

Vale S.A.
Form 6-K
October 18, 2010

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**United States
Securities and Exchange Commission
Washington, D.C. 20549
FORM 6-K
Report of Foreign Private Issuer
Pursuant to Rule 13a-16 or 15d-16
of the
Securities Exchange Act of 1934
For the month of**

October 2010

Vale S.A.

Avenida Graça Aranha, No. 26
20030-900 Rio de Janeiro, RJ, Brazil
(Address of principal executive office)

(Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F.)

(Check One) Form 20-F Form 40-F

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(Indicate by check mark whether the registrant by furnishing the information contained in this Form is also thereby furnishing information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.)

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Vale 3Q10 Production Report

HIGH PERFORMANCE

Rio de Janeiro, October 18, 2010 Vale S.A. (Vale) operations performed very well in 3Q10, as shown by the continuous output increase of the majority of its products, and the recording of all-time high volumes for pellets, coal and bauxite.

We concluded three projects Additional 20Mt, Bayóvar and CSA in the first seven months of the year and others are being delivered in 4Q10 Onça Puma, Tres Valles and Oman. VNC, formerly Goro, is being successfully commissioned and has already started to produce an intermediate nickel and cobalt product, nickel hydroxide cake. A total of US\$ 12.6 billion was invested in these projects, which are beginning to generate cash flow and superior returns to shareholders.

The improvement in operational performance of the existing assets and the delivery of new projects amidst a scenario of growing global demand for minerals, metals and fertilizers are adding significant strength to our financial results.

The production of iron ore reached 82.6 Mt¹, the second largest quarterly output in Vale's history and the best performance since the record of 85.8 Mt achieved in 3Q08. The operational issues at the discharge in the Ponta da Madeira maritime terminal were solved, allowing Carajás production to rise to a record level. In another important achievement, the performance of our iron ore operations was sufficient to feed the all-time high pellet output of 13.6 Mt in 3Q10.

In the first nine months of 2010, Vale produced 227.5 Mt of iron ore and 36.8 Mt of pellets, increasing 30.4% and 143.5%, respectively, over the same period last year.

Coal production attained a record level of 1.9 Mt in 3Q10 as did bauxite with 3.8 Mt.

The Canadian nickel operations were returning to normalcy during 3Q10 and are reaching full capacity in October. Mining as well as smelting and refining operations at Sudbury, the precious metals plant of Port Colborne, and Voisey's Bay mining and processing operations were ramped up. The 3Q10 numbers already showed some improvement in nickel and copper output, but the bulk of output growth of nickel and its by-products will be reflected in the 4Q10 report.

In 3Q10, the first quarter in which their production volumes are reported for the full three-month period, the recently acquired phosphate fertilizer assets delivered a strong performance. Bayóvar, our phosphate rock mine in Peru, came on stream in July 2010, and its first production of 209,000 metric tons was recorded in 3Q10.

