

Zinc

Patrick Chevalier
 Metal Materials Division
 Telephone: (613) 992-4401
 E-mail: patrick.chevalier@nrcan.gc.ca

2004 mine production: \$1.0 billion
 World rank: Second (metal production)
 2004 exports: \$1.21 billion

Canada	2003	2004 (e)	2005 (f)
	(000 t)		
Mine output	788	788	660
Refined metal production	761	804	790
Usage	146	152	150

(e) Estimated; (f) Forecast.

Zinc is used in the automotive and construction industries for the galvanization of steel and manufacture of die-cast alloys, in the production of brass, in semi-manufactures such as rolled zinc, and in chemical applications. Promising new applications for zinc are in the manufacture of zinc-air batteries and in galvanized steel studs as an alternative to wood in residential construction. Recycled zinc has become an increasingly important source of the metal in recent years. Recycled zinc includes high-purity refined zinc, remelted zinc of a purity less than 98.5% zinc, and zinc scrap used in the production of zinc alloys. Canada currently produces only a minor amount of recycled zinc exclusively from recycled feeds in primary zinc smelters. However, refined zinc from the processing of electric arc furnace dusts or from the de-zincing of galvanized steel scrap may become important in the future.

ANNUAL AVERAGE SETTLEMENT PRICES, LONDON METAL EXCHANGE FOR SPECIAL HIGH GRADE ZINC

2001	2002	2003	2004	2005 (f)	2006 (f)
(US\$/t)					
886.27	778.56	828.39	1 047.83	1 350	1 550

(f) Forecast.

CANADIAN OVERVIEW

- A strike at Teck Cominco's Trail lead and zinc smelters, which started in July, ended when union members ratified a new three-year contract in October.
- The strike at Falconbridge's Kidd Creek metallurgical complex was settled in October when the workers signed a new three-year collective agreement. Mining was not affected by the strike and, following an initial shut-down, the mill was restarted, in part using management labour.
- Aur Resources Inc. is developing the Duck Pond copper-zinc deposit in Newfoundland and Labrador on a fast-track basis with production expected to begin in late 2006. The mine will produce about 18 600 t of copper contained in concentrates annually, plus by-products of about 34 000 t/y of zinc, 16.7 t/y of silver and 128 kg/y of gold over the mine's seven-year life.
- In June, Noranda and Falconbridge agreed to the terms of their amalgamation. The new combined company, known as Falconbridge Limited, is the third largest zinc producer in the world. The combined operations include the Brunswick mine, General Smelting, the Kidd Creek smelter, Noranda Income Fund-CEZ refinery (25% interest), and the Antamina mine (33.75% interest) in Peru.

WORLD OVERVIEW

- Four consecutive years of concentrate deficits have resulted in depleted producer stocks, forcing a number of custom smelters to cut output. With feed in tight supply, mine production losses take on added importance and create difficulties for smelters.
- Korea Zinc announced that the Onsan smelter will produce about 30 000 t less than targeted for this year.
- Vancouver-based EuroZinc is spending US\$5.2 million to develop a zinc circuit at its Neves Corvo copper mine in Portugal to process zinc-rich ore zones. The company plans to modify a former tin concentrator circuit to produce 25 000 t/y of zinc in concentrate by June 2006.
- Toronto-based HudBay Minerals plans to re-open the Balmat zinc mine in New York state in the second quarter of 2006. The mine, which has been on care and maintenance since 2001, has reserves of 1.86 Mt grading 11% zinc and resources of 1.39 Mt grading 12.9% zinc. Expected output of 60 000 t/y of zinc in concentrate will be processed at the Noranda Income Fund electrolytic refinery at Valleyfield, Quebec.
- In April 2005, Coeur d'Alene Mines Corporation acquired the silver reserves and production of the Endeavor mine in Australia for US\$38.5 million. CBH Resources declared force majeure on concentrate deliveries from the Endeavor mine following a rockfall in October. Lost production during the fourth quarter of 2005 and first quarter of 2006 is estimated at 17 000 t of zinc in concentrate. As a result, Endeavor will limit supply to Zinifex's Hobart smelter and Toho Zinc.
- The Antamina mine in Peru announced that production of contained zinc will fall by around 40 000 t in 2006 due to mine scheduling issues.
- Zinc smelter Padaeng Industry Public is reducing its reliance on imported concentrate by increasing production from its integrated zinc mines at Mae Sot in Thailand. The company, which is 41% owned by Umicore, is seeking to enhance its competitive position in the face of a tight concentrate market and a reduction in the import duty for zinc from 10% in 2003 to 5.5% effective in 2005.
- Hindustan Zinc Limited (HZL) will build an additional 170 000-t/y electrolytic zinc smelter at Chanderiya, India, identical to the one completed last May. The addition will bring HZL's total zinc production capacity to 579 000 t/y by early 2008.

