

Aluminum

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2004 primary metal production:	\$5.8 billion (e)
World rank (2004):	Third
2004 exports (unwrought):	\$4.9 billion
2004 exports (HS 76)	\$8.8 billion
Installed capacity:	3.06 Mt/y

Canada	2004	2005 (e)	2006 (f)
	(000 tonnes)		
Primary aluminum			
Production	2 590	2 900	3 050
Use	1 050	1 075	1 125

(e) Estimated; (f) Forecast.

Aluminum, in both its pure and alloyed form, is used to make a wide variety of products for the consumer and capital goods markets. Alcan reports¹ that aluminum's largest markets are transportation (31%), packaging (16%), building and construction (18%), electrical (8%), consumer goods (6%), and machinery and equipment (8%). North America accounts for 37% of total Western World demand for aluminum. Asia accounts for 27% and Europe accounts for another 30%.¹

ANNUAL AVERAGE ALUMINUM PRICES, LONDON METAL EXCHANGE (CASH SETTLEMENT)

2002	2003	2004	2005 (f)	2006 (f)
(US\$/t and US¢/lb)				
1 350 (61¢)	1 431 (65¢)	1 716 (78¢)	1 880 (84¢)	2 200 (99¢)

(f) Forecast.

CANADIAN OVERVIEW

- Canada's production of primary aluminum is expected to increase by 12% to 2.89 Mt in 2005 from 2.59 Mt in 2004. Monthly Canadian production statistics can be obtained on Natural Resources Canada's Internet site at http://mmsd1.mms.nrcan.gc.ca/mmsd/production/default_e.asp.
- Aluminerie Alouette Inc. completed a \$1.45 billion investment to expand capacity to 550 000 t/y. The first metal was poured in early 2005 and the last new reduction cell started up in June. This smelter is now the largest in North America. Partners include: Alcan Inc. (40%), Aluminium Austria Metall Québec Inc. (20%), Norsk Hydro ASA (Hydro Aluminium - 20%), Société Générale de Financement du Québec (13.33%), and Marubeni Québec Inc. (6.66%). Further details are available on the company's web site at www.alouette.com.
- Alcan has continued to follow through with its acquisition of Pechiney and strengthening of the new company. It has completed the spin-off of Novelis Inc., the world's largest aluminum rolled products company, and has opened a packaging plant and automotive structures plants in Quebec, in addition to expansions and plans for future opportunities around the world.
- Alcan announced a \$2.1 million contribution towards a new university laboratory for integrated research into aluminum products and processes at the Université du Québec à Chicoutimi (UQAC).
- Alcan continues its efforts in the social and sustainability areas, including its 2005 Alcan Prize for Sustainability, and has taken a leadership role in the Executive Forum on Climate Change. Alcan received a 2005 Globe Award for Environmental Excellence for demonstrating a commitment to sustainable business strategies. Further details on its work are on the company's web site at www.alcan.com.
- The Bécancour smelter (Alcoa 75%, Alcan 25%) restarted production at two of the three potlines that were shut down due to a strike by the Syndicat des Employés de l'Aluminerie de Bécancour, United

¹ www.alcan.com (annual report).

Steelworkers' Local 9700. Alcoa and Alcan have announced that billet production at the Bécancour smelter will be expanded to 234 000 t/y in 2007.

- Alcoa, Nova Pb and St. Lawrence Cement announced a long-term agreement to recycle spent potliner to create a commercial product called CALSiFrit at the Nova Pb secondary lead smelter in Quebec. The project will reduce greenhouse gas emissions by more than 70 000 t (www.alcoa.com/canada/en/news/releases/nova.asp, www.calsifrit.com and www.stlawrencecement.com). NovaPb received the Phoenix award for its work in developing the process to recycle spent potliner. For further information, see (French only) www.phenixdelenvironnement.qc.ca and www.phenixdelenvironnement.qc.ca/html/lf_2005/4.1.html.
- The Aluminium Association of Canada links the Canadian aluminum industry, aluminum users, the public and government. A public awareness campaign has resulted in the distribution of brochures to improve public awareness of issues surrounding aluminum production in Quebec. Further information and links to web sites of Canadian primary aluminum producers can be found on the Association's web site at aia.aluminium.qc.ca.

