



HIGH SPEED STEEL ROLLS

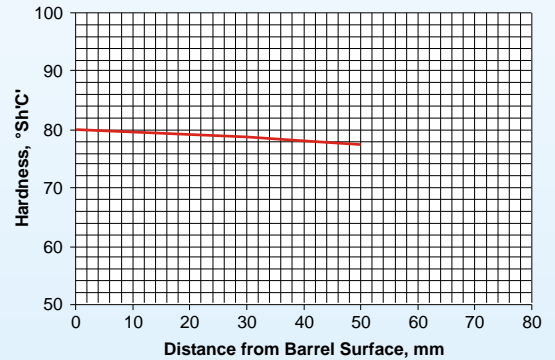
FEATURES

These rolls have high wear resistant shell with minimal drop in hardness & having good resistance to thermal shock and thermal fatigue with higher level of resistance to oxidation at high temperature of operation in the mill. The shell matrix contains martensite, bainite and finely dispersed carbides which impart excellent wear resistance and high thermal fatigue resistance. It has very good anti heat crack propagation properties which increases the campaign production length. Core material is always SG Iron imparting better strength for application in mills. These rolls require high degree of cooling in the mill during operation. It also requires proper monitoring of cracks during dressing through Eddy Current & Ultrasonic Testing.

APPLICATION

These rolls generally used in initial finishing stand of flat rolling (CSP, DSP, HSM).

Hardness Drop Curve

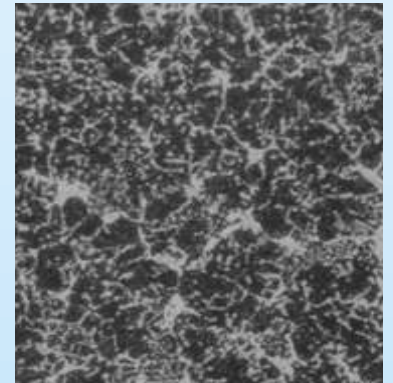


CHEMICAL COMPOSITION

	C	Si	Cr	Mo	V	Nb
Shell	1.2-2.5	0.2-2.0	3.0-8.0	3.5-7.5	3.5-7.5	1.0-4.0
Core	2.5-3.5	2.5-4.0	<0.60	Nil	Nil	Nil

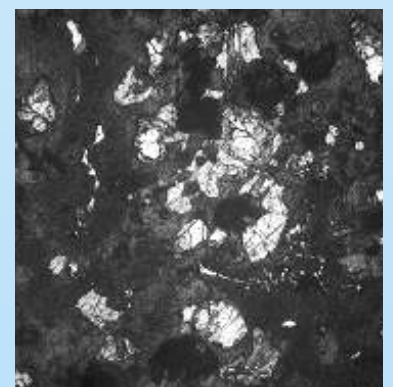
Mechanical Properties

- Barrel Hardness : 75-85 °Sh'C'
- Tensile Strength : 700-800 MPa
- Neck Hardness : 35-45 °Sh'C'
- Core Strength : 350-450 Mpa



HSS Shell Photomicrograph
(Hs 77-82 °Sh'C')

X100



SG Core Photomicrograph
(Hs 35-45 °Sh'C')

X100



SUPER NICKEL GRAIN ROLLS

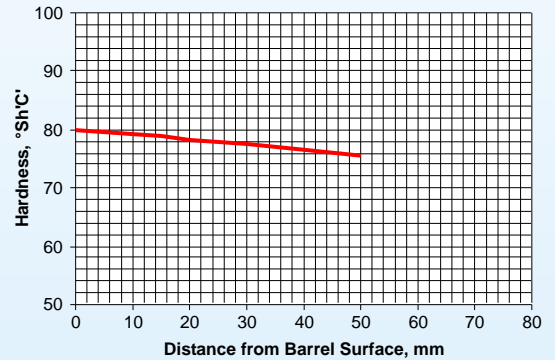
FEATURES

These rolls have evenly distributed fine graphite globules in a martensitic matrix with higher amount of dispersed carbides in shell metal. Change in Graphite morphology with same amount of graphite compared to Normal ICDP rolls gives added advantage for these rolls. The even distribution of enhanced carbide with globalize graphite is achieved through alloying and special inoculations. It is recommended to keep the core as nodular iron (SG Iron). This grade is highly wear resistant with deeper hardness penetration, responsible for higher campaign length.

APPLICATION

These rolls generally used in final finishing stand of flat rolling (CSP, DSP, HSM, STECKEL). Due to enhanced carbide and evenly distributed globular graphite, it gives superior finishing.

Hardness Drop Curve

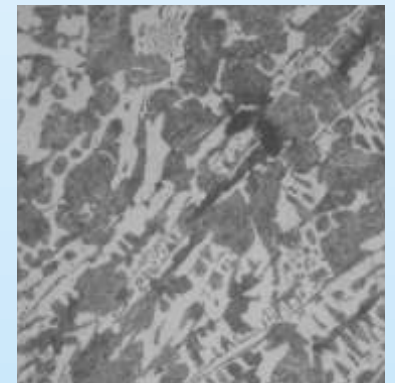


CHEMICAL COMPOSITION

	C	Si	Cr	Mo	V	Nb
Shell	2.5-3.5	0.5-2.0	1.5-2.5	0.30-0.80	0.30-0.80	0.20-0.60
Core	2.5-3.5	2.5-4.0	<0.60	Nil	Nil	Nil

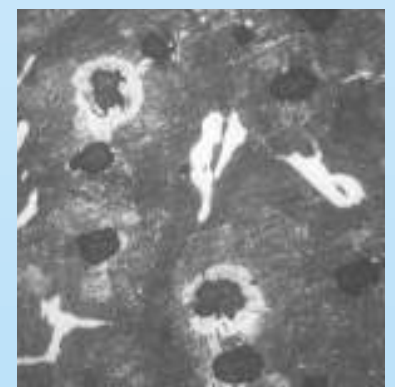
Mechanical Properties

Barrel Hardness : 70-85 °Sh'C'
 Tensile Strength : 400-500 MPa
 Neck Hardness : 35-45 °Sh'C'
 Core Strength : 350-450 Mpa



X100

Shell Photomicrograph
(Hardness: 75-80 °Sh'C')



