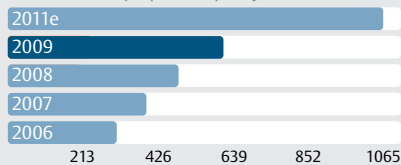


Zinc – Lead



Zinc and Lead ktpa
Production and proposed capacity



Description

Vedanta is the world's second largest integrated Zinc-Lead producer. Zinc and Lead operations include various mines and smelting facilities in India.

272 million tonnes of Reserves and Resources of ore.

Key locations

India

Zinc and Lead Mines

Rampura-Agucha
Rajpura Dariba
Sindesar Khurd
Zawar

Smelters and Refinery

Chanderiya
– Zinc & Lead smelters
– Silver refinery
Debari – Zinc smelter
Vizag – Zinc smelter

The performance of our Zinc business in FY 2009 is set out in the table below.

(in US\$ millions, except as stated)	FY 2009	FY 2008	% change
Production volumes – Zinc (in kt)			
Mined metal content	651	551	18.1
Refined metal	552	426	29.6
Production volumes – Lead (in kt)			
Mined metal content	84	78	7.7
Refined metal	60	58	3.5
Production volumes – Saleable silver (in m. oz)	3.38	2.58	31.0
Sale of commercial power, including wind power (in million units)	297	112	165.2
Average LME zinc cash settlement prices (US\$ per tonne)	1,563	2,992	(47.8)
Average LME lead cash settlement prices (US\$ per tonne)	1,660	2,875	(42.3)
Average exchange rate (INR per US\$)	45.91	40.24	14.1
Unit costs			
Zinc (US\$ per tonne)	710	884	(19.7)
Zinc (INR per tonne)	32,621	35,590	(8.3)
Zinc excluding royalties (US\$ per tonne)	609	686	(11.2)
Zinc excluding royalties (INR per tonne)	27,973	27,625	1.3
Revenue	1209.1	1,941.4	(37.7)
EBITDA	605.4	1,380.1	(56.1)
EBITDA margin	50.1%	71.1%	–
Operating profit	548.3	1,333.0	(58.9)

Production Performance

Mined metal production for zinc and lead from all our mines was 735,000 tonnes in FY 2009, up 16.9% over FY 2008, primarily as a result of commissioning of the stream III concentrator at the Rampura Agucha mine.

We delivered record refined zinc metal production in FY 2009 of 552,000 tonnes, up 29.6% compared with FY 2008. Production was higher primarily on account of commissioning the new zinc smelter at Chanderiya in December 2007 and the 88 ktpa de-bottlenecking project. The production of lead during FY 2009 was 60,000 tonnes, up 3.5% compared with FY 2008.

Production of saleable silver in FY 2009 was our highest ever at 3.38 million troy ounces, up 31% compared with FY 2008.

Unit Costs

Unit costs of production in FY 2009 excluding royalties were lower at US\$609 per tonne (INR 27,973 per tonne) compared with US\$686 per

tonne (INR 27,625 per tonne) in FY 2008. Cost performance in Indian rupee terms during the year was impacted by higher input costs, benefit of increased volumes, volatile acid credits and higher coal cost used for captive power plant. The underlying operating performance showed an improving trend with exit CoP (excluding royalties) in March 2009 of US\$593 per tonne (INR 30,380 per tonne) despite lower by-product credits.

Sales

We sold 332,000 tonnes of zinc metal in the domestic markets during FY 2009, broadly in line with domestic sales in FY 2008. Zinc export sales were 221,000 tonnes in FY 2009, up 151.1% from 88,000 tonnes in FY 2008. In addition to refined zinc metal, we also sold 76,000 dry metric tonnes of surplus zinc concentrate and 56,000 dry metric tonnes of lead concentrate, in FY 2009.