1 Mt=million
metric tons

kt=thousand
metric tons

t=metric tons

Table of Contents**BULK MATERIALS***Iron ore*

| 000 metric tons | 3Q09 | 2Q10 | 3Q10 | 9M09 | 9M10 | % Change 3Q10/2Q10 | % Change 3Q10/3Q09 | % Change 9M10/9M09 |
|------------------------|---------------|---------------|---------------|----------------|----------------|-----------------------------------|-----------------------------------|-----------------------------------|
| IRON ORE | 66,780 | 75,860 | 82,614 | 174,510 | 227,533 | 8.9% | 23.7% | 30.4% |
| Southeastern System | 25,528 | 31,049 | 32,619 | 64,221 | 89,825 | 5.1% | 27.8% | 39.9% |
| Itabira | 8,939 | 10,139 | 10,621 | 23,128 | 28,668 | 4.8% | 18.8% | 24.0% |
| Mariana | 7,834 | 9,750 | 9,697 | 21,001 | 27,702 | -0.5% | 23.8% | 31.9% |
| Minas Centrais | 8,482 | 10,148 | 11,212 | 19,820 | 30,515 | 10.5% | 32.2% | 54.0% |
| Corumbá | n.a. | 652 | 749 | n.a. | 1,953 | 14.8% | n.a. | n.a. |
| Urucum | 273 | 360 | 339 | 273 | 987 | -5.8% | 24.3% | 261.5% |
| Southern System | 15,684 | 19,808 | 20,258 | 40,643 | 56,489 | 2.3% | 29.2% | 39.0% |
| Minas Itabiritos | 5,403 | 7,833 | 8,275 | 12,883 | 22,581 | 5.6% | 53.2% | 75.3% |
| Vargem Grande | 5,697 | 5,821 | 5,938 | 15,344 | 16,938 | 2.0% | 4.2% | 10.4% |
| Paraopeba | 4,584 | 6,154 | 6,044 | 12,415 | 16,970 | -1.8% | 31.8% | 36.7% |
| Carajás | 22,941 | 22,296 | 26,997 | 63,698 | 73,164 | 21.1% | 17.7% | 14.9% |
| Samarco ¹ | 2,628 | 2,707 | 2,741 | 5,948 | 8,054 | 1.2% | 4.3% | 35.4% |

¹ Vale's attributable production capacity of 50%.

Our iron ore production rose to 82.6 Mt in 3Q10, which was the best performance since the all-time high level of 85.8 Mt of 3Q08. Output increased 8.9% on a quarter-on-quarter basis, primarily due to the outstanding performance of Carajás, which was responsible for 70% of the expansion.

When compared to the first nine months of last year, total iron ore production of 227.5 Mt increased by 30.4% in 2010.

The Southeastern System, which encompasses the Itabira, Mariana, Minas Centrais, Corumbá and Urucum mining sites, had a very good performance, reaching a production of 32.6 Mt, thus rising 5.1% over 2Q10 and 27.8% over 3Q09.

The Southern System – Minas Itabiritos, Vargem Grande and Paraopeba – produced 20.3 Mt in 3Q10, 2.3% above the figures for 2Q10. Production of 8.3 Mt from Itabiritos grew 5.6% and marked a new record. This was chiefly influenced by an additional processing plant beginning to operate in June.

At Carajás, iron ore output was 27.0 Mt in 3Q10 – a historical record – increasing 21.1% over 2Q10. The elimination of the operational problems at the discharge in the Ponta da Madeira maritime terminal was the main factor underlying the strong production growth. In addition, the improved performance of the Carajás railroad and the end of the rainy season in the Amazon region helped mining performance to excel.

Table of Contents*Pellets*

| 000 metric tons | 3Q09 | 2Q10 | 3Q10 | 9M09 | 9M10 | % | % | % |
|--------------------------|--------------|---------------|---------------|---------------|---------------|---------------------|---------------------|---------------------|
| | | | | | | Change 3Q10/2Q10 | Change 3Q10/3Q09 | Change 9M10/9M09 |
| PELLETS | 7,970 | 12,653 | 13,638 | 15,105 | 36,783 | 7.8% | 71.1% | 143.5% |
| Tubarão I and II | 1,311 | 1,497 | 1,434 | 3,159 | 4,246 | -4.3% | 9.3% | 34.4% |
| Fábrica | 0 | 1,057 | 1,058 | 235 | 2,793 | 0.1% | n.a. | n.a. |
| São Luís | 0 | 1,440 | 1,656 | 3 | 3,391 | 15.1% | n.a. | n.a. |
| Vargem Grande | 809 | 1,441 | 1,425 | 1,034 | 4,113 | -1.1% | 76.1% | n.a. |
| Nibrasco | 2,404 | 2,074 | 2,395 | 3,641 | 6,465 | 15.5% | -0.3% | 77.6% |
| Kobrasco | 0 | 1,198 | 1,163 | 889 | 3,547 | -2.9% | n.a. | 299.1% |
| Hispanobras ¹ | 125 | 457 | 560 | 125 | 1,455 | 22.4% | 347.4% | n.m. |
| Itabrasco | 656 | 972 | 1,049 | 656 | 2,852 | 8.0% | 60.0% | 334.9% |
| Samarco ² | 2,665 | 2,519 | 2,897 | 5,364 | 7,920 | 15.0% | 8.7% | 47.7% |

¹ Vale's attributable production capacity of 50.89%.