X100

Core Photomicrograph
(Hardness: 35-45 °Sh'C')



SPHEROIDAL GRAPHITE (ACCICULAR) CAST IRON ROLLS

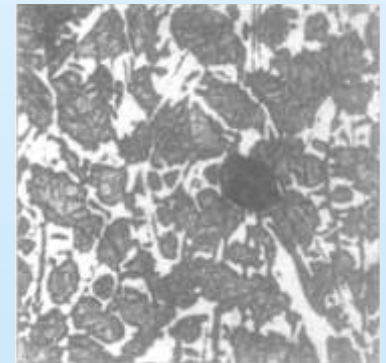
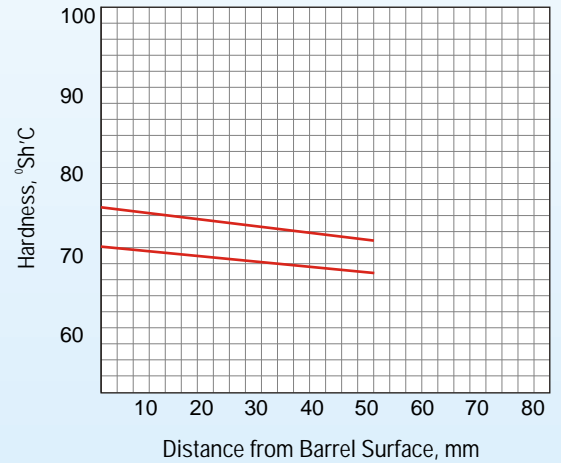
CHARACTERISTICS

The structure consists of graphite nodules in the matrix of bainite. These rolls have high hot strength combined with good wear resistance. Sufficient water-cooling is a must for satisfactory performance.

APPLICATION

Skin Pass and Temper Mill rolls for cold rolling. Finishing rolls for wire rod and strip mills.

HARDNESS DROP CURVE



X100

Photomicrograph
(Hs 70-75 °ShC)

CHEMICAL COMPOSITION

C	Ni	Mo	Mg
3.20-3.50	1.80-2.00	0.40-0.70	0.40-0.07
3.20-3.50	2.00-3.00	0.40-1.00	0.04-0.07

MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	65 - 75	
	70 - 80	
Neck Properties		
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
35 - 45	500 - 600	3.00 - 5.00

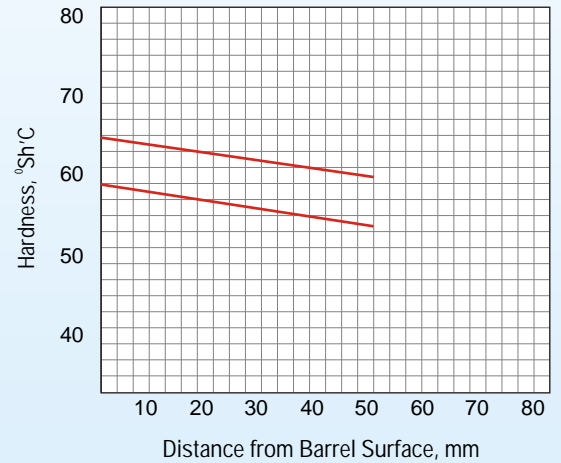


INDEFINITE CHILL CAST IRON ROLLS

CHARACTERISTICS

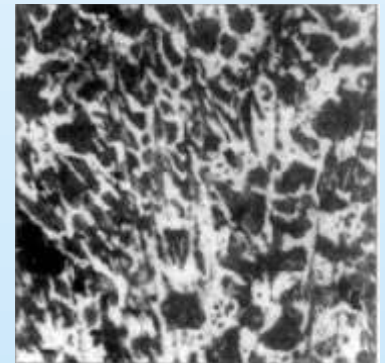
The matrix structure varies from fine pearlite to bainite depending on the alloy content. The desired hardness is obtained by changing the carbide/graphite balance, which is achieved by a close control of chemistry and process parameters. The roll is tailor-made for the mill and its application. The working surface is highly resistant to fire cracking, spalling and wear.

HARDNESS DROP CURVE



APPLICATION

Roughing rolls for merchant mills and billet mills. Intermediate & Finishing rolls for wire rod mills, merchant mills & structural mills. Edger rolls for universal beam mills. Finishing rolls for non-ferrous sheet rolling.



X100

Photomicrograph
(Hs 70-75 °ShC)

CHEMICAL COMPOSITION

C	Ni	Cr	Mo
3.00-3.30	1.50-2.00	0.80-1.40	0.20-0.40
3.10-3.40	1.80-2.50	0.80-1.40	0.30-0.50

MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	55 - 65	
	65 - 75	
Neck Properties		
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
30 - 40	200 - 300	1.80 max



CAST IRON ROLLS FOR RUBBER MILLS

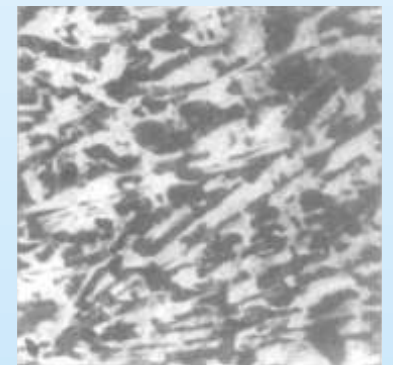
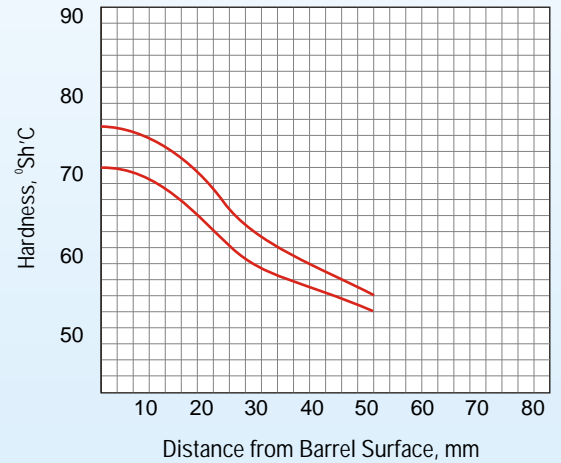
CHARACTERISTICS

An outer layer of white iron backed by a condensed mottle zone with soft graphite inner layer imparts the good thermal conductivity required for these rolls.

