

## THE MINERAL INDUSTRY OF

# IRELAND

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Ireland remained a major European Union producer of zinc and an important producer of alumina, lead, and peat in 1997. Although the range of minerals exploited in the country has been limited, exploration activity for new mineral resources continued to increase, mainly focused on gold, lead, and zinc. The country's mineral-processing industry was small, as was the demand for and consumption of mineral products.

Base metal exploration continued to be the main mineral exploration activity; gold exploration was continuing. The upswing in activity in the lead and zinc sector resulted in the development of new mines and the investigation of several other potential projects. The Department of Transportation, Energy, and Communication (1997b) reported that 402 Prospecting Licenses, 16 State Mining Leases, and 1 Mining License had been issued for 1997. The main License holders were BHP Minerals International Exploration Inc., Navan Resources/CEC (Ireland) Pty. Ltd., and Tara Mines Ltd.

Ireland's base-metals production, formerly centered mainly on Outokumpu Oyj's Tara zinc-lead mine, increased when Arcon International Resources plc's Galmoy zinc-lead mine came on-stream in 1997. Industrial mineral production, including barite and gypsum, remained relatively constant. Several metals and industrial minerals projects were awaiting the granting of planning permission and mining leases before moving into development and production. Natural gas production continued off the southern coast of Ireland, near Cork. Reserves were not disclosed, and the production from the fields was being carefully managed to extend the life of the area. (*See table 1.*)

The Geological Survey of Ireland (GSI) was responsible for the development of mineral information and for technical management of the state mineral licensing and leasing system. GSI also provided technical assistance to the exploration and mining industries.

Ireland's geology includes several lithological units and tectonic features that are favorable for the occurrence of several types of mineral resources. Interest in gold, lead, and zinc exploration provided the impetus for the revitalization of the exploration sector within the past few years. (*See table 2.*)

Aughinish Alumina Ltd.'s (AAL) production of alumina was based on imports of bauxite from Guinea and Brazil. The major markets for AAL's alumina were primary aluminum smelters. British Alcan Aluminium plc. purchased 65% of the refinery's output for its smelter in the United Kingdom, and Billiton Aluminium Ireland Ltd. purchased the remaining 35% for its smelter in Norway.

Irish Marine Oil plc. (IMO) was the leading Irish mineral exploration company, holding interests in 52 licenses in Ireland. Exploration efforts were directed mainly toward zinc, although

IMO was the most active explorer for gold in Ireland with licenses in Counties Donegal, Kerry, Wexford, and Wicklow. IMO reported that its prospecting program had encountered numerous boulders containing high grade gold values some in excess of 30 grams per metric ton (g/t) of gold. Also, drilling near Carnew on the Wexford/Wicklow border had intersected four narrow veins all of which assayed from 1 g/t to 11.65 g/t over a width of 0.38 meter (m) (Irish Marine Oil plc, 1997).

The former Irish Steel Company was acquired by Ispat International Group in December 1995 and started operating as Irish Ispat in May 1996. Irish Ispat planned to invest \$31 million during 6 years and has spent \$6 million so far. The current interest was improving the infrastructure, environmental items, and upgrading the melt-shop and the rolling mill. Around 70% of expenditure went for infrastructure and 30% on development in 1997 and was expected to shift to 50% each in 1998, and 30% and 70% respectively, in 1999 (Metal Bulletin Monthly, 1997a).

Ireland produced more than 3% of world zinc mine output and more than 2% of world lead output, a situation that was expected to increase as the Galmoy and the Lisheen Mines come into full production. Tara Mines Ltd. was one of the largest lead-zinc producers in Europe. The Tara Mine, brought into production in 1977, was the largest producing zinc mine in Europe.

Europe's newest zinc mine, Arcon's Galmoy Mine in County Kilkenny, began underground mining in the first part of 1997. Galmoy's orebodies, CW, G, G-East, and K-Zone, are hosted by lower Carboniferous limestones and lie at the base of the Waulsortian limestone formation. Areas of the mineralization footwall extend several meters down into the underlying upper Ballysteen limestone formation. The CW ore body, where mining was started, has estimated reserves of 4.1 million metric tons and an estimated mine life of 6 years. Average grade of the ore was 11.3% zinc and 1.1 % lead. The ore body can be envisaged as a 450- by 750-m oval saucer tilted at an angle of around 10°. The seam thickness ranges from 4 to 12 m, with an average of 6 m, at an average depth of 70 m from the surface. Its shape and orientation mean that minimal waste rock is generated, contributing significantly to lower production costs. At full production, the mine was expected to produce 135,000 metric tons per year (t/yr) of 54.5% zinc concentrate (Metal Bulletin Monthly, 1997).

The joint-venture Lisheen lead-zinc underground mine project, involving Ivernia Lisheen plc and Minorco Lisheen Ltd., continued. The Lisheen Mine is on the same mineralized trend as the Galmoy Mine, 8 kilometers (km) away. Minorco Lisheen held a 50% interest in the project and was the manager of the project. Lisheen was granted a mining lease, and construction began initiated on part of the project in late 1997. The \$247

million construction program was due to be completed in time for production to start in June 1999. The Lisheen Mine has a projected life of 14 years at an operating capacity of 120,000 t/yr (Mining Journal, 1997).

Ireland produced significant quantities of synthetic diamond. Output was not quantitatively reported, and information was not available to make reliable estimates of production. The two companies that manufacture industrial diamonds and super abrasives were De Beers Industrial Diamonds Div. (Ireland), a subsidiary of De Beers Consolidated Mines (Pty.) Ltd. of South Africa, and GE Superabrasives Ireland, a subsidiary of General Electric Co. of the United States.

