R		S35C	
C35		SAE 1008	S45C		
C35E		SAE 1010	S48C	UK (BS 970)	
C35R		SAE 1015	EN3B		
C40		SAE 1018	EN32B		
C40E		SAE 1020	EN8		
C40R		SAE 1026	EN8A		
C45		SAE 1035	EN8D		
C45E		SAE 1038	EN9		

**PLEASE CALL US OR REFER TO THE ARKKAYS HAND BOOK FOR THE COMPLETE LIST OF GRADES AND OTHER TECHNICAL DATA.**





We produce high quality free cutting steel bright bars supplied primarily by our collaborator Saerstahl AG, to the most stringent standards required for hydraulic and CRDI applications.

To gain improved machinability, Bismuth(Bi), Tellurium(Te), and Selenium(Se) free cutting steels and from Saerstahl AG can be supplied.

Our free cutting range includes carbon steels with the addition of lead (Pb) for improved machinability, supplied by Saerstahl AG.

Special applications include screw plugs, pump plungers, banjo bolts and hydraulic fittings.



## POPULAR GRADES

GRADE	COUNTRY	GRADE	COUNTRY	GRADE	COUNTRY
11SMn30	GERMANY (DIN EN)	44SMn28	GERMANY (DIN EN)	60SPb20 Bi	GERMANY (DIN EN)
11SMNPb30		44SMnPb28		SAE1117	USA (AISI SAE)
11SMn37		46S20		SAE1144	
11SMnPb37		46SPb20		SAE1212	
10S20		60SPb20		SAE 1213	
10SPb20		C10R Pb		SAE 12L14	
15SMn13		C15R Pb		SAE 1215	JAPAN (JIS)
35S20		C35R Pb		SUM 22	
35SPb20		C45R Pb		SUM 24L	UK (BS 970)
36SMn14		C4C Pb		EN1A	
36SMnPb14		C8C Pb		EN1AL	
38SMn28		C10C Pb		EN8M	
38SMnPb28		C60R Pb		EN15AM	

**PLEASE CALL US OR REFER TO THE ARKKAYS HAND BOOK FOR THE COMPLETE LIST OF GRADES AND OTHER TECHNICAL DATA.**





Our alloy and bearing steel bright bars are manufactured to stringent quality standards for further processes that require 'zero' defect, close tolerances and evenly distributed fine microstructures that promote enhanced mechanical properties through various kinds of heat treatment.

Special applications include rocker arm shafts, gudgeon pins, pistons, fuel injection nozzles and spindles.



### POPULAR GRADES

GRADE	COUNTRY	GRADE	COUNTRY	GRADE	COUNTRY
16MnCrS5	GERMANY (DIN EN)	42CrMoS4	GERMANY (DIN EN)	SAE 8640	USA (AISI SAE)
16MnCrB5		34CrNiMo6		SAE 8650	
20MnCrS5		100Cr6		SAE 52100	
16NiCrS4		51CrV4		SCM 415H	JAPAN (JIS)
15NiCr13		SAE 4130	SCM 420H		
18CrNi8		SAE 4140	SCM 435H		
20NiCrMoS2-2		USA (AISI SAE)	SAE 4142	SUJ2	UK (BS 970)
17NiCrMoS6-4			SAE 4150	EN19	
34CrS4			SAE 4340	EN18D	
41CrS4			SAE 8620	EN24	
25CrMoS4	SAE 8630		EN31		

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ARKKAYS

**BRIGHT STEEL  
PROFILE BARS**





## Annexure A

**Table 1**

<b>SURFACE QUALITY AS PER DIN EN 10277-1:1999</b>				
<b>Condition</b>	<b>Class</b>			
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Permissible defect depth	max 0.3 mm for $d \leq 15$ mm; max 0.02 for $15 < d \leq 100$ mm	max 0.3 mm for $d \leq 15$ mm; max 0.02 for $15 < d \leq 75$ mm; max 1.5 mm for $d > 75$ mm	max 0.2 mm for $d \leq 20$ mm; max 0.01 for $20 < d \leq 75$ mm; max 0.75 mm for $d > 75$ mm	technically crack free by manufacture
Maximum percentage of delivered weight in excess of specified defect level	4%	1%	1%	0.02%
Product form				
Rounds	+	+	+	+
Squares	+	+(for $d \leq 20$ mm)	-	-
Hexagons	+	+(for $d \leq 50$ mm)	-	-
Flats	+	-	-	-