APPLICATION

Rolls for mixing, calendering, cracking and refining in rubber mills.

HARDNESS DROP CURVE



X100

Photomicrograph
(Hs 70-75 °ShC)

CHEMICAL COMPOSITION

C	Ni	Cr
3.40-3.70	1.00-1.60	0.35 max
3.40-3.70	1.50-2.50	0.35 max

MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	65 - 70	
	70 - 75	
Neck Properties		
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
30 - 40	200 - 250	1.80 max



ALLOY CHILLED CAST IRON ROLLS

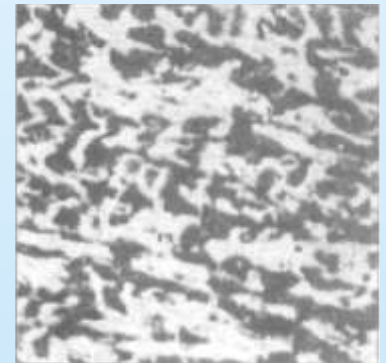
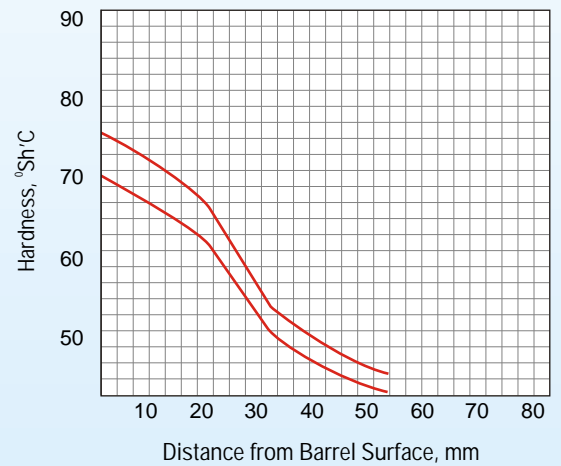
CHARACTERISTICS

The matrix structure is pearlitic or bainitic depending on the alloy content. Changing the carbide distribution obtained through control of chemical composition varies the hardness.

APPLICATION

Finishing rolls for sheet, plate and strip mills. Intermediate and Finishing rolls for small section, bar and wire rod mills. Also used as cold mill rolls for ferrous and non-ferrous sheets.

HARDNESS DROP CURVE



X100

Photomicrograph
(Hs 70-75 °ShC)

CHEMICAL COMPOSITION

C	Ni	Cr	Mo
3.00-3.30	1.50-1.80	0.40 max	0.20-0.35
3.20-3.50	1.70-2.60	0.40 max	0.20-0.35

MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	65 - 70	
	70 - 75	
Neck Properties		
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
30 - 35	200 - 250	1.80 max



DOUBLE Poured INDEFINITE CHILL CAST IRON ROLLS (STATIC CAST)

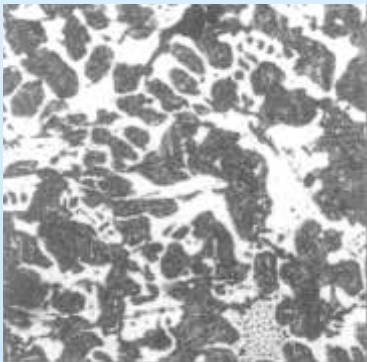
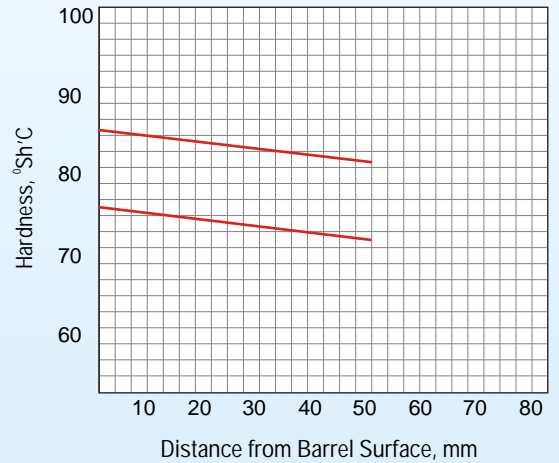
CHARACTERISTICS

These rolls have hard alloy iron on the working layer and soft grey iron or SG iron core depending upon the application. The shell matrix with proper distribution of carbides and graphite imparts high wear resistance, stability in shape and good surface finish. The softer core ensures good mechanical properties and resistance to thermal & mechanical loads.

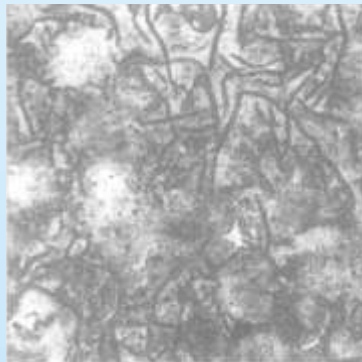
APPLICATION

Particularly suitable for rolling of flat products in Hot Strip Mills, Plate mills and the first stand of Tinline Tandem cold mills. Suitable for the finishing stands of wire rod mills as well. Can also be used for cold rolling of non-ferrous sheets.

HARDNESS DROP CURVE



Shell Photomicrograph X100
(Hs 75-85 °ShC)



GI Core Photomicrograph X100
(Hs 35-45 °ShC)



SG Core Photomicrograph X100
(Hs 35-45 °ShC)

CHEMICAL COMPOSITION (SHELL)			
C	Ni	Cr	Mo
3.15-3.35	3.80-4.20	1.40-1.80	0.30-0.50
3.25-3.45	4.20-4.50	1.60-1.90	0.30-0.50

CHEMICAL COMPOSITION (GI or SG Core)			
C	Ni	Cr	Mo
3.00-3.50	1.50-2.00	0.45-0.75	-
3.20-3.50	1.80-2.50	0.50 max	0.04-0.07

MECHANICAL PROPERTIES		
Barrel Hardness (°ShC)	65 - 75 (In steps of 5 (°ShC))	
	75 - 85 (In steps of 5 (°ShC))	
Neck Properties		
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
35 - 45	200 - 250	2.00 max
35 - 45	350 - 500	3.50 max