WORLD OVERVIEW

- China became the largest producer of primary aluminum in the world in 2001 (3.4 Mt). Production increased by 28% in 2002 (to 4.3 Mt), by 25% in 2003 (5.4 Mt) and by 25% in 2004 (6.6 Mt), and is expected to increase a further 20% in 2005 (7.8 Mt).
- After falling in 2004, North American smelter production rates rose in 2005 due to the re-opening of closed smelters and the resolution of a strike. Production has now levelled off at just above 5.4 Mt/y. With no definite plans for new smelters or expansions, the expected closures of Söderberg facilities in the next decade, and high costs for and limited availability of power, production is expected to decline in the longer term.
- Alcan's new activities outside of Canada, in addition to ongoing projects, include: participation in a proposed 325 000-t/y smelter project in Sohar, Oman (with Oman Oil Company S.A.O.C. and Abu Dhabi Water and Electricity Authority); the sale of its controlling interest in Aluminium de Grèce; the opening of a new research facility in Brisbane, Queensland, for alumina research; the closure of a smelter in Lannemezan, France; and an agreement on a potential US\$900 million project to upgrade and expand the Alucam smelter and to construct a new hydro-electric power station in Cameroon.
- As a result of the merger between Noranda Inc. and Falconbridge Limited in 2005, Falconbridge now owns 50% of the Gramercy alumina plant in Gramercy, Louisiana, a 50% stake in the St. Ann Bauxite mine in Jamaica, and 100% of Noranda Aluminum Inc., which owns and operates the New Madrid aluminum smelter in Missouri and four rolling mills in the United States (www.falconbridge.com).
- OMAI Bauxite Mining Inc. (Cambior Inc., 70%, and the Government of Guyana, 30%) is refurbishing its bauxite mine and associated facilities in Guyana to expand its capacity for the production of high-alumina refractory bauxite, mainly for non-metallurgical applications (www.cambior.com).
- Toronto-based Global Alumina Corporation (Global Alumina) continued work to finance and construct a 2.8-Mt/y alumina refinery in the Boké region of Guinea (www.globalalumina.com).
- A number of smelters in more developed countries are facing increased power charges and may be forced to close. However, new and expanded smelters with access to competitively priced power will provide approximately 2 Mt (6%) in new production capacity around the world in 2006, more than offsetting any closures. For details, see the aluminum chapter of the *Canadian Minerals Yearbook* (available on the Internet at www.nrcan.gc.ca/mms/cmy/com_e.html) and the company web sites listed in Table 1.

DEMAND OUTLOOK

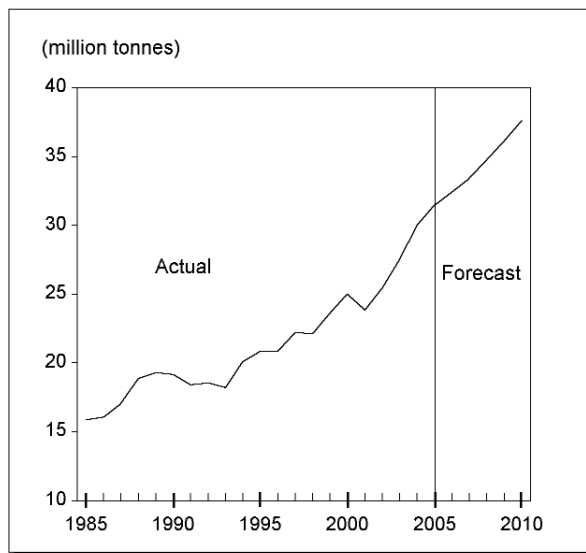
The world's apparent use of primary aluminum is estimated to be approximately 31.5 Mt in 2005, about 5% higher than the 30 Mt used in 2004. In 2006, world demand for aluminum is expected to again continue above its long-term trend of 3% annual growth, depending on the performance of the world economy (Figure 1).

Canada's reported use of all forms of aluminum increased approximately 8% in 2004 to an estimated 1.09 Mt from 1.01 Mt in 2003. Use is expected to increase at a slightly lower rate in 2005. In the longer term, use is expected to increase at a rate of about 3% annually.