² Vale's attributable production capacity of 50%.

In 3Q10, pellet production achieved the highest quarterly production figure ever, with 13.6 Mt, up 7.8% and 71.1% compared to 2Q10 and 3Q09, respectively.

The output of the Tubarão plants reflects the improved operational performance after the adjustments connected to the shutdown in 2008/2009. Five out of its seven plants recorded production increases. Itabrasco reached record production levels in 3Q10, at 1.0 Mt. Due to a three-day maintenance stoppage, Tubarão I and II showed a slight decrease in output, down to 1.4 Mt from 1.5 Mt in 2Q10.

The production of São Luís surged 15.1% on a quarter-on-quarter basis, given the augmented availability of feed from Carajás.

Vargem Grande, which came on stream in 1Q09 and has a nominal capacity of 7 Mtpy, is concluding its ramp up. In 9M10 it accumulated a production volume of 4.1Mt.

The three pellet plants of the 50%-owned JV Samarco, which have a nominal capacity of 21.0 Mtpy, are operating at full capacity and recording an all-time high output. Our attributable production was 2.897 Mt in 3Q10, increasing 15% over 2Q10.

In 3Q10, we produced 9.1 Mt of blast furnace pellets and 4.5 Mt of direct reduction pellets.

Currently, we are building two new pellet plants, Oman and Tubarão VIII, which will add 16.5 Mtpy to the company's capacity. The Oman plant is planned to start up operations very soon, with total production capacity of 9 Mtpy of direct reduction pellets. In the week of October 11th, the vessel Ore Moatize, one of our iron ore carriers, left the Tubarão port for the Middle East with 147,000 metric tons of iron ore, the first iron ore shipment to feed the Oman pellet plant.

Table of Contents*Manganese ore and ferroalloys*

| 000 metric tons | 3Q09 | 2Q10 | 3Q10 | 9M09 | 9M10 | % Change 3Q10/2Q10 | % Change 3Q10/3Q09 | % Change 9M10/9M09 |
|--------------------|------------|------------|------------|--------------|--------------|--------------------------|--------------------------|--------------------------|
| MANGANESE | | | | | | | | |
| ORE | 449 | 494 | 472 | 1,112 | 1,364 | -4.4% | 5.1% | 22.7% |
| Azul | 378 | 431 | 372 | 869 | 1,159 | -13.7% | -1.5% | 33.4% |
| Urucum | 41 | 48 | 55 | 137 | 143 | 13.7% | 33.7% | 4.8% |
| Other mines | 31 | 15 | 46 | 105 | 61 | n.m. | 48.4% | -42.4% |
| FERROALLOYS | 59 | 113 | 112 | 135 | 335 | -1.4% | 88.4% | 148.3% |
| Brazil | 24 | 51 | 50 | 65 | 152 | -2.3% | 110.7% | 133.4% |
| Dunkerque | 10 | 36 | 35 | 10 | 103 | -2.7% | 259.9% | n.a. |
| Mo I Rana | 26 | 26 | 26 | 60 | 80 | 2.3% | 2.2% | 33.9% |

In 3Q10, manganese ore production was slightly lower than the previous quarter, coming to 472,000 t against 494,000 tons in 2Q10.

This was caused by a stoppage of Azul – our largest manganese mine – for corrective maintenance, which meant a 13.7% reduction in its output relative to 2Q10. The production of Urucum grew by 13.7% over 2Q10 as a consequence of the adoption of an additional production shift.

Ferroalloy quarterly production was comprised of 55,000 t of ferrosilicon manganese alloys (FeSiMn), 52,000 t of high-carbon manganese alloys (FeMnHc) and 5,000 t of medium-carbon manganese alloys (FeMnMC).

