

Bar and Wire Rod Mill Rolls

Alloy Indefinite Chilled Cast Iron Rolls



Description

Alloy Indefinite Chilled Cast Iron Rolls

Alloy Indefinite Chilled Cast Iron Rolls is a cast iron with fine intercrystalline graphite evenly distributed throughout the working layer of roll barrel. The sizes, shapes and distributions of graphite and carbide are controlled by the chilling effect and the contents of alloy elements. The addition of alloy elements such as Manganese, Nickel, Chromium, and Molybdenum changes the matrix microstructure from pearlite, bainite to martensite. The present of small amount of fine graphite enhances the roll's resistance to spalling, thermal crack and wearability. This roll has small hardness gradient in the working layer of roll barrel and is suitable to medium and finishing stands for bar, wire and section mills.

Chemical Composition %

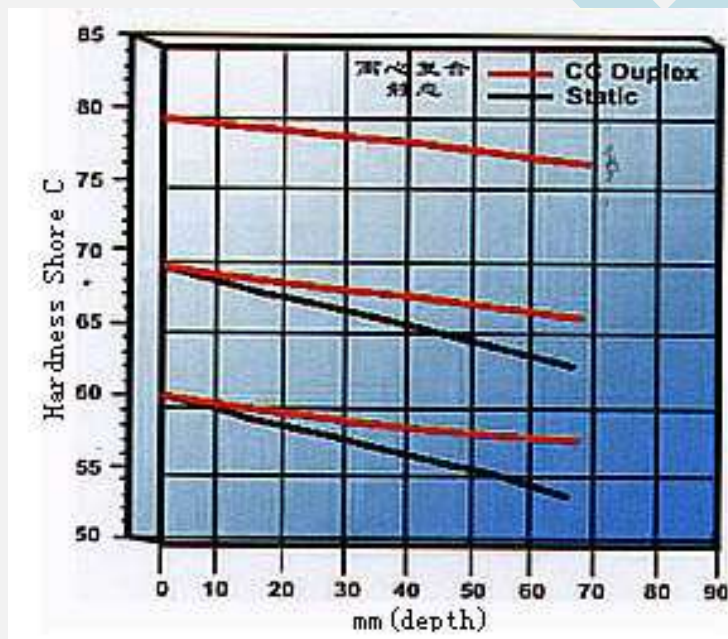
Symbol	C	Si	Mn	Cr	Ni	Mo	v
IC	2.90-3.60	0.60-1.20	0.40-1.20	0.60-1.20		0.20-0.60	
IC I	2.90-3.60	0.60-1.20	0.40-1.20	0.70-1.20	0.50-1.00	0.20-0.60	
IC II	2.90-3.60	0.60-1.20	0.40-1.20	0.70-1.20	1.01-2.00	0.20-0.60	
ICIII	2.90-3.60	0.60-1.20	0.40-1.20	0.70-1.20	2.01-3.00	0.20-1.00	

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ICIV	2.90-3.60	0.60-1.50	0.40-1.20	1.00-2.00	3.01-4.80	0.20-1.00	
ICV	2.90-3.60	0.60-1.50	0.4.-1.20	1.00-2.00	3.01-4.80	0.20-2.00	0.20-2.00

Prosperities & Application

Symbol	Hardness HS	Tensile Strength MPa	Application
IC	50-70	≥160	Rolls for intermediate and finish stands of section mills, bar and rod mills, hot strip mill
IC I	55-72	≥160	
IC II	55-72	≥160	
ICIII	65-78	≥350	
ICIV	70-83	≥350	Medium & heavy plate mills, hot strip mills, work rolls, skin pass rolls



Clear Chilled Rolls



Description

Clear Chilled Rolls (CC)

Alloy chilled cast iron rolls are one kind of cast iron rolls, which contain almost no free graphite in the matrix of working layer of the barrel. They have hardness and excellent wearability, are suitable to finish stands of light bar and wire rolling mills and narrow strip mills. Its microstructure is fine pearlite and carbides.