+ indicates available in this classes, - indicates not available in this classes

**Table 2**

### **QUALITY CLASSES, RECORDING LEVEL AND ACCEPTANCE CRITERIA FOR FERRITIC AND MARTENSITIC STEEL BARS AS PER DIN EN 10308:2002-03**

<b>Parameter</b>	<b>Quality class</b>			
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Recording level				
Equivalent flat bottomed holes (EFBH) $d_{eq}$ mm a	>8	>5	>3	>2
Ratio R for rapid backwall echo reduction bc	$\leq 0.1$	$\leq 0.3$	$\leq 0.5$	$\leq 0.5$
Acceptance criteria				
EFBH (Isolated point type discontinuities) $d_{eq}$ mm a	$\leq 12$	$\leq 8$	$\leq 5$	$\leq 3$
EFBH (Extended or grouped point type discontinuities) $d_{eq}$ mm a	$\leq 8$	$\leq 5$	$\leq 3$	$\leq 2$

a  $d_{eq}$  = Equivalent diameter of flat bottomed hole



## Annexure B

**Table 1**

<b>DIMENSIONAL TOLERANCES AS PER DIN EN 10278:1999</b>								
<b>Nominal dimension(mm)</b>		<b>Tolerance class to ISO 286-2</b>						
from	to	h6	h7	h8	h9	h10	h11	h12
1	3	-0.006	-0.010	-0.014	-0.025	-0.040	-0.060	-0.100
3	6	-0.008	-0.012	-0.018	-0.030	-0.048	-0.075	-0.120
6	10	-0.009	-0.015	-0.022	-0.036	-0.058	-0.090	-0.150
10	18	-0.011	-0.018	-0.027	-0.043	-0.070	-0.110	-0.180
18	30	-0.013	-0.021	-0.033	-0.052	-0.084	-0.130	-0.210
30	50	-0.016	-0.025	-0.039	-0.062	-0.100	-0.160	-0.250
50	80	-0.019	-0.030	-0.046	-0.074	-0.120	-0.190	-0.300

**Table 2**

<b>STRAIGHTNESS TOLERANCE AS PER DIN EN 10278:1999</b>			
<b>Product form</b>	<b>Steel group</b>	<b>Nominal dimension</b>	<b>Deviation in 1 metre max(mm)</b>
Rounds	< 0.25 % C		1.0
„	≥ 0.25 % C, alloy steels, quenched & tempered steels		1.5
„	stainless steels , bearing steels, tool steels		1.0
Squares & Hexagons	< 0.25 % C	d ≤ 75 mm	1.0
„	≥ 0.25 % C, alloy steels, quenched & tempered steels	d ≤ 75 mm	2.0
„	stainless steels , bearing steels, tool steels	d ≤ 75 mm	1.0
„	< 0.25 % C	d > 75 mm	1.5
„	≥ 0.25 % C, alloy steels, quenched & tempered steels	d > 75 mm	2.5
„	stainless steels , bearing steels, tool steels	d > 75 mm	1.5
Flats		width	on width
„	< 0.25 % C	W < 120 mm	1.5
„	≥ 0.25 % C, alloy steels, quenched & tempered steels	W < 120 mm	1.5
„	stainless steels , bearing steels, tool steels	W < 120 mm	1.5
			on thickness
„	< 0.25 % C	W < 120 mm	1.5
„	≥ 0.25 % C, alloy steels, quenched & tempered steels	W < 120 mm	2.0
„	stainless steels , bearing steels, tool steels	W < 120 mm	2.0





Arkkays National Engineering & Foundry Company is committed to total quality which shall be achieved by timely delivery of quality products to the entire satisfaction of the customer and by continually improving its quality management system processes.