- China-based Shuikoushan Nonferrous Metals Group and Taizhou Huatian Industry Company, as well as Russia-based IFK Metropol, will begin developing the Ozyomoye deposit in the Russian Republic of Buryatia in 2006. The deposit has proven reserves of 128.2 Mt grading 7% zinc, 1.25% lead and 37.6 g/t silver.
- Black Angel Mining is planning to re-open the Black Angel mine in Greenland, which closed in 1990. The 3-Mt resource includes 347 000 t of readily mineable ore at current high zinc prices.

LEADING WORLD ZINC PRODUCERS

Producers		Producers	
Zinc in Concentrate	2004	Zinc in Metal	2004
	(000 t)		(000 t)
China	2 264	China	2 519
Australia	1 298	Canada	805
Peru	1 209	Japan	635
Canada	791	South Korea	669
United States	739	Spain	523

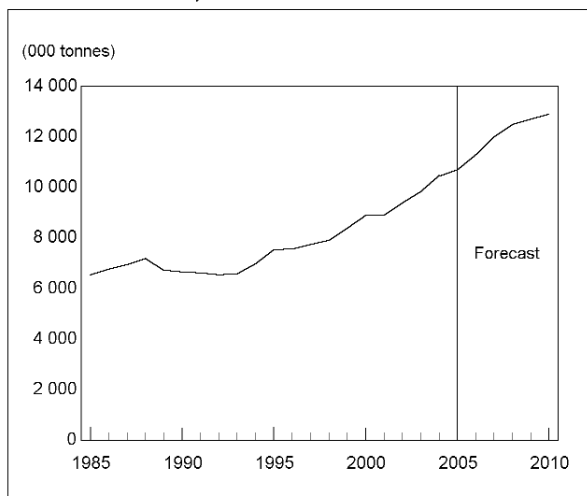
Source: International Lead and Zinc Study Group.

DEMAND OUTLOOK

According to the International Lead and Zinc Study Group (ILZSG), global demand for refined zinc metal in 2005 is expected to be at a similar level to that in 2004 at 10.52 Mt. However, in 2006, demand is expected to rise in all the main regions, resulting in an overall expansion of global usage of 5.7% to 11.12 Mt. A further increase in China of 9.8% will be due primarily to the continued rapid rise in galvanized steel consumption which, over the period 1984 to 2004, is estimated to have grown from half a million tonnes to over 10 Mt/y. On the supply side, ILZSG expects that global zinc mine supply will increase by 3.6% to 10.05 Mt in 2005 followed by a further rise of 4.2% to 10.47 Mt in 2006. The rises are largely due to recent expansions and mine openings in Australia, China and India.

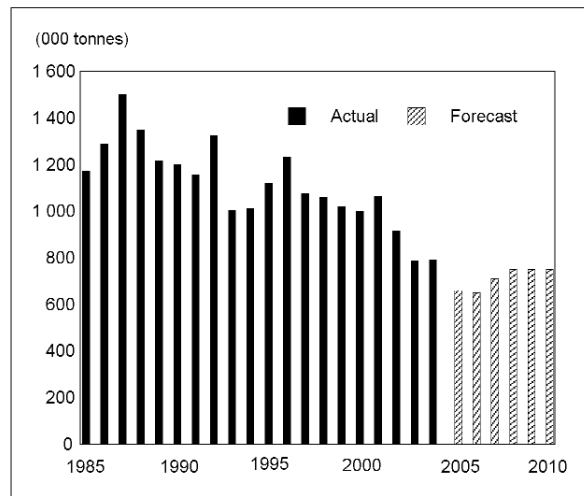
Taking into account the forecasts by ILZSG member countries for supply, demand and trade, as well as releases from the U.S. Defense National Stockpile, it is anticipated that the Western World refined zinc market will remain in deficit both this year and next. The expected size of the shortfall this year is 272 000 t, rising to 430 000 t in 2006.

Figure 1
World Zinc Use, 1985-2010



Source: Natural Resources Canada.

