

BRAZILIAN MARKET FOR COAL & COKE ¹

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Summary: The paper presents a brief description of the Brazilian mills buyers of coking coal, PCI coal and blast furnace coke, detailing the iron reduction area and the coke batteries. For the period 1998-2000 it is indicated, for each mill, the production of hot metal, the consumption of blast furnace coke and PCI coal, the production of coke and of blast furnace coke and the quantities of coking coal, PCI coal and blast furnace coke purchased every year. It is presented also the authors projection of the demand of coking coal, PCI coal and blast furnace coke for 2005. Are listed for the coal fiscal years of 1998, 1999 and 2000, the main coal brands purchased by BSM, indicating the estimated quantities and price range.

Keywords: coal coke market

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CHAPTER 1- INTRODUCTION

The Brazilian companies buyers of coking coal, PCI coal and blast furnace coke are:

- AÇO MINAS GERAIS S/A- AÇOMINAS;
- COMPANHIA AÇOS ESPECIAIS ITABIRA (ACESITA);
- COMPANHIA SIDERÚRGICA BELGO-MINEIRA;
- COMPANHIA SIDERÚRGICA PAULISTA-COSIPA;
- COMPANHIA SIDERÚRGICA NACIONAL (CSN);
- COMPANHIA SIDERÚRGICA DE TUBARÃO (CST);
- GRUPO GERDAU;
- USINAS SIDERÚRGICAS DE MINAS GERAIS S/A-USIMINAS.

AÇO MINAS GERAIS S/A- AÇOMINAS

Located at *Ouro Branco* county, *Minas Gerais* State. Semi-integrated plant producing semi-finished products (slabs, blooms and billets) with steelmaking capacity of 3.0 million mt/year of liquid steel.

Hot metal and coke production capacity:

- blast-furnace: inner volume of 2,650m³, increased in 2001 to 3,050m³ by installation of stove cooler; current hot metal nominal production capacity of 2.8 million mt/year;
- PCI unit: grinding technology by Küttner and injection technology by Paul Wurth; start-up August 1999, injection rate of 160kg/mt of hot metal; coal blend not considered for the time being;
- coke plant : start-up 1985/86, type underjet, 2 batteries with 53 ovens each, with inner volume of 39.80m³, 6.25m high, cokemaking nominal capacity of 1.14 million mt/year.

The coal and the blast furnace coke are discharged at the *Praia Mole* Coal Terminal, near *Vitória* port, *Espirito Santo* State, 668km away from the mill, by rail (*Vitória-Minas* Railway). There is also the possibility of coal and coke be discharged at the *Sepetiba* port, *Rio de Janeiro* State, railway distance of 464km (*MRS Logistica*).

COMPANHIA AÇOS ESPECIAIS ITABIRA (ACESITA)

Located at *Timóteo* county, *Minas Gerais* State. Integrated plant producing specialty steel (stainless steel and silicon steel) with steelmaking capacity of 900,000mt/year of liquid steel.

Hot metal production capacity:

- blast- furnace # 1: inner volume of 375 m³, operating with charcoal, hot metal production capacity of 260,000 mt/year;
- blast- furnace # 2: inner volume of 668 m³, operating with blast furnace coke acquired in the market, hot metal production capacity of 470,000 mt/year.
- total hot metal nominal production capacity: 730,000 mt/year.
- ACESITA is injecting charcoal fines in the blast furnaces.

The imported blast furnace coke is discharged at the *Praia Mole* Coal Terminal, 457km away from the mill by rail (*Vitória-Minas* Railway).

COMPANHIA SIDERÚRGICA BELGO-MINEIRA

The *BELGO-MINEIRA* group has an integrated mill located at *João Monlevade* county, *Minas Gerais* State, purchasing blast furnace coke and PCI coal with a steelmaking capacity of 1.2 million mt/year of liquid steel.

Hot metal production capacity:

- blast-furnace # A: inner volume of 1,357m³, operating with blast furnace coke acquired in the market, hot metal nominal production capacity of 1.040,000mt/year(start-up December 1999);
- PCI unit: start-up April 1999, is injecting currently 160kg/mt of hot metal (Paul Wurth technology) - unit has not coal blend facility.