Coal

| 000 metric tons | 3Q09 | 2Q10 | 3Q10 | 9M09 | 9M10 | % Change 3Q10/2Q10 | % Change 3Q10/3Q09 | % Change 9M10/9M09 |
|----------------------|------------|--------------|--------------|--------------|--------------|--------------------------|--------------------------|--------------------------|
| METALLURGICAL | | | | | | | | |
| COAL | 844 | 755 | 814 | 1,869 | 2,285 | 7.9% | -3.6% | 22.3% |
| Integra Coal | 456 | 245 | 296 | 986 | 868 | 20.8% | -35.1% | -12.0% |
| Broadlea | 114 | 70 | 0 | 227 | 101 | n.m. | n.m. | -55.4% |
| Carborough Downs | 127 | 277 | 289 | 359 | 849 | 4.2% | n.m. | 136.3% |
| Others | 148 | 162 | 229 | 296 | 466 | 41.0% | 55.1% | 57.6% |
| THERMAL COAL | 858 | 1,104 | 1,057 | 2,285 | 2,862 | -4.2% | 23.3% | 25.2% |
| El Hatillo | 315 | 809 | 830 | 775 | 2,161 | 2.6% | 163.7% | 178.9% |
| Integra Coal | 147 | 65 | 114 | 599 | 236 | 74.3% | -22.6% | -60.5% |
| Broadlea | 209 | 118 | 0 | 470 | 165 | n.m. | -100.0% | -64.8% |
| Others | 187 | 111 | 113 | 442 | 299 | 1.4% | -39.6% | -32.4% |

In 3Q10 Vale's coal production reached an all-time high volume of 1.9 Mt, which was comprised of 814,000 t of metallurgical coal and 1.1 Mt of thermal coal.

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Production of metallurgical and thermal coal at Integra Coal, in Australia, was 296,000 t and 114,000 t, respectively, in 3Q10. It has shown improved performance despite the unusual rainy weather during the Australian winter season, maintenance checks and equipment repair. Metallurgical coal output grew by 21% on quarter-on-quarter basis, while the production of thermal coal output increased 74.3% over 2Q10.

Production at Carborough Downs (CD), in Australia, was 289,000 t in 3Q10, versus 277,000 t in 2Q10. Production rates of the longwall have improved over the last quarter and are being achieved on a far more consistent basis, which allowed CD to achieve its best performance ever.

Broadlea, a small open pit mine, which had been used as an auxiliary source of output to CD while the longwall was being installed, was shut down in the first week of December 2009. Stockpiles of intermediate products existing at the end of 2009 were washed at the CD plant² and used to produce coal in 2Q10. Broadlea continues to be in care and maintenance.

The thermal coal mine of El Hatillo, an open pit coal mine in Colombia, is ramping up and produced 830,000 t in 3Q10, up 2.6% on a quarter-on-quarter basis and 163.7% on a year-on-year.

BASE METALS*Nickel*

| 000 metric tons | 3Q09 | 2Q10 | 3Q10 | 9M09 | 9M10 | % Change 3Q10/2Q10 | % Change 3Q10/3Q09 | % Change 9M10/9M09 |
|-----------------|-----------|-----------|-----------|------------|------------|--------------------------|--------------------------|--------------------------|
| NICKEL | 33 | 37 | 44 | 157 | 114 | 21.1% | 36.1% | -27.4% |
| Sudbury | 5 | 8 | 6 | 42 | 14 | -20.0% | 25.4% | -66.4% |
| Thompson | 5 | 8 | 5 | 19 | 22 | -43.2% | 4.1% | 12.5% |
| Voisey Bay | 3 | 4 | 10 | 36 | 17 | n.m. | n.m. | -53.0% |
| Sorowako | 20 | 17 | 22 | 54 | 59 | 28.1% | 7.7% | 8.3% |
| Others* | 0 | 0 | 2 | 6 | 3 | n.m. | n.m. | -53.2% |

* External feed purchased from third parties and processed into finished nickel in our operations

Total finished nickel production was 44,000 t in 3Q10, 21% up on a quarter-on-quarter basis. In addition to the better performance of Sorowako, the output increase was due to the ramp up of Sudbury and Voisey s Bay, which sourced an expansion of 4,700 t of finished nickel.