CAST IRON ROLLS FOR PAPER MILLS

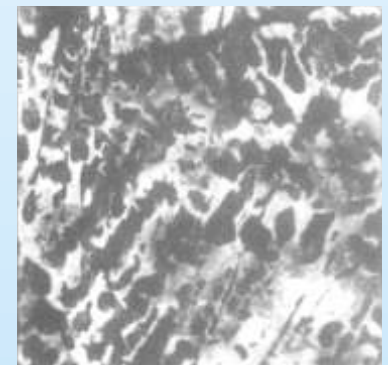
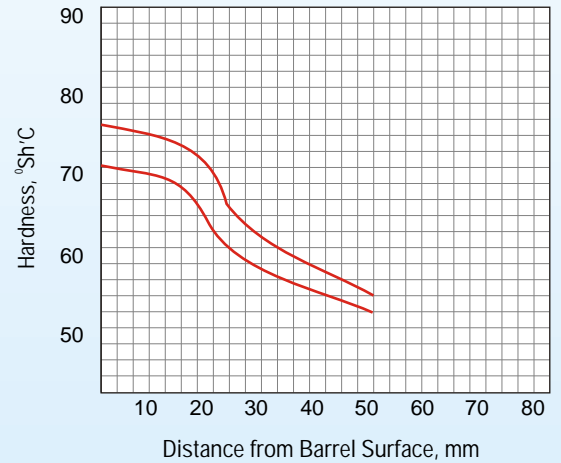
CHARACTERISTICS

The matrix of the chilled layer consists of fine pearlite/bainite with a uniform distribution of cementite. Special alloying is done to impart high corrosion resistance and also to obtain a homogeneous structure on the barrel surface for uniform wear resistance.

APPLICATION

Calender rolls for paper mills.

HARDNESS DROP CURVE



X100

Photomicrograph
(Hs 70-75 °ShC)

CHEMICAL COMPOSITION

C	Ni	Cr	Cu
3.50-3.80	1.50-1.80	0.30-0.50	0.45-0.65
3.65-3.75	1.80-2.40	0.40-0.60	0.45-0.65

MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	70 - 75	
	75 - 80	
Neck Properties		
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
30 - 40	200 - 250	1.80 max



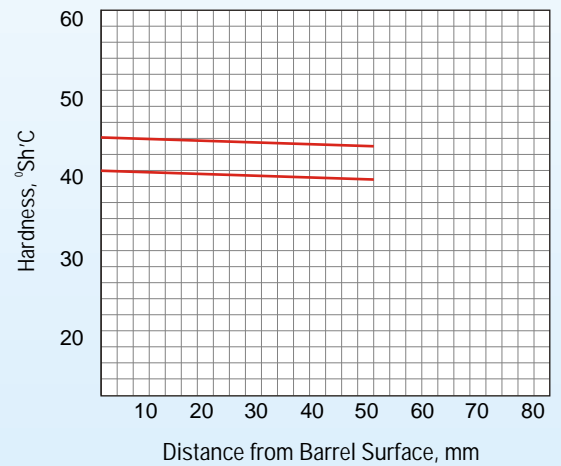
GRAPHITIC STEEL CAST ROLLS

CHARACTERISTICS

The Graphitic Steel rolls are special carbon steels with carbon content above 1.50%. The rolls are statically cast single poured subjected to special heat treatment and inoculation.

The structure consists of carbides in a pearlitic matrix with free graphite. These rolls do not have hardness drop. They have better strength and greater resistance to thermal cracking than steel base rolls.

HARDNESS DROP CURVE



APPLICATION

These rolls are most suitable for Medium & Heavy Section Mills, Intermediate and Finishing stands, Rail Finishing Mills, Merchant Mills, Intermediate stands of Bar Mills.



X100

Photomicrograph
(Hs 40-45 °ShC)

CHEMICAL COMPOSITION

C	Mn	Si	Cr	Mo
1.50	0.70	0.70	0.90	0.25
2.50	1.20	1.10	1.10	0.80

MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	40 - 55 (In steps of 5 °ShC)			
Neck Properties				
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)	Elongation (%)	
35 - 40	600 - 780	3.00 - 4.50	1.00 - 3.00	



ALLOY STEEL CAST ROLLS

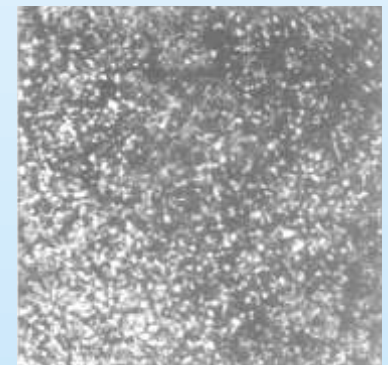
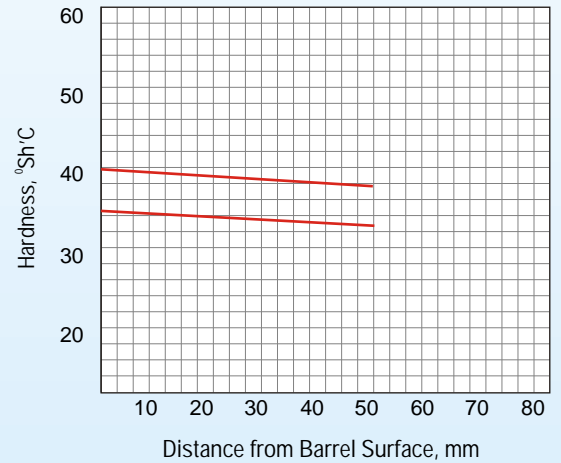
CHARACTERISTICS

Carbon content in these rolls is in the range of 0.50 % to 1.20 %. Heat treatment gives either a spheroidised or fine pearlite matrix for high toughness. Small areas of carbide increase the wear resistance.

APPLICATION

Rolls for blooming and slabbing mills. Roughing and Intermediate rolls for heavy section mills.