Financial Performance

Despite a 26.4% increase in production volumes and stable operating costs, EBITDA in FY 2009 was US\$605.4 million, down 56% compared with FY 2008

EBITDA of US\$1,380.1 million, primarily due to the significant reduction in LME zinc and lead prices by 47.8% and 42.3%, respectively. Higher volumes contributed positively to EBITDA by c.US\$130 million whilst lower LME prices reduced EBITDA by c.US\$850 million.

Exploration

Ongoing exploration activities at HZL have yielded significant success with the gross addition of 46.3 million tonnes to reserves and resources prior to a depletion of 6.7 million tonnes in FY 2009. Contained zinc-lead metal has increased by 4.7 million tonnes, prior to a depletion of 0.7 million tonnes during the same period. Total reserves and resources at 31 March 2009 were 272.0 million tonnes containing 31.5 million tonnes of zinc-lead metal and 713.3 million ounces of silver. The reserves and resources position has been independently reviewed and certified as per the JORC standard.

In FY 2009, record annual drilling of 70,300 metres was completed. The success of our exploration efforts has been primarily at the Rampura Agucha and Sindesar Khurd mines. The success of exploration efforts during the year is signified by additions at the Rampura Agucha and Sindesar Khurd mines where we now have a reserve and resource base of 118.7 million tonnes (FY 2008: 107.3 million tonnes) and 56.6 million tonnes respectively (FY 2008: 37.1 million tonnes).

Projects

We successfully commissioned our 1.0 mtpa stream III concentrator at Rampura Agucha and captive power plant of 80 MW at Zawar during the year.

Construction activities at the 210,000 tpa zinc smelter and 100,000 tpa lead smelter at Rajpura Dariba is progressing well and on schedule for completion by mid 2010. Work at the mining projects at Rampura Agucha, Sindesar Khurd and Kayar are also progressing on schedule for progressive commissioning from mid 2010. At Sindesar Khurd the ramp portal is nearing completion and resources have been mobilised to achieve accelerated mine development.

In line with the Group’s philosophy of being a fully self reliant producer of power, a 160 MW captive thermal power plant is also being built at Rajpura Dariba. The project is progressing well on schedule.

Case study



Bulk Concentrate

The conventional technology for flotation of lead-zinc ores is differential flotation to produce separate concentrates of lead and zinc. The separate concentrates are then fed to respective smelters of lead and zinc for recovery of metals. In this process, misplaced metals (Zinc in Lead concentrates and Lead in Zinc concentrates) are lost and conventionally not accounted for in recovery, either at mines or at smelters. These losses range between 2% to 10%, depending upon concentration and tonnages of different concentrates for different mines.

The Imperial Smelting Process (ISP) existing at CLZS, enjoys the advantages of being able to use ‘Dirty’ feed i.e. both lead and zinc in the feed to the furnace without affecting its performance. Historically, bulk concentrates (concentrates containing both lead and zinc produced by bulk flotation at mines) should be fed to the furnace giving advantages of correspondingly higher recovery at mines and without affecting performance of ISF.

Two underground mines – namely Rajpura Dariba (RDM) & Zawar Mines(ZM) –earlier produced separate (zinc and lead) concentrates. The recoveries of zinc, lead and silver were relatively lower from RDM. Bulk flotation was carried out after a lot of R&D and plant trials at both the mines and after modifying the flow sheets to suit the requirements of the smelter and significant better overall recoveries were achieved at both the mines for all the metals. Zawar now produces all its output in the form of bulk concentrate while RDM produces bulk concentrate for a portion of its output depending on the grade mix and requirement of the ISF smelter. The innovativeness of this project lies in the use of Zawar bulk concentrate to blend with RDM bulk concentrate to make it acceptable to the smelter. In this process, zinc, lead and silver recoveries have improved by 0.5%, 2% and 1% respectively in ZM and by 2.5%, 6% and 4% respectively in RDM. Besides helping in better management of mineral resources, substantial financial savings are generated through this effort.

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