Chemical Composition %

Symbol	C	Si	Mn	Cr	Ni	Mo
CC I	2.90-3.60	0.25-0.80	0.20-1.00	0.20-0.60	0.50-1.00	0.20-0.60
CC II	2.90-3.60	0.25-0.80	0.20-1.00	0.30-1.20	1.01-2.00	0.20-0.60
CCIII	2.90-3.60	0.25-0.80	0.20-1.00	0.50-1.50	2.01-3.00	0.20-0.60
CCIV	2.90-3.60	0.25-0.80	0.20-1.00	0.50-1.70	3.01-4.50	0.20-0.60

Prosperities & Application

Symbol	Hardness	Tensile	Bending	Dimension	Unit N.W	Application
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	HS	Strength MPa	Strength MPa	MM	KGS	
CC I	60-70	≥150	300-400	∅ 300-800	300-7000	Rolls for finishing stands of small section mills, bar and wire mills, hot narrow strip mills
CC II	62-75	≥150	300-400			
CCIII	65-80	≥350	500-700			
CCIV	70-85	≥350	500-700			

Alloy Nodular Cast Iron Rolls



Description

Alloy Nodular Cast Iron Rolls (SG)

These rolls are characterized by spherical graphite. Its mechanical properties are similar to that of alloy indefinite chilled rolls except that its strength is higher than the latter. They can be produced by static.

Chemical Composition %

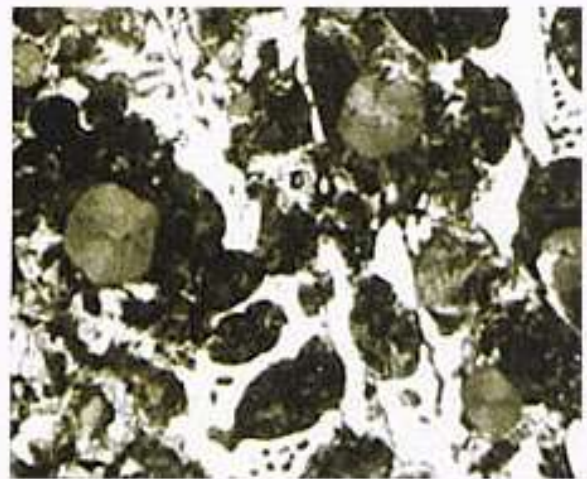
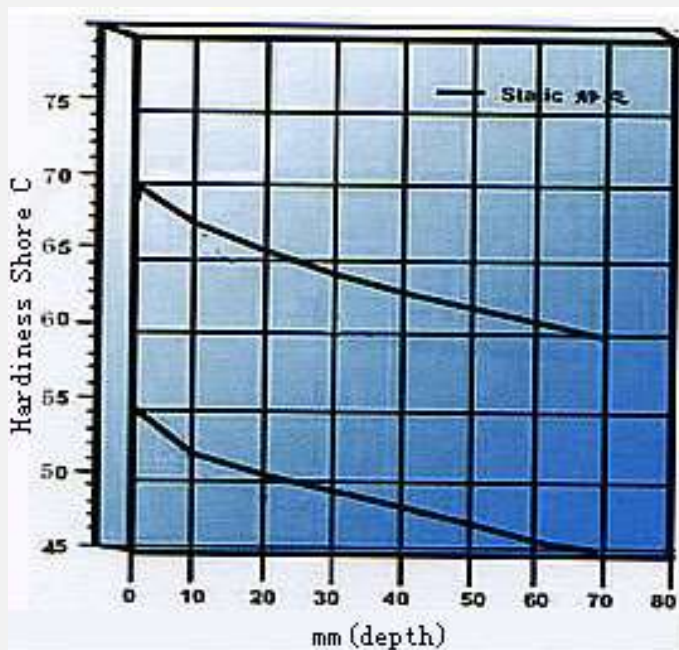
Symbol	C	Si	Mn	Cr	Ni	Mo	Mg

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SG II	2.90-3.60	0.80-2.50	0.40-1.20	0.20-0.60	-	0.20-0.60	≥0.04
SG IV	2.90-3.60	0.80-2.50	0.40-1.20	0.20-0.60	0.50-1.00	0.20-0.80	≥0.04
SG V	2.90-3.60	0.80-2.50	0.40-1.20	0.30-1.20	1.01-2.00	0.20-0.80	≥0.04