HARDNESS DROP CURVE



X100

Photomicrograph
(Hs 35-40 °ShC)

CHEMICAL COMPOSITION

C	Ni	Cr	Mo
0.50-0.80	1.00 max	0.70-1.20	0.20-0.50
0.90-1.20	1.00 max	0.70-1.20	0.20-0.50

MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	30 - 35	
Neck Properties	35 - 40	
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
30 - 40	600 - 700	3.00 - 8.00
30 - 40	650 - 750	3.00 - 8.00



DOUBLE POURED HIGH CHROMIUM STEEL ROLLS (SPUN CAST)

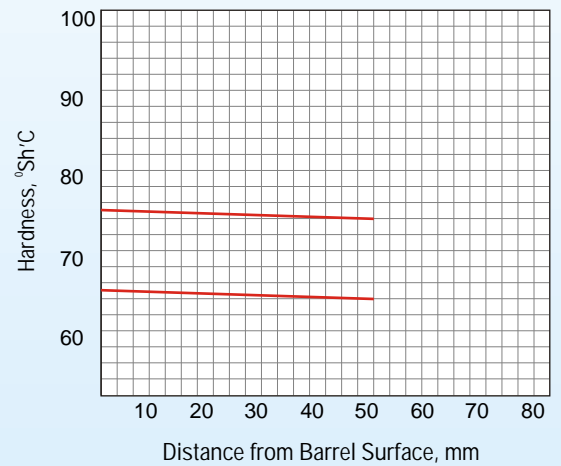
CHARACTERISTICS

These rolls are highly wear resistant with a tough shell having less tendency for banding, better biting properties apart from greater strength to thermal shock and fracture toughness. The shell material consists of bainite, martensite and precipitated carbides. The Core is either Grey Iron with flake graphite or nodular Iron on a pearlitic matrix depending upon the core strength requirement.

APPLICATION

These rolls are suitable as work rolls for roughing stands of Hot Strip Mills & Plate Mills. Also used as Work rolls in the initial stands of Hot Strip Finishing Mills.

HARDNESS DROP CURVE



CHEMICAL COMPOSITION (SHELL)

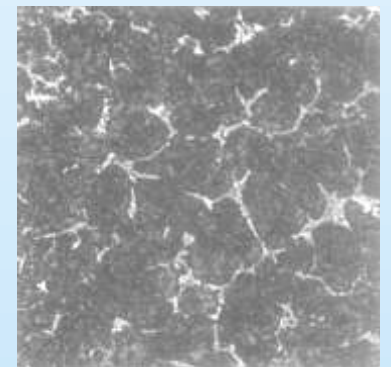
C	Mn	Ni	Cr	Mo	V	Mg
1.60	0.50	0.50	10.00	1.00	0.15	-
2.50	0.80	2.00	15.00	3.00	0.45	-

CHEMICAL COMPOSITION (GI or SG CORE)

C	Mn	Ni	Cr	Mo	V	Mg
2.50	1.50	1.00	1.20	-	-	-
3.10	2.00	max	max	-	-	-
2.50	2.40	1.00	0.80	-	-	0.04
3.10	2.80	max	max	-	-	0.07

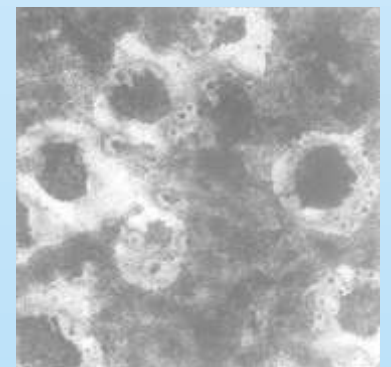
MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	65 - 75 (In steps of 5 °ShC)	
	75 - 85 (In steps of 5 °ShC)	
Neck Properties		
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
35 - 45	400 - 500	3.50 max



Shell Photo Micrograph (Hs 65-75 °ShC)

X100



SG Core Photo micrograph (Hs 35-45 °ShC)

X100



DOUBLE Poured INDEFINITE CHILL CAST IRON ROLLS (SPUN CAST

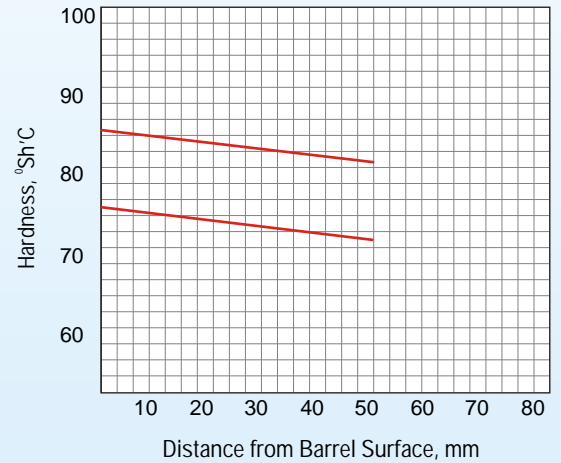
CHARACTERISTICS

These rolls have highly alloyed centrifuged shell as the working layer and a core of Grey Iron or SG Iron depending upon the mill requirements. The shell microstructure consists of carbide and graphite in a matrix that systematically progresses from a mixture of pearlite and bainite in the softer grades through bainite to martensite in the harder grades. The wear resistance property is controlled by proper dispersion of graphite and the carbides.

These rolls have following advantages compared to statically cast double poured rolls:

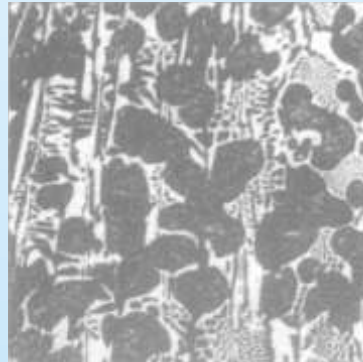
- Average hardness drop is less.
- A uniform compact shell thickness than statically cast rolls.
- Lower alloy content in the core imparting higher toughness.

HARDNESS DROP CURVE



APPLICATION

These rolls are suitable for finishing stands of Hot Strip Mills, Plate Mills, first and second stands of Tandem Cold Mills, Skin Pass Mills and Steckel Mills. These rolls are also suitable for the finishing stands of Wire Rod Mills, for Cold Rolling of non-ferrous sheets.