A range of abrasives was produced from synthetic diamond, cubic boron nitride, and polycrystalline diamond. All production was for the export market.

Cambridge Mineral Resources of the United Kingdom reported a discovery of diamond indicator minerals and sapphires from its heavy-mineral stream sediment sampling project in the Inishowen area, County Donegal. The company reported that the kimberlite and lamproitic indicator minerals were present at all sample locations, diamond indicator minerals were identified at two sample locations, and small blue sapphires were discovered at one location. Cambridge submitted a formal request for additional prospecting licences in the Inishowen area (Mining Journal, 1997).

Coal production was not recorded during 1997. Indigenous natural gas production continued from the Kinsale Head and the Ballycotton gasfields.

Ireland has a good network of roads supplemented by a Government-owned railroad. The two deep water ports at Cork and Dublin are supplemented by 10 secondary ports. Most mine

sites are easily accessible and no more than 600 km from either deep water port.

The mineral industry is expected to use the opportunities created by the boom in gold and lead-zinc exploration and by renewed interest from multinational companies to continue mineral developments. GSI has an active data collection program through mapping and resource-related studies and offers technical assistance. This should continue to be a significant benefit and encouragement to companies engaged in mineral-resource activities.

## References Cited

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## Major Sources of Information

- Department of Transportation, Energy and Communications  
Beggars Bush, Haddington Road, Dublin 4, Ireland.  
Geological Survey of Ireland  
Beggars Bush, Haddington Road, Dublin 4, Ireland.

TABLE 1  
IRELAND: PRODUCTION OF MINERAL COMMODITIES 1/

(Thousand metric tons unless otherwise specified)

Commodity	1993	1994	1995	1996	1997 e/
<b>METALS</b>					
Alumina	1,103	1,140	1,186	1,234	1,273 2/
Iron and steel, steel, crude	326	316	309 r/	340	337 2/
Lead:					
Mine output, Pb content	48,300	53,700	69,067	45,344 r/	45,149 2/
Metal, refined, secondary e/	12,000	11,000	11,000	10,400	10,500
Silver, mine output, Ag content kilograms	13,000	17,400	13,700	14,706	13,284 2/
Zinc, mine output, Zn content	194,000	194,500	184,100	164,168 3/	194,796 2/
<b>INDUSTRIAL MINERALS 3/</b>					
Barite	53	--	--	--	--
Cement, hydraulic e/	1,600	1,550	2,100	2,100	2,000
Gypsum	318	325	406	422	477 2/
Lime e/	100,000	100,000	100,000	100,000	100,000
Nitrogen, N content of ammonia	367	380	408 r/	377 r/	465 2/
Sand and gravel e/ 4/	7,500	7,800	10,000	12,000	12,000
Stone and other quarry products: e/					
Limestone million tons	1	1	1	1	1
Other e/ 5/	25,000	30,000	30,000	40,000	35,000
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal, anthracite and bituminous	500	100 r/	-- r/	-- r/	--
Gas, natural, marketed million cubic meters	2,690 r/	2,710 r/	2,826 r/	2,737 r/	2,417 2/
Peat:					
For horticultural use	300 e/	250	300 e/	300	300
For fuel use: e/					
Sod peat 6/	1,000	1,200	1,142	1,702	1,500
Milled peat 7/ thousand tons	5,500	5,000	5,000	4,876 r/	2,551 2/
Total do.	6,500	6,200	6,142	6,578 r/	4,351
Peat briquets e/ do.	400	400	365	285 r/	253 2/
Petroleum refinery products: 8/					
Liquefied petroleum gas thousand 42-gallon barrels	325	360	350 e/	350	350
Naphtha e/ do.	350	350	350	350	350
Gasoline, motor do.	3,120	3,000	3,000 e/	3,000	3,000
Distillate fuel oil e/ do.	5,000	5,000	5,000	5,000	5,000
Residual fuel oil do.	4,540	5,470	5,500 e/	5,000	5,000
Refinery fuel and losses e/ do.	400	400	400	400	400
Total e/ do.	13,735	14,580	14,600	14,100	14,100

e/ Estimated. r/ Revised.

1/ Table includes data available through May 1998.

2/ Reported figure.

3/ Ireland also produces significant quantities of synthetic diamond and is the major supplier to the United States. Output, however, is not quantitatively reported, and general information is inadequate to make reliable estimates of output levels.

4/ Excludes output by local authorities and road contractors.

5/ Includes clays for cement production, fire clay, granite, marble, rock sand, silica rock, and slate.

6/ Includes production by farmers and by Bord Na Mona (the Government Peat Board).

7/ Includes milled peat used for briquet production.

8/ From imported crude oil.

TABLE 2  
IRELAND: STRUCTURE OF THE MINERAL INDUSTRY IN 1997

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facility	Annual capacity
Alumina	Aughinish Alumina Ltd. (Alcan Aluminium Ltd.)	Aughinish Island, County Limerick	800
Barite	Magobar Ireland Ltd.	Silvermines, County Tipperary	240
Cement	Irish Cement Ltd.	Plants in Limerick and Platin	2,000
Lead-zinc	Arcon International Resources plc	Galmoy Mine, County Kilkenny	135
Do.	Outokumpu Oyj	Tara Mine, Navan, County Meath	215
Natural gas	million cubic feet Marathon Oil Co.	Kinsale Head Field, Celtic Sea	75,000
Peat	Bord Na Mona (Government Peat Board)	Production mainly in midlands	4,200
Petroleum, refined	barrels per day Irish Refining Co.	Whitegate, near Cork	56,000
Steel	Irish Ispat (Ispat International Group)	Haulbowline, near Cork	500