Prosperities & Application

Symbol	Hardness HS	Tensile Strength MPa	Bending Strength MPa	Dimension MM	Unit N.W KGS	Application
SG II	50-70	≥320	500-700	∅ 300-1300	500-35000	Rolls for finish stands of light section mills, bar and wire rod mills, hot narrow strip mills and temper mill.
SG IV	55-70	≥320	500-700			
SG V	60-70	≥320	600-800			



Pearlitic Nodular Cast Iron Rolls



Description

Pearlitic Nodular Cast Iron Rolls (SGP)

Pearlitic nodular rolls are obtained by adding alloy elements of Ni, Cr, Mo into the nodular cast iron and following special heat treatment. Pearlitic nodular rolls have high strength, good thermal properties and resistance to emergencies as well as small hardness gradient of working layer.

As Per your request to rolling mill rolls hardness, we will suggest you the most suitable rolls material, to ensure the right rolling mill rolls grinding amount or removal stock.

Chemical Composition%

Symbol	C	Si	Mn	Cr	Ni	Mo	Mg
SGP I	2.90-3.60	1.40-2.20	0.40-1.00	0.10-0.60	1.50-2.00	0.20-0.80	≥0.04
SGP II	2.90-3.60	1.20-2.00	0.40-1.00	0.20-1.00	2.01-2.50	0.20-0.80	≥0.04
SGP III	2.90-3.60	1.00-2.00	0.40-1.00	0.20-1.20	2.51-3.00	0.20-0.80	≥0.04

Prosperities & Application

Symbol	Hardness HS	Tensile Strength MPa	Dimension MM	Unit N.W KGS	Application
SGP I	45-60	≥450	∅ 300-1350	500-35000	Rolls for blooming mills, roughing and

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SGP II	55-65	≥450			intermediate stands of bar, wire and section mills.
SGPIII	62-72	≥450			

Bainitic Nodular Cast Iron Rolls



Description

Bainitic Nodular Cast Iron Rolls (SGA)

Alloy elements of Ni, Mn, Cr, Mo etc., are added to bainitic nodular cast iron rolls for obtaining acicular (bainite-martensite) matrix in its microstructure of these rolls. Its strength and toughness are higher than Perlitic Nodular Cast Iron Rolls, wearability is also better than latter. These rolls can be produced by static casting and centrifugal casting.

To ensure the best performance of SGA rolls, we might suggest CCSGA for better strength and hardness. We will also help you do the roll pass design. Our goal is to minimize roll failures and breakages. We can offer you different barrel radius from 300mm-1500mm.

Chemical Composition %

Symbol	C	Si	Mn	Cr	Ni	Mo
SGA I	2.90-3.60	1.20-2.20	0.20-0.80	0.20-1.00	3.01-3.50	0.50-1.00
SGA II	2.90-3.60	1.00-2.00	0.20-0.80	0.30-1.50	3.51-4.50	0.50-1.00

Prosperities & Application

Symbol	Hardness HS	Tensile Strength MPa	Bending Strength MPa	Dimension MM	Unit N.W KGS	Application
SGA I	55-78	≥350	600-800	∅ 300-1000	500-12000	Finishing stands of small section mills, bar,rod and hot narrow strip mills,finishing stands of high speed wire mills
SGA II	60-80	≥350	600-800			

Non Continuous Carbides Rolls



Description

Non Continuous Carbide Rolls (NCC)

Rolls for rough stand mills require a combination of some properties, some of which can be counteracted by the others. These properties include wearability, resistance of fire cracking and impact, hot hardness and hot strength etc. Excessive network carbides will improve wearability and impact resistance but dramatically reduce fracture toughness. Under rough rolling process they can promote fire cracking formation and added to form Bainitic/Martensitec(acicular) matrix, which is

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more wearable than conventional pearlitic matrix. The Molybdenum can also improve the hot hardness of rolls.