The imported blast furnace coke and PCI coal are discharged at the *Praia Mole* Coal Terminal, 565km away from the mill by rail (*Vitória-Minas* Railway)

COMPANHIA SIDERÚRGICA PAULISTA-COSIPA

Located at *Cubatão* county, *São Paulo* State. Integrated plant producing flat products with steelmaking production capacity of 2.6 million mt/year of liquid steel (as of September 2001). Considering that COSIPA shut down the BOF shop #1 and is adding new vessel plus continuous casting machine at the BOF shop #2, the nominal steelmaking capacity will increase to 4.5 million mt/year.

Hot metal and coke production capacity:

- blast-furnace # 2: inner volume of 3,180m³ (after the revamping on June 2001, with installation of stove cooler, this volume will increase to 3.365m³), hot metal production capacity of 2.7 million mt/year, after the revamping;
- blast-furnace # 1: inner volume of 1,829m³, hot metal production capacity of 1.1 million mt/year;
- total hot metal nominal production capacity: 3.8 million mt/;
- PCI unit: started-up in 1998 (grinding technology by Loesche and injection by Nippon Steel); nominal injection rate up to 150kg/mt of hot metal - unit has not coal blend facility;
- coke battery # 1 and 2: start-up 1965, type underjet, 62 ovens, with inner volume of 22m³, 4.10m high, cokemaking capacity of 350,000mt/year (presently under hot repair);
- coke battery # 3: start-up 1973, type underjet, 35 ovens, with inner volume of 22m³, 4.10m high, cokemaking capacity of 200,000mt/year(presently under hot repair);
- coke battery # 4: start-up 1976, type underjet, 53 ovens, with inner volume of 37.4m³, 6.25m high, cokemaking capacity of 600,000mt/year;
- coke battery # 5: start-up 1983, type underjet, 53 ovens, with inner volume of 37.4m³, 6.25m high, cokemaking capacity of 600,000mt/year;
- total cokemaking nominal capacity: 1,750,000mt/year (production to be achieved in 2004 after the repairs of coke batteries #4 e #5).

The coal and the blast furnace coke are discharged at the coal terminal of the sea port at the plant area. This port that originally was owned by COSIPA was sold to USIMINAS as part of the COSIPA's debt re-structuration.

COMPANHIA SIDERÚRGICA NACIONAL (CSN)

Located at *Volta Redonda* county, *Rio de Janeiro* State. Integrated plant producing flat products with steelmaking capacity of 5.1 million tons/year of liquid steel.

Hot metal and coke production capacity:

- blast-furnace # 3: inner volume of 3,815m³, hot metal production capacity of 3.3 million tons/year;
- blast-furnace # 2: inner volume of 1,653m³, hot metal production capacity of 1.5 million tons/year;
- total hot metal nominal production capacity: 4.6 million mt/year;
- PCI unit: start-up June 1997, injection rate 160kg/mt of hot metal; grinding technology by Pfeifer and injection technology by KST- unit has not coal belnd facility;
- coke plant # 1: revamped and re-started in 1990, type underjet, 75 ovens, with inner volume of 23m³, 4.5m high, cokemaking capacity of 498,000mt/year;
- coke plant #2 and #3 are shut down;
- coke plant # 4 (4-A and 4-B): start-up 1982/83, type underjet M, 60 ovens, with inner volume of 38m³, 6.0m high, cokemaking capacity of 619,000mt/year;
- coke plant # 5: start-up 1984, type underjet M, 45 ovens, with inner volume of 38m³, 6.0m high, cokemaking capacity of 464,500mt/year;
- total cokemaking nominal capacity: 1,581,500mt/year.

The coal and the blast furnace coke are discharged at the *Sepetiba* Coal Terminal, near Rio de Janeiro, away 130km from the mill, by rail (*MRS Logistica*).

COMPANHIA SIDERÚRGICA DE TUBARÃO (CST)

Located at *Serra* county, *Espirito Santo* State. Semi-integrated plant oriented to export producing semi-finished (slabs) with nominal steelmaking capacity of 4.8 million tons/year of liquid steel.