CANADIAN AND WORLD PRODUCTION OUTLOOK

Canadian installed capacity for the production of primary aluminum is now 3.06 Mt/y with the completion of the expanded Alouette smelter at Sept Îles, Quebec. With production in 2005 of an estimated 2.9 Mt of primary aluminum, Canada is expected to maintain its rank as the

Figure 1
World Primary Aluminum Use, 1985-2010



Sources: Actual - International Consultative Group on Nonferrous Metal Statistics; Forecast - author.

third largest primary producer after China and Russia. Canada is expected to produce above 3 Mt of primary aluminum in 2006, with a slightly higher amount in 2007 due to capacity creep in existing smelters.

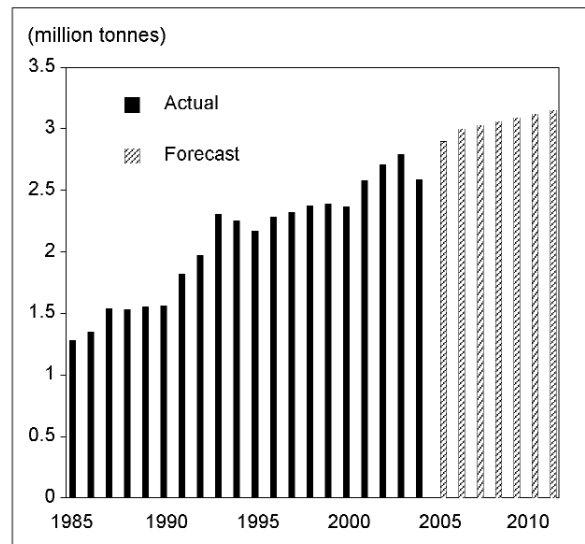
Production growth will flatten over the next few years, depending on production at Kitimat and closures of Söderberg capacity in the next decade (not included in Figure 2), which will lower Canadian installed capacity should modernizations not occur at these facilities. Smelter expansion projects in Quebec are dependent on the construction of new power projects and/or the negotiation of additional long-term power supply contracts.

World production of primary aluminum increased to 29.8 Mt in 2004, up 6% from a revised figure of 28 Mt in 2003. Production is expected to increase by approximately 5% in 2005 to about 31.3 Mt.

The International Aluminium Institute (IAI) indicates that members' world daily average primary aluminum production for the year to October was 65 000 t, up 3200 t/d from a comparable period in 2004. It also reports that the rate for world consolidated production was 87 000 t/d, up from 80 500 t/d at the same time in 2004. Additional information can be obtained from the IAI's web site at www.world-aluminium.org.

IAI reported inventories of unwrought aluminum have remained relatively stable over the last year and were reported at 1.77 Mt in September 2005, down slightly from 1.79 Mt in December 2004. IAI total inventories

Figure 2
Canadian Primary Aluminum Production, 1985-2011



Source: Natural Resources Canada.

have also remained stable and have increased slightly from 3.18 Mt in December 2004 to 3.23 Mt in September 2005. On the other hand, primary aluminum inventories at London Metal Exchange (LME) warehouses have steadily declined throughout the year from 693 000 t in December 2004 to 512 000 t at the end of September 2005.