This type of roll is manufactured from high alloy materials with special heat treatment. Carbide content in the matrix is less than 5%, which is satisfactory to the requirement of rough stand mill.

Chemical Composition %

Symbol	C	Si	Mn	Cr	Ni	Mo
NCC I	3.00-3.40	2.00-2.50	0.80-1.00	≥0.15	2.00-3.00	0.40-0.70
NCC II	3.00-3.40	1.50-2.00	0.80-1.00	≥0.15	2.50-4.50	0.50-1.00

Prosperities & Application

Symbol	Hardness HS	Tensile Strength MPa	Bending Strength MPa	Dimension MM	Unit N.W KGS	Application
NCC I	40-50	≥520	970-1380	∅ 500-1380	1000-35000	Roughing stands of bar and wire mills, BD2 rolls for large section
NCC II	50-60	≥520	970-1380			

High Chromium Iron Rolls



Description

High Chromium Iron Rolls

This type of roll is manufactured from high alloy materials, whose microstructure is bainite and chrome carbides and core is filled with spheroidal graphite cast iron.

Chemical Composition %

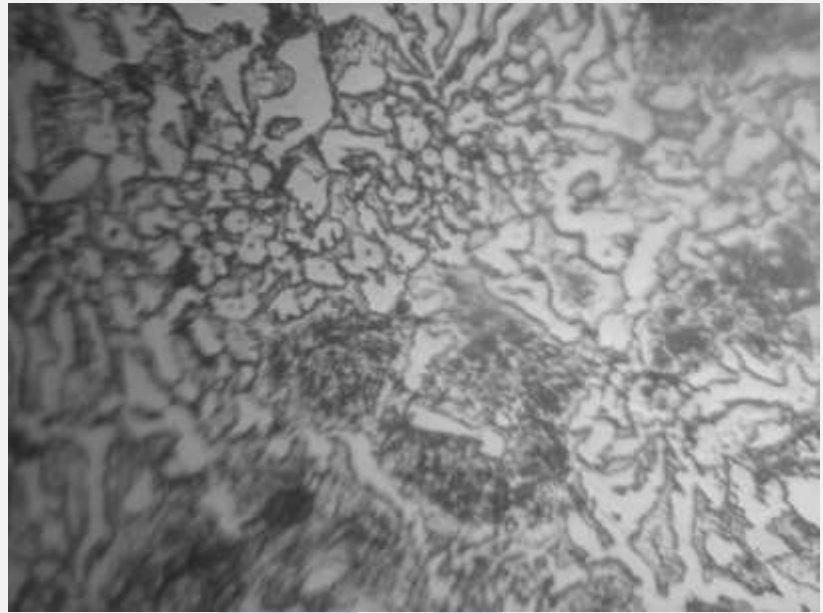
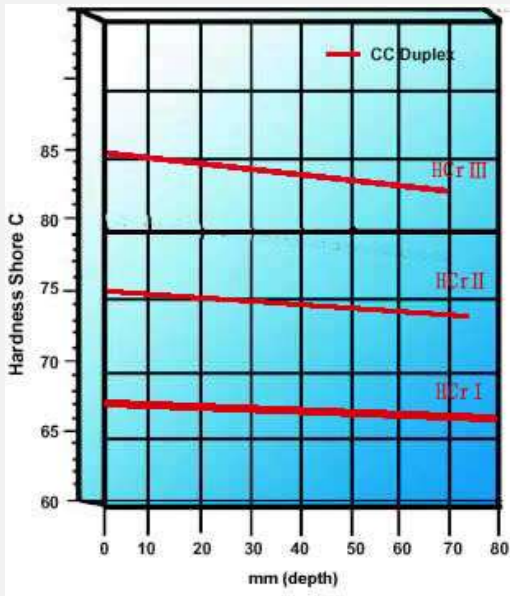
Symbol	C	Si	Mn	Cr	Ni	Mo	V
HCr I	2.30-3.30	0.30-1.00	0.50-1.20	12.00-15.00	0.70-1.70	0.70-1.50	0.00-0.60
HCr II	2.30-3.30	0.30-1.00	0.50-1.20	15.01-18.00	0.70-1.70	0.70-1.50	0.00-0.60
HCrIII	2.30-3.30	0.30-1.00	0.50-1.20	18.01-22.00	0.70-1.70	1.51-3.00	0.00-0.60