Hot metal and coke production capacity:

- blast-furnace #1: inner volume of 4,415m³, hot metal production capacity of 3.6 million tons/year;
- blast-furnace #2: inner volume of 1,550 m³, hot metal production capacity of 1.2 million tons/year (entered into operation in 1998);
- PCI unit: start-up for BF #1 in 1996 (grinding technology by Küttner and injection technology by Paul Wurth) and for BF #2 in 1998 (only injection unit- technology by Paul Wurth); injection rate of 140-190kg/mt of hot metal, limited in the BF#1 by the grinding capacity;
- total hot metal nominal production capacity: 4.8 million mt/year;
- coke plant # 1 and 2: start-up 1983, type Carl Still, dry quenching, 98 ovens, with inner volume of 39.5m³, 6.50m high, cokemaking capacity of 1.18 million tons/year;

- coke plant # 3: start-up 1985, type Carl Still, dry quenching, 49 ovens, with inner volume of 39.5m³, 6.50m high, cokemaking capacity of 590,000mt/year;
- total cokemaking nominal capacity: 1,770,000mt/year.

The coal and the blast furnace coke are discharged at the *Praia Mole* Coal Terminal, next to the mill.

GRUPO GERDAU

The *GRUPO GERDAU* (*GERDAU* group) has 3 plants at *Minas Gerais* State, operating blast-furnaces:

- *Companhia Siderúrgica Pains*-located at *Divinópolis* county, with 3 mini blast-furnaces with 110, 192 and 125m³ inner volume, with total hot metal nominal production capacity of 250,000mt/year;
- *Contagem* plant- located at *Contagem* county, with 2 mini blast-furnaces 174 m³ inner volume each, with total pig iron nominal production capacity of 240,000mt/year;
- *Barão de Cocais* plant- located at *Barão de Cocais* county, with 2 mini blast-furnaces of 214m³ and 300m³ inner volume, with total hot metal nominal production capacity of 250,000mt/year.

These mini blast furnaces operate basically with charcoal. The *GRUPO GERDAU* used to buy small coke, but presently they are not in the market for small coke. They are buying small quantities of petcoke. So they are using in the burden charcoal, pet coke and small coke they have in stock.

The small coke is discharged at the *Praia Mole* Coal Terminal.

USINAS SIDERÚRGICAS DE MINAS GERAIS S/A-USIMINAS

Located at *Ipatinga* county, *Minas Gerais* State. Integrated plant producing flat products with steelmaking capacity of 4.5 million tons of liquid steel/year.

Hot metal and coke production capacity:

- blast-furnace # 3: inner volume of 3,162.7m³, hot metal production capacity of 3.1 million tons/year, revamped in September-November 1999;
- blast-furnace # 2: inner volume of 850m³, hot metal production capacity of 730,000mt/year;
- blast-furnace # 1: inner volume of 850m³, hot metal production capacity of 730,000mt/year;
- total hot metal nominal production capacity: 4.56 million mt/year;
- PCI unit: start-up on 1992 (grinding technology by Polisius, injection technology by Küttner), injection rate of 130kg/mt of hot metal for blast furnace #3 and 150kg for blast furnaces #1 and #2- unit has not coal blend facility;
- coke plant # 1-battery #1: start-up 1962, type gun flue underjet, 50 ovens, with inner volume of 18.35m³, 4.00m high, cokemaking capacity of 280,000mt/year;
- coke plant #1-battery # 2: start-up 1965, type gun flue underjet, 50 ovens, with inner volume of 18.35m³, 4.00m high, cokemaking capacity of 280,000mt/year;
- coke plant # 2- battery # 3: start-up 1974, type underjet M, 55 ovens, with inner volume of 37.6m³, 6.00m high, cokemaking capacity of 560,000mt/year;

- coke plant #2- battery # 4: start-up 1979, type underjet M, 55 ovens, with inner volume of 37.6m³, 6.00m high, cokemaking capacity of 560.000mt/year;
- total cokemaking nominal capacity: 1,680,000mt/year.

The coal and the blast furnace coke are discharged at the *Praia Mole* Coal Terminal, away 441 km from the mill, by rail (*Vitória-Minas* Railway).

CHAPTER 2- PURCHASE OF METALLURGICAL COAL AND BLAST FURNACE COKE

2.1. PROCEDURES ADOPTED BY THE MILLS FOR THE PURCHASE OF METALLURGICAL COAL AND BLAST FURNACE COKE

The so called BSM (Brazilian Steel Mills) group that is formed by the 5 steel companies having own coke production (*AÇOMINAS*, *COSIPA*, *CSN*, *CST* and *USIMINAS*) that were formerly controlled by the state owned holding *SIDERBRAS* decided about 15 years ago to do jointly their coking coal purchase. In FY 2001, *CST* decided to split from BSM and is buying their coal individually.