Shell Photomicrograph
(Hs 75-85 °ShC)



SG Core Photomicrograph
(Hs 35-45 °ShC)

CHEMICAL COMPOSITION (SHELL)

C	Ni	Cr	Mo
3.15-3.35	3.80-4.20	1.40-1.80	0.30-0.50
3.25-3.45	4.20-4.50	1.60-1.90	0.30-0.50

CHEMICAL COMPOSITION (GI or SG Core)

C	Ni	Cr	Mo
3.00-3.50	1.50-2.00	0.45-0.75	-
3.20-3.50	1.80-2.50	0.50 max	0.04-0.07

MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	65 - 75 (In steps of 5 (°ShC))	
Neck Properties	75 - 85 (In steps of 5 (°ShC))	
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
35 - 45	200 - 250	2.00 max
35 - 45	350 - 500	3.50 max



SPHEROIDAL GRAPHITE (PEARLITIC) CAST IRON ROLLS

CHARACTERISTICS

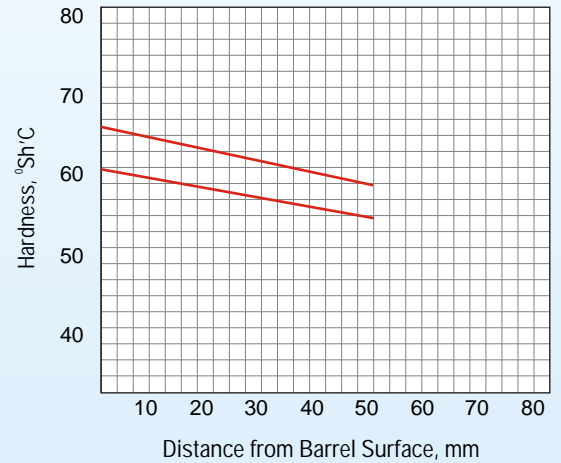
Spheroidal Graphite rolls are structurally characterized by nodular graphite as against flake graphite in the normal cast iron rolls. These are excellent substitutes for many conventional steel and cast iron rolls due to a combination of superior strength, good wear resistance and resistance to spalling & fire cracking.

Adequate water-cooling is desirable.

APPLICATION

Roughing and Intermediate rolls for blooming, slabbing and wire rod mills. Roughing, Intermediate and Finishing rolls for rail and structural mills. Finishing rolls for sheet and plate mills. Skin-pass and Scale Breaker rolls for hot strip mills.

HARDNESS DROP CURVE



X100

Photomicrograph
(Hs 60-65 °ShC)

CHEMICAL COMPOSITION

C	Ni	Mo	Mg
3.50-3.40	1.50-2.30	0.20-0.50	0.04-0.07
3.20-3.50	1.60-2.50	0.20-0.50	0.04-0.07

MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	45 - 55	
Neck Properties	55 - 65	
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
35 - 40	400 - 600	2.00 - 4.00



DOUBLE Poured INDEFINITE CHILL ENHANCED CARBIDE (TEK) ROLLS (SPUN CAST)

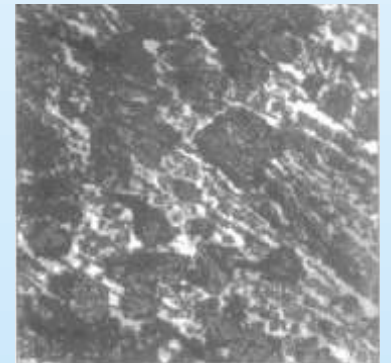
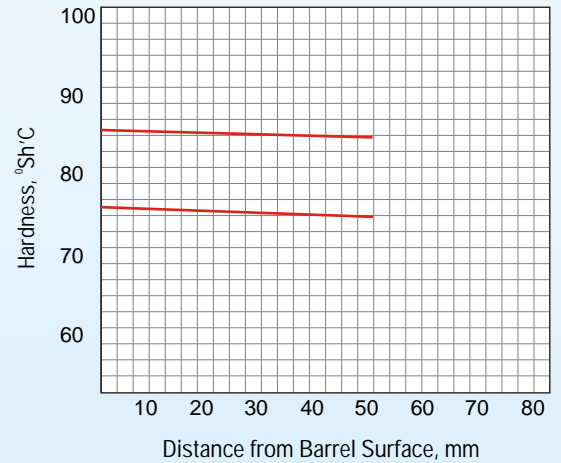
CHARACTERISTICS

These rolls have evenly distributed fine graphite globules in a martensitic matrix with higher amount of dispersed carbides in the shell metal. The even distribution of enhanced carbide with globulised graphite is achieved through alloying and special inoculations. This grade is highly wear resistant with deeper hardness penetration, responsible for higher campaign life. It is recommended to keep the core as nodular iron (SG Iron).

APPLICATION

These rolls are suitable for finishing stands of Hot Strip Mills, Plate Mills and Steckel Mills. Due to enhanced carbide and evenly distributed graphite, it gives superior finish to rolled product.

HARDNESS DROP CURVE



X100

Photomicrograph
(Hs 70-75 °ShC)



X100

Photomicrograph
(Hs 70-75 °ShC)

CHEMICAL COMPOSITION (SHELL - 1)

C	Si	Ni	Cr	Mo	V
2.90	1.00	4.30	1.60	0.30	1.00
3.20	1.40	4.60	1.80	0.50	max

CHEMICAL COMPOSITION (SHELL - 2)

C	Si	Ni	Cr	Mo	V
2.70	1.75	4.30	1.60	0.35	1.00
2.90	2.15	4.60	1.70	0.45	1.80

CHEMICAL COMPOSITION (SG CORE)

C	Si	Ni	Cr	Mo	Mg
3.00	1.90	1.00	0.60	-	0.03
3.30	2.70	max	max	-	0.07

MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	65 - 75 (In steps of 5 °ShC)	
Neck Properties	75 - 85 (In steps of 5 °ShC)	
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
35 - 45	400 - 500	3.50 max



DOUBLE POURED HIGH CHROMIUM IRON ROLLS (SPUN CAST)