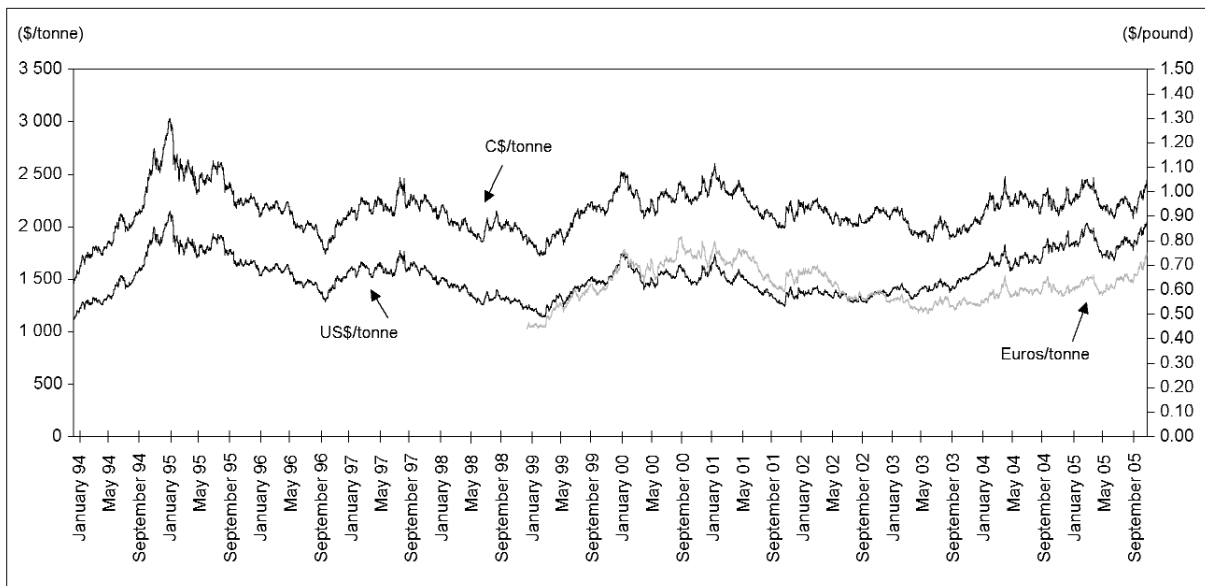
PRICE OUTLOOK

Sales of aluminum, alumina and bauxite are generally valued in U.S. currency. The rapid changes in the relative value of other currencies to the U.S. dollar seen in the last several years have resulted in the potential for diverging outlooks on prices dependent on the currency considered. In general, prices were high in the early and late part of 2005 and were somewhat weaker in mid-year.

In U.S. dollar terms, cash prices set new 10-year highs of US\$2056/t in mid-November 2005. However, current cash prices in Euro equivalents of about €1750/t are still below highs of about €1900 established in September 2000.

Cash prices for primary-grade aluminum on the LME started 2005 at approximately US\$1800/t (83¢/lb) and weakened to approximately US\$1700/t (77¢/lb) in June. Since then, prices have risen to US\$2056/t (93¢/lb) on November 15, a 12% increase for the year. The Canadian currency equivalents for the start of the year are \$2250/t (102¢/lb), and in November were \$2450/t (111¢/lb), representing an increase of about 9%.

Figure 3
Aluminum Prices, 1994-2005



Source: Natural Resources Canada

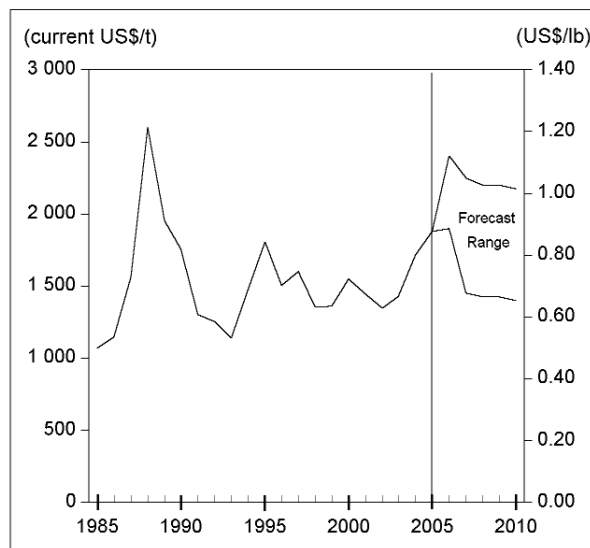
U.S. dollar-denominated prices appear to have broken out of a longer-term price range of between US\$1200 and \$1800/t (55¢ and 82¢/lb) in 2004, and in 2005 reached well above US\$2000/t by mid-November. Given the current strength of demand and pressure from existing higher prices for alumina, aluminum prices are expected to remain strong in 2006. Prices may trade in the range of US\$1900-\$2400/t during 2006, with an average in the order of \$2200/t. On a longer-term basis, however, once Söderberg closures and expansions of existing operations have been completed in China and the expected new alumina and smelting capacity comes on line around the world, prices are likely to soften.