At the beginning of this procedure about 70 to 80% of the annual coking coal requirements were bought through long term contracts (3 years, 5 years and 7 years) signed by the supplier with three or more of the 5 mills. By these contracts the reference tonnage were committed but the prices and firm tonnage plus options negotiated and valid for each coal fiscal year whose term was April 1 through March 31. The same joint negotiation procedure was also applied to negotiate with ship owners to establish the annual ocean freights. The balance of each mill annual coal requirement were negotiated on the spot market individually and in general each mill used it to try new suppliers and/or new coals.

Each year the mills select the general coordinator that conducts the preparatory meetings to define the strategy and the tactics to each joint negotiation. During the negotiation period that runs from February through May preparatory meetings are held once a week one day before any joint negotiation start. Very often two to three suppliers are negotiating with different teams from the mills in different places at the same time. It is established that the chief negotiator to the mills on each negotiation is the head of the coal purchase division of the mill that is the host of that negotiation.

The supplier discuss the price and the total tonnage not knowing in advance how its tonnage will be allocated among the buyers.

By doing so during many years the mills with poor financial records benefited from the others good numbers. Every supplier is requested in advance to grant 180 to 360 days finance to any of the mills that do request it without any collateral guarantee other than the buyer's banking draft. The financing terms are different for each mill and negotiated on a case by case basis. More recently, the mills are using their own credit lines and paying at sight against shipping documents.

In the recent years the Brazilian coal fiscal year has moved from April/March to July/June in practically all contracts. For FY 2001 most of the contracts were settled based on the international coal fiscal year through March 31, 2002.

Also recently the mills decided that PCI coal and anthracite were to be negotiated individually although the mechanism of annual contract still prevails.

Very often the BSM organize visits to their coal suppliers or new mines, producing areas or export countries and visit reports are circulated to all members.

Practically all major Brazilian steel mills operating with blast furnaces have been in the coke market. The purchase of coke is made in general on the spot basis although may include several cargoes. In most of the cases each mill negotiate individually its requirements directly with the suppliers that are in general coke trading companies.

2.2. PURCHASES OF METALLURGICAL COAL AND BLAST FURNACE COKE-1998/2000

For each mill it is indicated below, for the period 1998-2000, the production of hot metal, the consumption of coking coal and PCI coal, as well as the production of coke and the quantities purchased of coking coal, PCI coal and blast furnace coke.

In the Tables I, II and III are showed the list of selected coals purchased in the fiscal years 1998/99, 1999/00 and 2000/01, according to the country of origin, indicating the coal brand, the quantities purchased and the range of price.

AÇO MINAS GERAIS S/A- AÇOMINAS

	(values in 1,000mt)		
	1998	1999	2000
- Production of hot metal	2,260	2,316	2,538
- Consumption of BF coke	1,107	1,080	837
- Consumption of PCI coal	-	-	406
- Production of coke	1,147	1,143	1,129
- Production of BF coke	1,032	1,029	1,016
- Purchase of BF coke	127	40	-
- Purchase of coking coal	1,600	1,650	1,700
- Purchase of PCI coal	-	120	400
- Sale of BF coke	-	-	80

Source: IBS (Brazilian Iron and Steel Institute) – Production of hot metal and coke.

For 2000 it was considered an average fuel rate of 490kg/mthm; average injection rate of 160kg/mthm and a coke rate of 330kg/mthm.

COMPANHIA AÇOS ESPECIAIS ITABIRA (ACESITA)

	(values in 1,000mt)		
	1998	1999	2000
- Production of hot metal (BF #2)	412	427	430
- Consumption of BF coke	183	184	190
- Purchase of BF coke	200	200	200

Source: ACESITA– Production of hot metal and consumption of BF coke.

COMPANHIA SIDERÚRGICA BELGO-MINEIRA

	(values in 1,000mt)		
	1998	1999	2000
- Production of hot metal (BFs operating with coke)	286 (BF#5)	274 (BF#5)	922 (BF#A)
- Consumption of BF coke	182	151	419
- Consumption of PCI coal	-	23	106
- Purchase of BF coke	200	200	456
- Purchase of PCI coal	-	30	156

Source: BELGO-MINEIRA– Production of hot metal and consumption of BF.

The PCI system was commissioned in April 1999. For 2000 it was considered an injection rate below the nominal one. From April to November 1999 it was injected charcoal fines. After January 2000 only coal has been injected.