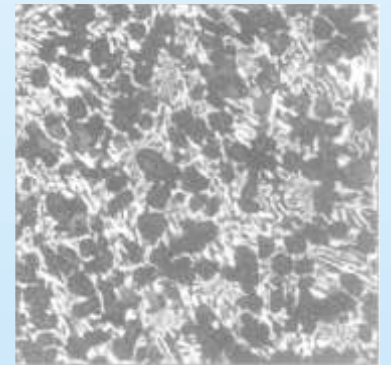
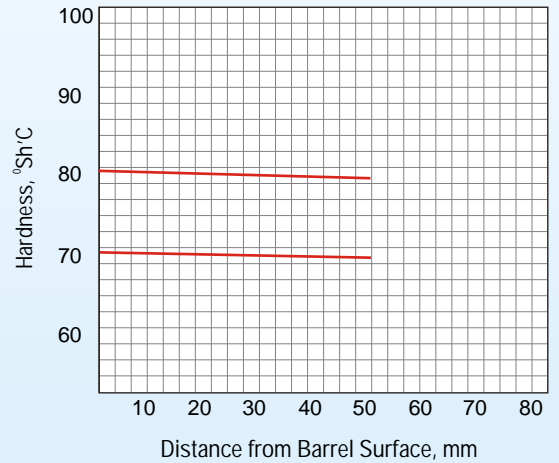
CHARACTERISTICS

These rolls have high wear resistant shell with no drop in hardness having a good strength to thermal shock, fracture toughness and resistance to oxidation at high temperature. The shell matrix contains martensite, bainite and carbide: which impart excellent wear resistance. The selection a core material can be done depending upon the mill requirements, which will be either Grey Iron or SG Iron, A better cooling is required for these rolls in the Mill. This is a replacement for Double poured indefinite chill rolls it the initial finishing stands of Hot Strip Mills.

APPLICATION

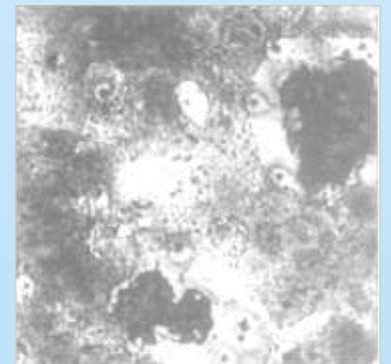
These rolls are suitable for initial finishing stands of Hot Strip Mills, Plate Mills, Skin Pass Mills, finishing stand for Checker Plate rolling. These rolls can also be used in the first & second stands of Cold Tandem Mills.

HARDNESS DROP CURVE



X100

Shell Photomicrograph
(Hs 70-80 °ShC)



X100

SG Core Photomicrograph
(Hs 35-45 °ShC)

CHEMICAL COMPOSITION (SHELL)

C	Si	Ni	Cr	Mo	V	Mg
2.50	0.40	0.50	13.00	1.00	0.15	-
3.00	1.00	1.50	18.00	2.00	0.45	-

CHEMICAL COMPOSITION (GI or SG CORE)

C	Si	Ni	Cr	Mo	V	Mg
2.50	1.50	1.00	1.20	-	-	-
3.10	2.00	max	max	-	-	-
2.50	2.20	1.00	0.80	-	-	0.40
3.10	2.90	max	max	-	-	0.07

MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	65 - 75 (In steps of 5 °ShC)	
	75 - 85 (In steps of 5 °ShC)	
Neck Properties		
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
35 - 45	400 - 500	3.50 max



STEEL BASE (ADAMITE) CAST ROLLS

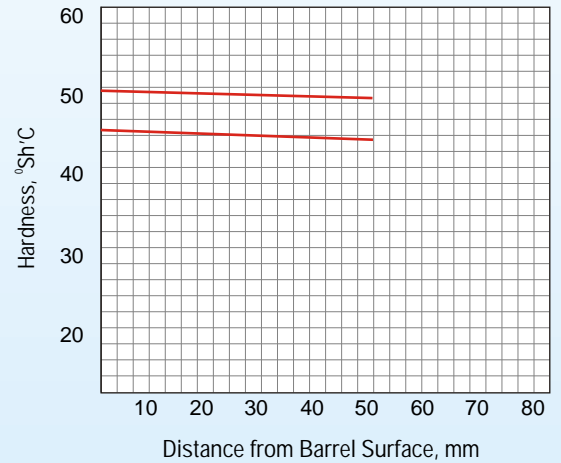
CHARACTERISTICS

These rolls stand between steel and cast iron rolls in carbon content and the structure consists mainly of primary carbide particles distributed randomly in a matrix of spheroidised pearlite.

APPLICATION

Roughing, Intermediate and Finishing rolls for section and structural mills. Applications include heavy section and rail mills, universal beam mills, medium section mills & billet mills. Roughing rolls for plate and sheet mills. Pilger rolls for seamless tube mills.

HARDNESS DROP CURVE



X100

Photomicrograph
(Hs 45-50 °ShC)

CHEMICAL COMPOSITION

C	Ni	Cr	Cu
1.10-1.40	0.50 max	0.70-1.20	0.20-0.50
1.30-1.50	0.50 max	0.70-1.20	0.20-0.50
1.30-1.50	1.00-1.20	0.90-1.50	0.30-0.60

MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	40 - 45	
Hardness (°ShC)	45 - 50	
	50 - 55	
Neck Properties		
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
30 - 40	700 - 750	3.00 - 6.00
30 - 40	700 - 850	3.00 - 6.00
30 - 40	750 - 850	3.00 - 6.00



DOUBLE Poured SEMI HIGH SPEED STEEL ROLLS (SPUN CAST)

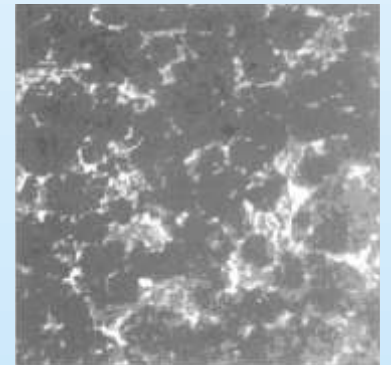
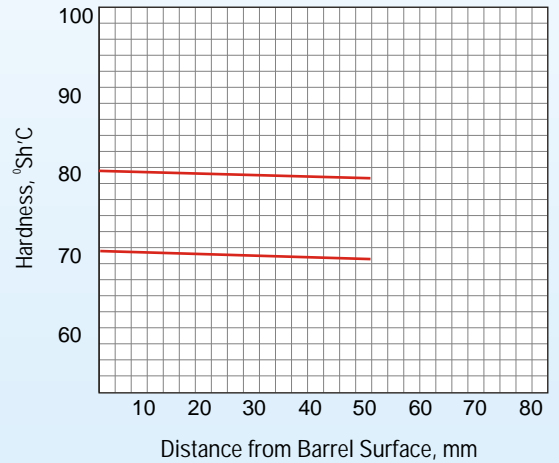
CHARACTERISTICS