The handover of operating assets to workers returning after the long strike caused the stoppage of the Sudbury mines, the Clarabelle processing mill and the smelter for some time. Mines have largely been producing in line with the plan since September, and the smelter is now running with its two furnaces. The Copper Cliff Nickel Refinery (CCNR), which was shutdown during the strike, resumed operations near the end of August and reached full capacity by the end of September.

Therefore, while this transition helps to explain the relatively modest increase in nickel output in 3Q10, the dynamics of the ramp-up of the Canadian operations signal a major performance improvement for 4Q10.

Finished nickel production from Sudbury was 6,100 t, down 1,500 t from 2Q10, and up 25.4% from 3Q09.

Finished nickel production from Voisey s Bay source nickel was 9,700 t, increasing 6,200 t over 2Q10. Voisey s Bay nickel concentrates were used to feed CCNR and the Clydach nickel refinery.

Production at Thompson, in the province of Manitoba, Canada, was 4,700 t in 3Q10. This was 43.2% lower than the previous quarter due to the planned one-month annual maintenance shutdown in August.

² CHPP=coal
handling and
preparation
plant

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Nickel in matte production from the Indonesian operations at Sorowako was 18,900 t in 3Q10, up 28.7% relative to 2Q10 due to strong performance.

The commissioning of VNC, the 60,000 t nickel project in New Caledonia, is almost concluded. The production cycle of its upstream units have begun and the resulting nickel solution from HPAL is being sold to clients as an intermediate nickel and cobalt product, nickel hydroxide cake (NHC).

The ramp up of Onça Puma, a 58,000 t ferronickel project in Brazil, is beginning in October and the first metal is expected to be delivered in November.

Copper

| 000 metric tons | 3Q09 | 2Q10 | 3Q10 | 9M09 | 9M10 | % Change 3Q10/2Q10 | % Change 3Q10/3Q09 | % Change 9M10/9M09 |
|------------------------|-------------|-------------|-------------|-------------|-------------|-----------------------------------|-----------------------------------|-----------------------------------|
| COPPER | 31 | 40 | 58 | 166 | 131 | 45.2% | 86.4% | -20.7% |
| Sossego | 31 | 29 | 32 | 89 | 87 | 10.9% | 3.3% | -2.9% |
| Sudbury | 0 | 3 | 14 | 39 | 20 | n.m. | n.m. | -49.6% |
| Thompson | 0 | 0 | 0 | 1 | 1 | -74.7% | -4.4% | -44.2% |
| Voisey s Bay | 0 | 5 | 11 | 24 | 17 | n.m. | n.m. | -28.4% |
| Others | 0 | 3 | 1 | 12 | 7 | -46.5% | n.m. | -40.7% |

Vale's copper production was 58,000 t in 3Q10, an increase of 45.2% on a quarter-on-quarter basis. Our Canadian operations delivered 26,000 t in 3Q10, 15,000 t higher than 2Q10.

With the end of the strike in Sudbury, the production of copper is expected to normalize in 4Q10.

Production of copper in concentrates from Sossego mine at Carajás was 3,100 t, 10.9% higher than 2Q10. This was caused by the increase of the utilization of SAG milling, a semi-autogenous mill that uses a large rotating drum filled with ore, water and steel grinding balls to transform the ore into a fine slurry.