COMPANHIA SIDERÚRGICA PAULISTA-COSIPA

	<u>(values in 1,000mt)</u>		
	<u>1998</u>	<u>1999</u>	<u>2000</u>
- Production of hot metal	3,369	2,477	2,748
- Consumption of BF coke	1,514	991	1,072
- Consumption of PCI coal	152	240	357
- Production of coke	1,601	1,321	1,387
- Production of BF coke	1,440	1,189	1,248
- Purchase of BF coke	240	-	120
- Purchase of coking coal	2,108	2,078	1,700
- Purchase of PCI coal	125	-	150
- Purchase of Pet coke	86	90	100

Source: *IBS* (Brazilian Iron and Steel Institute) – Production of hot metal and coke.

For 2000 it was considered an average fuel rate of 520kg/mthm: 390kg/mthm of coke, including small coke, and an injection rate of 130kg/mthm.

COMPANHIA SIDERÚRGICA NACIONAL (CSN)

	(values in 1,000mt)		
	1998	1999	2000
- Production of hot metal	4,561	4,650	4,517
- Consumption of BF coke	1,630	1,662	1,766
- Consumption of PCI coal	730	744	677
- Production of coke	1,752	1,752	1,720
- Production of BF coke	1,577	1,577	1,575
- Purchase of BF coke	289	320	200
- Purchase of coking coal	2,329	2,200	2,200
- Purchase of PCI coal	791	800	750

Source: *IBS* (Brazilian Iron and Steel Institute) – Production of hot metal and coke.

CSN is operating with an average fuel rate of 536kg/mthm: coke rate of 386kg/mthm, including small coke, and injection rate of 150kg/mthm.

COMPANHIA SIDERÚRGICA DE TUBARÃO (CST)

	<u>(values in 1,000mt)</u>		
	1998	1999	2000
- Production of hot metal	3,978	4,730	5,016
- Consumption of BF coke	1,373	1,633	1,592
- Consumption of PCI coal	614	742	773
- Production of coke	1,700	1,514	1,800
- Production of BF coke	1,530	1,363	1,530
- Purchase of BF coke	-	-	150
- Purchase of coking coal	2,230	2,140	2,600
- Purchase of PCI coal	550	700	800

Source: *IBS* (Brazilian Iron and Steel Institute) – Production of hot metal and coke.

CST is operating with an average fuel rate of 470kg/mthm for BF #1 (coke rate of 330kg/mthm and injection rate of 140kg/mthm) and 475kgmthm for BF#2 (coke rate of 285kg/mthm and injection rate of 190kg/mthm).

USINAS SIDERÚRGICAS DE MINAS GERAIS S/A-USIMINAS

	<u>(values in 1,000mt)</u>		
	1998	1999	2000
- Production of hot metal	3,817	2,851	4,134
- Consumption of BF coke	1,440	1,080	1,591
- Consumption of PCI coal	480	350	537
- Production of coke	1,694	1,560	1,688
- Production of BF coke	1,525	1,404	1,512
- Purchase of BF coke	132	-	160
- Purchase of coking coal	2,149	2,300	2,600
- Purchase of PCI coal	346	330	520

Source: *IBS* (Brazilian Iron and Steel Institute) – Production of hot metal and coke.

USIMINAS is operating with an fuel rate of 515kg/mthm: coke rate of 385kg/mthm, including small coke, and injection rate of 130kg/mthm. Decrease of production of hot metal in 1999 due to the revamping of blast furnace #3.

TOTAL PURCHASE

The total purchase of metallurgical coal and blast furnace coke can be summarized as follow:

	<u>(values in 1,000mt)</u>		
	1998	1999	2000
AÇOMINAS			
Coking coal	1,600	1,650	1,700
PCI coal	-	120	400
BF coke	127	40	-
ACESITA			
BF coke	200	200	200
BELGO-MINEIRA			
PCI coal	-	30	156
BF coke	200	200	456
COSIPA			
Coking coal	2,108	2,078	1,700
PCI coal	125	-	150
BF coke	240	-	120
CSN			
Coking coal	2,329	2,200	2,200
PCI coal	791	800	750
BF coke	289	320	200
CST			
Coking coal	2,230	2,140	2,600
PCI coal	550	700	800
BF coke	-	-	150
USIMINAS			
Coking coal	2,149	2,300	2,600
PCI coal	346	330	520
BF coke	132	-	160
TOTAL			
Coking coal	10,416	10,368	10,800
PCI coal	1,812	2,015	2,695
BF coke	1,188	760	1,286