Ashok Bulchandani  
Managing Director




## CERTIFICATE

The Certification Body  
of TÜV SÜD Management Service GmbH  
certifies that

**ARKKAYS National Engineering & Fdry Company**  
B-73, Sipcot Industrial Park, Irrungattukottai, Sriperumbudur  
Tamil Nadu - 602117  
INDIA

has established and applies  
a Quality Management System for

**Manufacture of Bright Steel Bars and Machining of  
metal Components for Automotive Application**  
(without Product Design as per Chapter 8.3).

An audit was performed and has furnished proof  
that the requirements according to

**IATF 16949**  
First Edition 2016-10-01

are fulfilled.

Issue date: **2018-07-25**  
Expiry date: **2021-07-24**

Certificate Registration No.: **12 111 47281 TMS**  
IATF Certificate No.: **0318551**



Product Compliance Management  
Munich, 2018-07-27

Page 1 of 1

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CERTIFICATE ◆ CERTIFICADO ◆ CERTIFIKAT ◆ 認證證書 ◆ CERTIFICATE ◆ CERTIFIKAT



Arkkays National Engineering & Foundry Company recognises that it has a responsibility to the environment beyond legal and regulatory requirements. We are committed to reducing our environmental impact and continually improving our environmental performance as an integral part of our business strategy and operating methods, with regular review points. We will encourage customers, suppliers and other stakeholders to do the same.

We endeavour to

Comply with and exceed all relevant regulatory requirements.

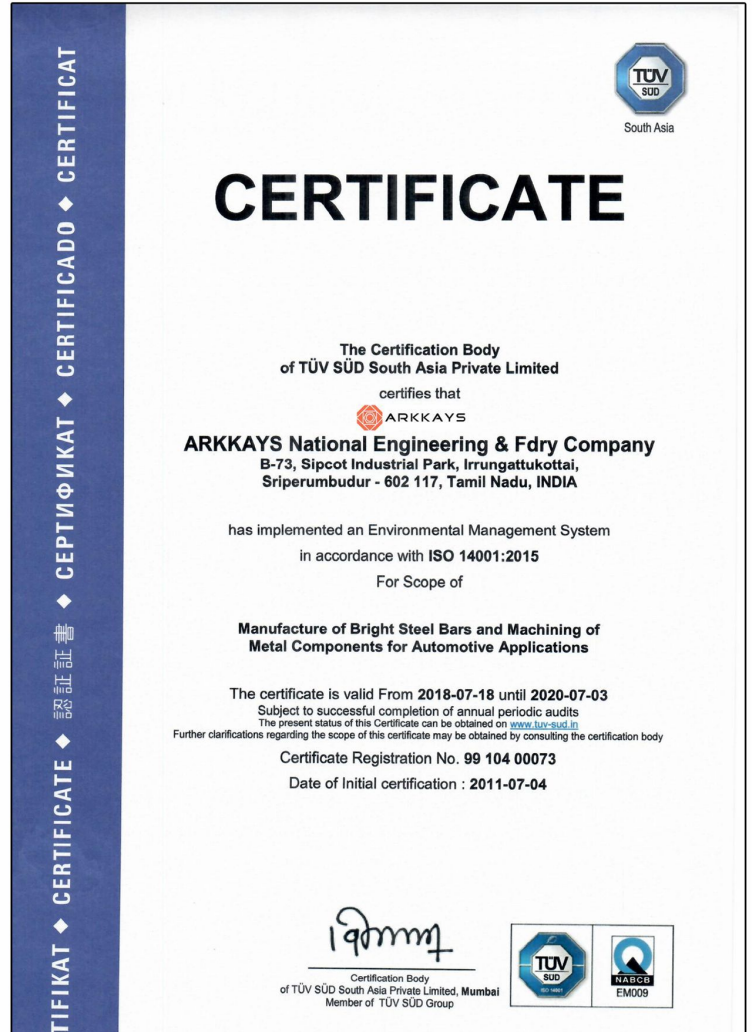
Continually improve and monitor environmental performance.

Continually improve and reduce environmental impacts.

Incorporate environmental factors into business decisions.

Increase employee awareness and training.

Punith Bulchandani  
Director







**Arkkays National Engineering & Foundry Company**

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