Table of Contents*Nickel by-products*

| | 3Q09 | 2Q10 | 3Q10 | 9M09 | 9M10 | % Change 3Q10/2Q10 | % Change 3Q10/3Q09 | % Change 9M10/9M09 |
|--------------------------------|-----------|------------|------------|--------------|--------------|--------------------------|--------------------------|--------------------------|
| COBALT (metric tons) | 97 | 179 | 133 | 1,442 | 442 | -25.4% | 37.0% | -69.4% |
| Sudbury | 2 | 6 | 39 | 359 | 45 | n.m. | n.m. | -87.6% |
| Thompson | 31 | 73 | 34 | 111 | 159 | -53.8% | 9.1% | 43.3% |
| Voisey Bay | 64 | 98 | 60 | 908 | 235 | -38.7% | -6.5% | -74.1% |
| Others | 1 | 2 | 1 | 64 | 3 | n.m. | n.m. | -95.5% |
| PLATINUM (000 oz troy) | 16 | 5 | 3 | 102 | 10 | -45.2% | -80.9% | -90.5% |
| Sudbury | 16 | 5 | 3 | 102 | 10 | -45.2% | -80.9% | -90.5% |
| PALLADIUM (000 oz troy) | 27 | 15 | 7 | 148 | 25 | -49.8% | -72.9% | -82.9% |
| Sudbury | 27 | 15 | 7 | 148 | 25 | -49.8% | -72.9% | -82.9% |
| GOLD (000 oz troy) | 4 | 6 | 5 | 47 | 15 | -17.5% | 27.3% | -68.5% |
| Sudbury | 4 | 6 | 5 | 47 | 15 | -17.5% | 27.3% | -68.5% |
| SILVER (000 oz troy) | 20 | 718 | 194 | 1,219 | 1,049 | -72.9% | 884.4% | -13.9% |
| Sudbury | 20 | 718 | 194 | 1,219 | 1,049 | -72.9% | 884.4% | -13.9% |

In 3Q10, cobalt production was 133 metric tons, down 25.4% from 2Q10 due to the planned annual maintenance shutdown of Thompson.

The decrease in the production of platinum and palladium in 3Q10 still reflects the effects of the labor strike, given the long PGM production cycle. PGMs are processed through the Sudbury and Port Colborne plants and then shipped to the Acton refinery in the United Kingdom to be refined into finished products. Thus, the output of PGMs will be the last to recover from the interruption of Sudbury operations.

Bauxite

| 000 metric tons | 3Q09 | 2Q10 | 3Q10 | 9M09 | 9M10 | % Change 3Q10/2Q10 | % Change 3Q10/3Q09 | % Change 9M10/9M09 |
|-----------------|--------------|--------------|--------------|--------------|---------------|--------------------------|--------------------------|--------------------------|
| BAUXITE | 3,303 | 3,413 | 3,801 | 9,142 | 10,482 | 11.4% | 15.1% | 14.6% |
| Trombetas | 1,600 | 1,568 | 1,883 | 4,520 | 4,975 | 20.1% | 17.7% | 10.1% |
| Paragominas | 1,703 | 1,844 | 1,918 | 4,623 | 5,507 | 4.0% | 12.6% | 19.1% |

In 3Q10, Vale's bauxite production reached a record of 3.8 Mt, showing an 11.4% quarter-on-quarter and a 15.1% year-on-year increase.

Vale's attributable production at Trombetas amounted to 1.8 Mt, up 20.1% quarter-on-quarter and up 17.7% year-on-year, respectively.

The Paragominas bauxite mine hit an all time-high production of 1.9 Mt, rising 4% against 2Q10. In 3Q10, we concluded the ramp-up of the three additional filters, which will allow Paragominas to run at its nominal capacity of 9.9 Mtpy.

Table of Contents*Alumina*

| | | | | | | % Change 3Q10/2Q10 | % Change 3Q10/3Q09 | % Change 9M10/9M09 |
|-----------------|--------------|--------------|--------------|--------------|--------------|--------------------------|--------------------------|--------------------------|
| 000 metric tons | 3Q09 | 2Q10 | 3Q10 | 9M09 | 9M10 | | | |
| ALUMINA | 1,515 | 1,521 | 1,442 | 4,433 | 4,357 | -5.2% | -4.8% | -1.7% |
| Alunorte | 1,515 | 1,521 | 1,442 | 4,433 | 4,357 | -5.2% | -4.8% | -1.7% |

The production of alumina at the Barcarena refinery totaled 1.4 Mt in 3Q10, as against 1.5 Mt in 2Q10, in line with its capacity.