Prosperities&Application

Symbol	Hardness HS	Tensile Strength MPa	Application
HCr I	60-75	≥350	Vertical rolls and skin pass rolls for hot strip mills, work rolls for medium & heavy plate mills, roll sleeves for
HCr II	65-80	≥350	

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HCrIII	75-90	≥350	universal mills ,work rolls for cold rolled tin plate mills
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High Chromium Steel Rolls



Description

High Chrome Cast Steel Roll (HiCrI)

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High Chromium Cast steel roll is manufactured with special process of triple casting and double duplex technology. High chromium cast steel roll is characterized by high nipping capability, high thermal resistance and high wear resistance.

Chemical Composition

Symbol	C	Si	Mn	Cr	Ni	Mo	V
HiCrI Steel	1.0-2.0	0.40-1.40	0.5.-1.40	10.0-18.0	0.60-1.60	1.0-2.0	<0.5

Physical Performance

Barrel Harness (HSD)	Journal Hardness (HSD)	Tensile Strength (Mpa)	Hardness Uniformity (HSD)	Thichness Difference of Shell(mm)
70-85	35-45	>400	<3	<10

Hot Working Die Steel Rolls



Description

Hot Working Die Steel Rolls

Hot Working Die Steel Rolls are formed in the high temperature state. It has high thermal strength, good thermal stability, excellent resistance to wear and thermal fatigue as well as sound temper stability. This type of rolls can deliver a much longer service life when used for blooming of large section mills.

symbol HWD Cast Steel

Chemical Composition %

Symbol	C	Si	Mn	Cr	Ni	Mo	V
HWD I	0.50/0.60	0.10/0.40	0.50-0.80	0.50-0.80	1.40/1.80	0.10/0.30	
HWD II	0.40/0.50	0.40/0.70	0.40-0.60	1.50-2.00	0.80/1.20	0.80/1.20	0.30-0.50
HWDIII	1.40/1.60	0.20/0.40	0.40/0.60	10.0/14.0		0.70/0.90	0.80/1.00

Properties & Application

Symbol	Hardness HS	Tensile Strength MPa	Dimension MM	Unit N.W KGS	Application
HWD I	40/50	≥1000	∅ 600-1480	5000-45000	Blooming and Roughing stands of large section mills
HWD II	50/60	≥1100			
HWDIII	55/65	≥500(core)			Vertical rolls for universal mills, edger rolls

Alloy Steel Rolls



Description

Alloy steel rolls features:

We advanced foundry and heat treatment technologies to ensure high performance. The main features are its excellent high tensile strength, as well as its wear resistance. In which case, it has very long rolling life.

Alloy steel rolls chemical content:

Thanks to the main contents of pearlite (or temper sorbite) in the microstructure.

As a result, alloy steel rolls have mechanical properties of very high tensile strength. Such as, excellent resistance to fire crackings, high wearability and toughness.

Alloy steel rolls applications:

As an important roll material, it has very competitive price, however the hardness is range from 35 HSD to 60 HSD.

In addition, because of low carbon, it has very good tensile strength. As a result, for steel mills, you can use them in roughing stands heavy or medium section mills, profile mill, blooming mills, slabbing mills, breakdown mills, rail mills, beam mills, universal mills; as well as roughing stands for bar mills or wire rod mills.