These rolls have less wear per campaign with negligible drop in hardness having a good resistance to therm shock and thermal fatigue with higher level of resistance to slippage & surface oxidation at high temperatures, operation in the mill. The shell matrix contains martensite bainite and finely dispersed carbides which impart excellent wear resistance and high thermal fatigue resistance resistance to cracking & spalling. Core material is always SG Iron imparting better strength for application in hot strip mills. These rolls require high degree of cooling in the mill during operation. The higher requirement of roll cooling and mill discipline is important for optimizing performance. It also requires proper monitoring of cracks during dressing through Eddy Current & Ultrasonic Testing. The primary benefit using these rolls would be high campaign life in comparison to that of Hi Cr Steel rolls.

APPLICATION

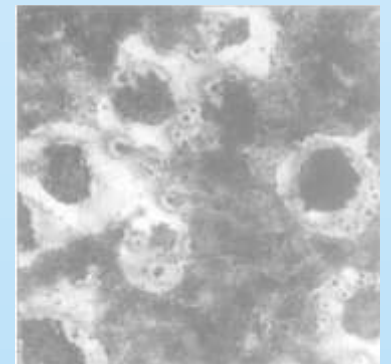
This roll grade is suitable for roughing stands of Hot Strip Mills and initial finishing stands of CSP Mills.

HARDNESS DROP CURVE



X100

Shell Photomicrograph
(Hs 70-80 °ShC)



X100

SG Core Photomicrograph
(Hs 35-45 °ShC)

CHEMICAL COMPOSITION (SHELL)

C	Si	Ni	Cr	Mo	V	W	Nb
2.00	0.70	0.70	5.50	3.00	2.80	-	0.60
2.50	1.30	1.30	6.50	3.80	3.60	-	2.00

CHEMICAL COMPOSITION (SG CORE)

C	Si	Ni	Cr	Mo	V	W	Nb
2.90	1.90	1.00	0.60	-	0.03	-	-
3.20	2.70	max	max	-	0.07	-	-

MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	60 - 70 (In steps of 5 °ShC)	
	70 - 80 (In steps of 5 °ShC)	
Neck Properties		
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
35 - 45	400 - 500	3.50 max



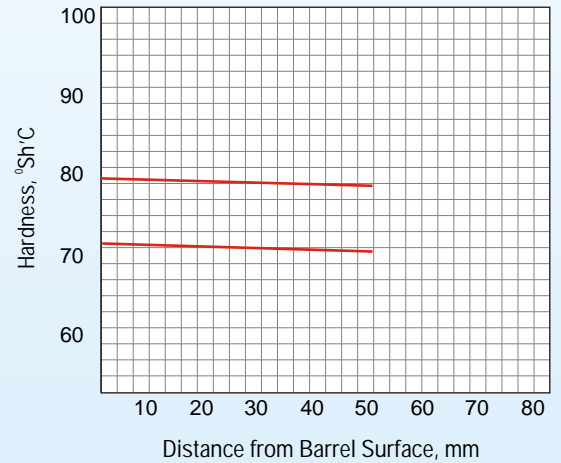
DOUBLE Poured HIGH CHROMIUM IRON ROLLS-ANTI BANDING (SPUN CAST)

CHARACTERISTICS

The shell of such rolls is highly wear resistant having minimal drop in hardness with a good strength to thermal shock, fracture toughness & resistance to oxidation at high temperatures. The oxide layer, once formed, has a good strength to retain it for a longer period during operation imparting uniform surface of the roll and ultimately that of the rolled sheet. The shell matrix contains martensite, bainite and carbides which impart excellent wear resistance.

It is recommended to keep the core as nodular iron (SG Iron). Better roll cooling is required for these rolls in the mill.

HARDNESS DROP CURVE



APPLICATION

These rolls are suitable for initial finishing stands of Hot Strip Mills, Plate Mills, Skin Pass Mills and finishing stand for Checker Plate rolling.

CHEMICAL COMPOSITION (SHELL)

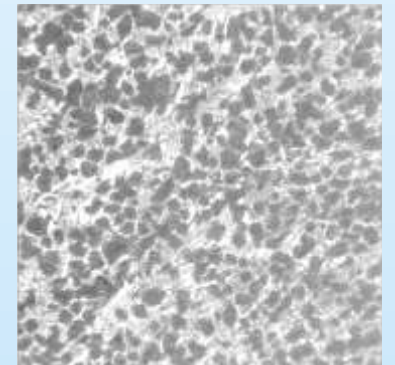
C	Si	Ni	Cr	Mo	V
2.40	0.40	1.00	15.00	1.00	0.15
2.90	0.80	1.60	16.00	1.50	0.45

CHEMICAL COMPOSITION (SG CORE)

C	Si	Ni	Cr	Mo	Mg
2.50	1.90	1.00	0.60	-	0.03
3.00	2.70	max	max	-	0.07

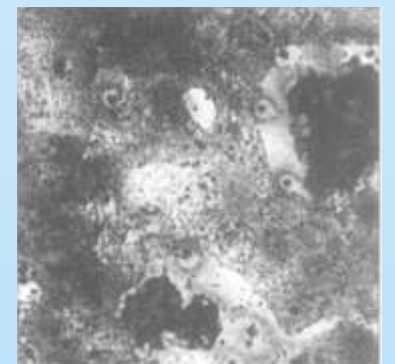
MECHANICAL PROPERTIES

Barrel Hardness (°ShC)	65 - 75 (In steps of 5 °ShC)	
	75 - 85 (In steps of 5 °ShC)	
Neck Properties		
Hardness (°ShC)	U.T.S. (N/mm ²)	Impact (J/cm ²)
35 - 45	400 - 500	3.50 max



X100

Shell Photomicrograph
(Hs 72-78 °ShC)



X100

SG Core Photomicrograph
(Hs 35-45 °ShC)