Aluminum

| | | | | | | % Change 3Q10/2Q10 | % Change 3Q10/3Q09 | % Change 9M10/9M09 |
|-----------------|------------|------------|------------|------------|------------|--------------------------|--------------------------|--------------------------|
| 000 metric tons | 3Q09 | 2Q10 | 3Q10 | 9M09 | 9M10 | | | |
| ALUMINUM | 113 | 112 | 114 | 347 | 333 | 1.2% | 0.5% | -4.1% |
| Albrás | 113 | 112 | 114 | 338 | 333 | 1.2% | 0.5% | -1.4% |
| Valesul | 0 | | | 9 | 0 | n.a. | n.a. | n.a. |

Aluminum production was 114,000 t in 3Q10, against 112,000 t in 2Q10 and 113,000 t in 3Q09. The production on 3Q10 was in line with the quarterly and annual basis.

FERTILIZER NUTRIENTS*Potash*

| | | | | | | % Change 3Q10/2Q10 | % Change 3Q10/3Q09 | % Change 9M10/9M09 |
|-------------------|------------|------------|------------|------------|------------|--------------------------|--------------------------|--------------------------|
| 000 metric tons | 3Q09 | 2Q10 | 3Q10 | 9M09 | 9M10 | | | |
| POTASH | 186 | 180 | 155 | 531 | 493 | -13.9% | -16.8% | -7.2% |
| Taquari-Vassouras | 186 | 180 | 155 | 531 | 493 | -13.9% | -16.8% | -7.2% |

In 3Q10, production of potash was 155,000 t, a volume 25,000 t smaller than 2Q10. This is explained by the lower content of the feed and the corrective maintenance of the concentration and compression plant at Taquari-Vassouras.

Table of Contents*Phosphates*

| 000 metric tons | 3Q09 | 2Q10 | 3Q10 | 9M09 | 9M10 | % Change 3Q10/2Q10 | % Change 3Q10/3Q09 | % Change 9M10/9M09 |
|---|--------------|--------------|--------------|--------------|--------------|--------------------------|--------------------------|--------------------------|
| Phosphate Rock | 1,145 | 1,107 | 1,407 | 3,423 | 3,468 | 27.1% | 22.8% | 1.3% |
| Vale Fertilizantes | 711 | 685 | 721 | 2,225 | 2,011 | 5.2% | 1.3% | -9.6% |
| Vale Fosfatados | 434 | 421 | 477 | 1,197 | 1,248 | 13.2% | 9.9% | 4.2% |
| Bayóvar | | | 209 | | 209 | n.a. | n.a. | n.a. |
| MAP Monoammonium phosphate | 207 | 185 | 229 | 664 | 653 | 24.1% | 10.6% | -1.7% |
| Vale Fertilizantes | 207 | 185 | 229 | 664 | 653 | 24.1% | 10.6% | -1.7% |
| TSP Triple superphosphate | 203 | 197 | 229 | 496 | 626 | 16.5% | 12.8% | 26.2% |
| Vale Fertilizantes | 203 | 197 | 229 | 496 | 626 | 16.5% | 12.8% | 26.2% |
| SSP -Single superphosphate | 531 | 525 | 637 | 1,374 | 1,603 | 21.3% | 20.0% | 16.7% |
| Vale Fosfatados | 531 | 525 | 637 | 1,374 | 1,603 | 21.3% | 20.0% | 16.7% |
| DCP Dicalcium Phosphate | 138 | 137 | 144 | 352 | 390 | 5.0% | 4.6% | 10.8% |
| Vale Fosfatados | 138 | 137 | 144 | 352 | 390 | 5.0% | 4.6% | 10.8% |

Vale Fosfatados owns two phosphate rock mines, Araxá, in the state of Minas Gerais, and Cajati, in the state of São Paulo, Brazil. Alongside the mining operations, the assets also comprise four processing plants for the production of phosphates fertilizers located at: (a) Araxá, state of Minas Gerais; (b) Cajati, state of São Paulo; (c) Cubatão, state of São Paulo; (d) Guará, state of São Paulo.