2.3. DEMAND OF METALLURGICAL COAL AND BLAST FURNACE COKE - 2005

Situation of each mill regarding the demand of metallurgical coal and blast furnace coke in 2005 were estimated to be the following:

AÇO MINAS GERAIS S/A- AÇOMINAS

- Blast furnace: scheduled to be revamped in mid 2001 for installation of the stove cooler, increasing the inner volume to 3,051m³, representing an increase in the hot metal nominal production capacity to around 2.8 million mt/year of hot metal;
- The mill is considering that the production of BF coke will be totally consumed in the blast furnace.
- The company is studying to build a new blast furnace to enter into operation by 2005 (not considered in the projection below) and to build a new coke battery to match the demand of the new blast furnace.

COMPANHIA AÇOS ESPECIAIS ITABIRA (ACESITA)

- Blast furnace #2 is scheduled to be revamped in 2004, without increase of the inner volume.

COMPANHIA SIDERÚRGICA PAULISTA-COSIPA

With the revamping of the blast furnace #1 and the expansion of the BOF shop/the start-up of the continuous casting machine of the line#1 in 2001, the steelmaking capacity will increase to 4.5 million mt/year of liquid steel.

Hot metal production capacity:

- blast-furnace # 2: scheduled to be revamped in May 2001, inner volume to be increased to 3,365m³, with the introduction of stove cooler; hot metal nominal production capacity will be increased to 2.7 million mt/year;
- blast-furnace # 1: under revamping with start-up foreseen for October 2000; furnace will keep same inner volume of 2,565m³, hot metal nominal production capacity of 1.1 million mt/year;
- total hot metal nominal production capacity: 3.8 million mt/year.
- PCI unit: with a new compressor, the injection rate can be increased up to 170kg/mt of hot metal (650,000mt/year);
- BF coke consumption to be around 1.5 million mt/year in balance with the BF coke production capacity.

COMPANHIA SIDERÚRGICA NACIONAL (CSN)

- blast furnace # 3: scheduled to be revamped in May 2001, inner volume to be increased to 4,172m³, corresponding to a hot metal nominal production capacity of 3.5 million mt/year; the company is considering to build a new blast furnace to replace the idle BF #1, the total hot metal nominal production capacity will be increased to 6 million mt/year;
- coke plant # 3 (presently not operating- scheduled to be revamped and to enter into operation in 2004-2005), type underjet M, 45 ovens, with inner volume of 38m³, 6.0m high, cokemaking capacity of 470,000mt/year; the total cokemaking nominal capacity will be increased to 2,060,000 mt/year

COMPANHIA SIDERÚRGICA DE TUBARÃO (CST)

- blast-furnace #1: re-scheduled to be revamped in 2008- not considered an increase on the volume;
- coke plants: change of doors in 2001; in consequence it is expected a coke production reduction of around 200,000mt in 2001.

USINAS SIDERÚRGICAS DE MINAS GERAIS S/A-USIMINAS

- blast-furnace # 2: scheduled to be revamped in 2003, inner volume scheduled to be increased to 1,080m³, corresponding to a hot metal production capacity of 900,000mt/year; the total hot metal nominal production capacity will be increased to 4.73 million mt/year.

TOTAL DEMAND- 2005

The total demand for metallurgical coal and blast furnace coke can be summarized as follow:

	(values in 1,000mt)
	2005
<hr/>	
AÇOMINAS	
Coking coal	1,500,000
PCI coal	450,000
BF coke	-
ACESITA	
BF coke	200,000
BELGO-MINEIRA	
PCI coal	160,000
BF coke	460,000
COSIPA	
Coking coal	2,350,000
PCI coal	650,000
BF coke	-
CSN	
Coking coal	2,700,000
PCI coal	960,000
BF coke	-
CST	
Coking coal	2,350,000
PCI coal	760,000
BF coke	-
USIMINAS	
Coking coal	2,200,000
PCI coal	7000,000
BF coke	200,000
TOTAL	
Coking coal	11,100,000
PCI coal	3,680,000
BF coke	1,160,000

Remarks: ACESITA, BELGO-MINEIRA, USIMINAS and CST may joint efforts to build a new coke oven plant of about 1.0 million mt/year capacity what would increase the coking coal requirements to about 1.35 million mt/year while the BF coke imports would drop to zero.