Figure 2
Canadian Mine Production of Zinc, 1985-2010



Source: Natural Resources Canada.

CANADIAN PRODUCTION OUTLOOK

Zinc mine production fell sharply in 2004 as a result of mine closures at Bell-Allard and Selbaie, and closures in 2005 at Louvicourt and Bouchard-Hébert, all located in the province of Quebec. Mine output in the first nine months of 2005 was 14% lower than during the same period in 2004.

Labour disruptions at both the Trail and Kidd Creek refineries are expected to result in slightly lower refined zinc metal production in Canada of 790 000 t for 2005, down from the 804 000 t produced in 2004.

PRICE OUTLOOK

While prices for most of the base metals had started to recover earlier in the current price cycle, zinc prices remained subdued through most of the first half of the year. However, the situation changed dramatically in the second half of the year when cash settlement prices on the London Metal Exchange (LME) staged a price rally starting in July that continued through to the end of November, rising from the year low of \$1175/t to reach \$1732/t.

While reported consumer stocks remained relatively stable at between 290 000 and 300 000 t for most of 2005, stocks on the LME declined from 629 000 t at the start of the year to just under 440 000 t by the end of November, despite a large delivery in June that saw stocks rise 100 000 t in two days.

Prices are expected to continue to reflect the current depletion of zinc concentrate inventory from a lack of mine supply and surging demand. Zinc concentrate treatment charges are expected to fall to record lows. This, combined with smelter bottlenecks, should support higher prices through to 2007/08. Prices are forecast to average about US\$1350/t in 2005 and to rise to an average \$1550/t in 2006.

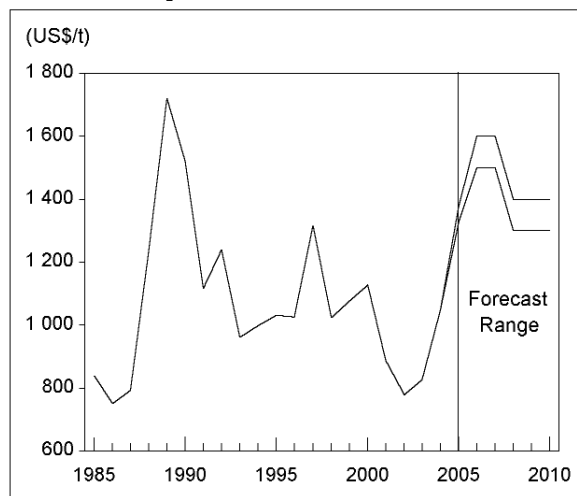
Beyond 2008, continued growth in galvanizing markets, combined with good growth overall for principal zinc markets, is expected in the remainder of the forecast period with annual average zinc prices ranging from US\$1200 to \$1400/t through to 2010.

Note: Information in this article was current as of November 30, 2005.

NOTE TO READERS

The intent of this document is to provide general information and to elicit discussion. It is not intended as a reference, guide or suggestion to be used in trading, investment, or other commercial activities. The author and Natural Resources Canada make no warranty of any kind with respect to the content and accept no liability, either incidental, consequential, financial or otherwise, arising from the use of this document.

Figure 3
Zinc Prices, 1985-2010
 Annual Average LME Cash Settlement



Source: Natural Resources Canada.

TABLE 1. WEB SITES FOR FURTHER INFORMATION

Company	Web Site Address
Agnico Eagle Mines Limited	www.agnico-eagle.com
American Galvanizers Association	www.galvanizeit.org
Aur Resources Inc.	www.aurreresources.com
Breakwater Resources Ltd.	www.breakwater.ca
Callinan Mines Limited	www.callinan.com
Campbell Resources Inc.	www.ressourcescampbell.com
Canadian Zinc Corporation	www.canadianzinc.com
EuroZinc Mining Corporation	www.eurozinc.com
Falconbridge Limited	www.falconbridge.com
HudBay Minerals Inc.	www.hudbayminerals.com
Imperial Metals Corporation	www.imperialmetals.com
Inmet Mining Corporation	www.inmet-mining.com
International Lead and Zinc Study Group	www.ilzsg.org
International Zinc Association	www.iza.com
London Metal Exchange	www.lme.co.uk
Northgate Minerals Corporation	www.northgateminerals.ca
Teck Cominco Limited	www.teckcominco.com
Yukon Zinc Corporation	www.yukonzinc.com