Note: Information in this article was current as of November 15, 2005.

NOTE TO READERS

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Figure 4
Aluminum Settlement Price, 1985-2010
Annual Average LME Settlement



Source: Metalprices.com.

TABLE 1. COMPANY WEB SITES FOR FURTHER INFORMATION

Company	Web Site Address
Alcan Inc.	www.alcan.com
Alcoa Inc.	www.alcoa.com
Alcoa World Alumina and Chemicals	www.alcoa.com
Aldoga Aluminium Smelter Pty Ltd.	www.aldoga.com
Aluar Aluminio Argentino S.A.I.C.	www.aluar.com.ar
Alum SA Tulsea	www.alumtulcea.com
Alumina do Norte do Brasil S.A.	www.cvrd.com.br
Alumina Limited	www.aluminalimited.com
Alumina Partners of Jamaica	www.kaiseral.com
Aluminerie Alouette Inc.	www.alouette.com
Aluminerie de Bécancour Inc.	www.alcoa.com
Aluminium Association of Canada	www.aia.aluminium.qc.ca
Aluminium Bahrain B.S.C.	www.albasmelter.com
Aluminum Company of Egypt	www.egyptalum.com.eg
Aluminum Corporation of China Ltd.	www.chinalco.com.cn
Atlantsal hf	www.atlantsal.is
Bharat Aluminium Company Limited	www.balcoindia.com
BHP Billiton	www.bhpbilliton.com
Brunei Economic Development Board	www.bedb.com.bn
Cambior Inc.	www.cambior.com
Century Aluminum Company	centuryca.com
Coega Smelter	smelter.csir.co.za
Columbia Ventures Corporation	www.nordural.is
Comalco Limited	www.riotinto.co
Companhia Brasileira de Alumínio	www.aluminiocba.com.br
Companhia Vale do Rio Doce S.A.	www.cvrd.com.br
Corporación Venezolana de Guayana	www.cvg.com
CVG Alcasa	www.aluminio.com.ve
CVG Bauxilum	www.bauxilum.com
CVG Venalum	www.venalum.com.ve
Dubai Aluminium Company Limited	www.dubai.ae
East Hope Group	www.easthope.com.cn
Elkem ASA	www.elkem.com
Federation of Aluminium Consumers in Europe	www.facealuminium.com
Glencor International AG	www.glencore.com
Global Alumina Products Corporation	www.globalalumina.com
Grupo Votorantim	www.votorantim.com.br
Hindalco Industries Limited	www.adityabirla.com
Indian Aluminum Limited.	www.indal.com
International Aluminium Institute	www.world-aluminium.org
KTD L.L.C.	www.ktdal.com
Magyar Aluminium Rt.	www.mal.hu
Marubeni Corporation	www.marubeni.com
Minmetals Nonferrous Metals Co., Ltd.	www.minmetals.com
National Aluminium Company Limited	www.nalcoindia.com
Noranda Inc.	www.noranda.com
Norsk Hydro ASA/Hydro Aluminium a.s.	www.hydro.com
NovaPb	www.novapb.com
Novelis Inc.	www.novelis.com
Ormet Corporation	www.ormet.com
PT. Antam Tbk	www.antam.com/News/news.htm
Queensland Alumina Limited	www.qal.com.au
Russian Aluminium (Rusky Aluminii)	www.rusal.com
Saudi Arabian Mining Company	www.maaden.com.sa
Sherwin Alumina Company	www.sherwinalumina.com
Siberian-Urals Aluminium Company	www.sual.com
Sibirsky Aluminium	www.sibirskyaluminum.com
Slovalco A.S.	www.slovalco.sk
Société Générale de financement du québec	www.sgfqc.com
Sterlite Industries (India) Ltd.	www.balcoindia.com
Talum D. D. Kidricevo	www.talum.si
The Aluminum Association, Inc. (USA)	www.aluminum.org
Tomago Aluminium Pty Ltd.	www.tomago.com.au
Worsley Alumina PTY. LTD	worsley.geo.net.au

Note: Feedback on missing or changed web site addresses would be welcome.