Chemical Composition %

Symbol	C	Si	Mn	Cr	Ni	Mo
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AS60	0.55-0.65	0.20-0.45	0.90-1.20	0.80-1.20	-	0.20-0.45
AS65I	0.60-0.70	0.20-0.60	0.50-0.80	0.80-1.20	0.20-0.50	0.20-0.45
AS70 II	0.65-0.75	0.20-0.45	1.40-1.80	-	-	0.20-0.45
AS75	0.70-0.80	0.20-0.45	0.60-0.90	0.75-1.00	-	0.20-0.45
AS75 I	0.70-0.80	0.20-0.70	0.70-1.10	0.80-1.60	≥0.20	0.20-0.60
Cr4	0.40-0.70	0.20-0.60	0.70-1.20	3.00-5.00	≥0.50	0.40-1.00

Prosperities & Application

Symbol	Hardness HS	Tensile Strength(MPa)	Dimension MM	Unit N.W KGS	Application
AS60	35-50	≥650	∅ 600-1600	1000-5000 0	Blooming and slabbing mills,roughing stands of large section mills;Roughing stands of bar and wire mills,breakdown rolls for rail and section universal mills
AS65I	35-45	≥650			
AS70 II	35-45	≥680			
AS75	35-50	≥680			
AS75 I	35-50	≥700			
Cr4	50-65	≥700			

Adamite Rolls



Description

Adamite Rolls (AD)

Adamite is a material, mechanical properties and carbon content of which stands between steel and iron. Owing to its alloy elements such as Ni, Cr, Mo etc, there are some amount of carbides in the matrix and because of certain special heat treatment technology, high wearability, good toughness and excellent resistance to fire crack is obtained. The biggest advantage of these rolls is almost no hardness gradient in the working layer. These rolls are used in rough mills and front stands of the finish mill for hot strip mills, rough stands, intermediate stands and pre-finishing stands for bar and wire mills, roll rings and roll sleeves for universal mills and cantilever mills.

Chemical Composition %

Symbol	C	Si	Mn	Cr	Ni	Mo
AD140 I	1.30-1.50	0.30-0.60	0.70-1.10	0.80-1.20	0.50-1.10	0.20-0.60
AD160 I	1.50-1.70	0.30-0.60	0.80-1.30	0.80-2.00	≥0.20	0.20-0.60
AD180-AD200	1.70-2.10	0.30-0.80	0.60-1.20	0.80-3.50	0.50-2.50	0.20-0.80
ADGT	1.40-1.60	0.30-0.80	0.70-1.50	1.00-2.00	1.00-3.00	0.40-0.80

Graphite Steel Rolls



Description

Graphite Steel Roll (GS)

The characteristics of graphite steel rolls are similar to those of adamite rolls. The main character is that it contains a small amount of fine graphite in its microstructure, which will increase its resistance to fire crack and prevent oxidized scales from adhering. They are suitable for blooming and roughing stands.

Chemical Composition %

Symbol	C	Si	Mn	Cr	Ni	Mo
GS140	1.30-1.50	1.20-1.60	0.50-1.00	0.40-1.00		0.20-0.50
GS160	1.50-1.70	0.80-1.50	0.60-1.00	0.60-1.00	0.20-1.00	0.20-0.80
GS190	1.80-2.00	0.80-1.50	0.60-1.00	0.50-2.00	0.60-2.20	0.20-0.80

Prosperities & Application

Symbol	Hardness HS	Tensile Strength MPa	Elongation %	Dimension MM	Unit N.W KGS	Application

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GS140	36-46	≥540	≥1.0	∅ 400-1400	1000-40000	Roughing stands of small and medium section mills, bar and wire mills and hot strip mills, roll sleeves for universal mills
GS160	40-60	≥500	≥1.0			
GS190	55-65	≥450	≥0.4			

High Speed Steel Rolls



Description

High Speed Steel Roll (HSS)

The microstructure of HSS roll shows fine and diffuse carbide of MC and M₆C embedded in the Martensite. The performance of wear resistance, thermal hardness and thermal fatigue resistance of HSS roll is excellent.

Chemical Composition

Symbol	C	Si	Mn	Cr	Ni	Mo	V	W
HSS	1.5-2.2	0.3-1.0	0.4.-1.20	3.0-8.0	0.5-1.5	2.0-8.0	2.0-8.0	0.0-8.0

Physical Performance

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Barrel Harness (HSD)	Journal Hardness (HSD)	Tensile Strength (Mpa)	Hardness Uniformity(HSD)	Thichness Difference Shell(mm)	of
60-90	35-45	>400	<3	<10	

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