Total production of phosphate rock, which is used to feed the output of phosphate nutrients, rose 27.1% compared to 2Q10. Vale Fertilizantes, former Fosfertil, reached a production of 721,000 t, a 5.2% quarter-on-quarter increase. Vale Fosfatados production was up 13.2%, reaching 477,000 t, which was made possible by the ramp-up of plant 2.

Bayóvar, our Peruvian phosphate rock mine, started to ramp up production in July and produced 209,000 metric tons in 3Q10. Bayóvar is expected to be running at 1 Mtpy by yearend.

The production of MAP (monoammonium phosphate) was 229,000 t, up 24.1% quarter-on-quarter, recovering from the scheduled maintenance stoppages in the last quarter, and also increased 10.6% on an annual basis reflecting the higher demand.

TSP (triple superphosphate) production increased 16.5% compared to 2Q10 reaching the new record of 229,000 t in 3Q10.

In 3Q10, the production of SSP (single superphosphate) grew 21.3% mainly because of the additional shift in the Cubatão plant to meet the higher demand. The demand was also reflected in DCP (dicalcium phosphate) production which went up 5.0% on a quarter-on-quarter basis.

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| 000 metric tons | 3Q09 | 2Q10 | 3Q10 | 9M09 | 9M10 | % Change 3Q10/2Q10 | % Change 3Q10/3Q09 | % Change 9M10/9M09 |
|-------------------------|------------|------------|------------|------------|------------|--------------------------|--------------------------|--------------------------|
| Ammonia | 129 | 112 | 108 | 381 | 368 | -3.9% | -16.4% | -3.3% |
| Vale Fertilizantes | 129 | 112 | 108 | 381 | 368 | -3.9% | -16.4% | -3.3% |
| Urea | 125 | 144 | 77 | 368 | 365 | -46.5% | -38.2% | -0.9% |
| Vale Fertilizantes | 125 | 144 | 77 | 368 | 365 | -46.5% | -38.2% | -0.9% |
| Nitric Acid | 119 | 103 | 119 | 337 | 334 | 15.3% | -0.1% | -1.1% |
| Vale Fertilizantes | 119 | 103 | 119 | 337 | 334 | 15.3% | -0.1% | -1.1% |
| Ammonium Nitrate | 116 | 105 | 115 | 339 | 331 | 9.5% | -0.6% | -2.4% |
| Vale Fertilizantes | 116 | 105 | 115 | 339 | 331 | 9.5% | -0.6% | -2.4% |

In 3Q10 ammonia production decreased 3.9% compared to 2Q10 due to the scheduled maintenance stoppage in the Araucária unit. This shutdown also impacted the urea production, which decreased 46.5% and 38.2% on a quarterly and annual basis, respectively.

The production of nitric acid and ammonium nitrate were 15.3% and 9.5% higher on a quarter-on-quarter basis, recovering from the scheduled maintenance in the Piaçaguera plant in 2Q10.

For further information, please contact:

+55-21-3814-4540

Roberto Castello Branco: roberto.castello.branco@vale.com

Viktor Moszkowicz: viktor.moszkowicz@vale.com

Carla Albano Miller: carla.albano@vale.com

Andrea Gutman: andrea.gutman@vale.com

Fernando Frey: fernando.frey@vale.com

Marcio Loures Penna: Marcio.penna@vale.com

Samantha Pons: samantha.pons@vale.com

Thomaz Freire: thomaz.freire@vale.com

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Signatures

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Vale S.A.
(Registrant)

Date: October 18, 2010

By: /s/ Roberto Castello Branco
Roberto Castello Branco
Director of Investor Relations