



2013 Minerals Yearbook

UKRAINE

THE MINERAL INDUSTRY OF UKRAINE

By Elena Safirova

Ukraine was among the world's leading producers of a number of minerals. It was one of the world's top four producers of gallium, the 4th-ranked producer of rutile (which accounted for 2.2% of world output), the 5th-ranked producer of titanium sponge (3.0%), the 6th-ranked producer of iron ore (2.6%), the 7th-ranked producer of pig iron (2.5%), the 9th-ranked producer of steel (2.0%), the 10th-ranked producer of manganese ore (1.8%), and the 11th-ranked producer of ilmenite (2.2%). The country had significant coal resources but depended on imported petroleum and natural gas to meet domestic demand (Bedinger, 2015a, b; Corathers, 2015; Fenton, 2015; Jaskula, 2015; Tuck, 2015).

Minerals in the National Economy

In 2013, Ukraine's real gross domestic product (GDP) remained unchanged compared with that of 2012. The nominal GDP in 2013 amounted to \$186.6 billion.¹ Overall annual industrial output decreased by 4.3% in 2013 compared with that of 2012; mining and quarrying production increased by 0.8%, although coal production decreased by 2.4%; oil and gas extraction decreased by 3.7%, but mining of metallic ores increased by 4%. Within the manufacturing sector, overall metallurgical production decreased by 5.6%, including production of ferroalloys, pig iron, and steel, by 0.7%; that of steel pipe, by 19.2%; and that of nonferrous and precious metals, by 4.2%. The share of industrial production in the country's GDP was 58%. The State Statistics Committee of Ukraine reported that, in 2013, mining and quarrying activities accounted for about 11.4% of all industrial production, and manufacturing, for 61.8%. The share of metallurgical production in overall industrial production was 15.2%, of which production of ferroalloys, pig iron, and steel accounted for 13.2 percentage points and production of nonferrous and precious metals accounted for 0.5 percentage points (State Statistics Service of Ukraine, 2014a, b).

Government Policies and Programs

In May 2013, the President requested that the Prime Minister create an interministry working group to evaluate options for substitution of energy sources in the national economy and replacement of imported natural gas with domestic coal. The group was to consider various strategies, such as an increase in production of thermal coal, implementation of new technologies to produce and use energy, and replacement of natural gas with alternative fuels. The working group consisted of representatives of various ministries, the central and local governments, and scientists and researchers from relevant research institutions. By June 7, the group had analyzed the existing energy substitution

¹Where necessary, values have been converted from Ukrainian hryvnias (UAH) to U.S. dollars (US\$) at an average annual exchange rate of UAH8.15=US\$1.00.

projects and determined problems with them, identified potential locations of new coal gasification facilities, and started economic assessment and specified equipment needs for such projects. Additional goals were to identify the costs of such projects as well as plans for their financing, including foreign investment and funds from international financial organizations (Mineral.ru, 2013i).

In April, the Cabinet of Ministers approved an import quota for coal. The quota was set at 10.2 million metric tons (Mt) for 2013 and included all types of coal. The measure was intended to reduce social pressure in coal-mining regions, promote environmental safety, and provide steady demand for domestic coal. Some analysts, however, noted that the underlying reason for the policy was an oversupply of coal at many coal mines. As of the end of March, the Government-owned coal mines had 412,700 metric tons (t) of coking coal in unsold inventory. The production of thermal coal decreased to 770,000 t in the first quarter of 2013, or by 3.6% compared with the first quarter of 2012. The analysts noted that the quotas contradicted the 2011 treaty with Russia on the CIS free trade zone between the two countries. The analysts also emphasized that the measure would likely lead to a reduction in the quality of metallurgical coke. In 2012, coke plants imported a total of 11.3 Mt of coking coal, and in 2013, the imports were forecasted to increase. It was expected that the measure would mostly affect the metallurgical companies with foreign capital, such as Evraz plc of Russia and ArcelorMittal S.A. of Luxembourg. In 2012, Ukraine imported coking coal from Australia, Kazakhstan, Russia, and the United States (Mineral.ru, 2013b, g; MinerJob.ru, 2013f).

In July, Ukraine introduced a 210,000-t quota for all types of imported coke. This measure was supposed to rectify the negative effects of the coal import quotas on the metallurgical companies. Previously, the quota on coke imports was set to zero; that is, imports of coke were prohibited. At the end of October, the Government announced that, by yearend, it would increase the import quota for coke to 300,000 t, and the import quota for coal, by 1 Mt to 11.2 Mt. The Government also indicated that Ukraine would have to relax its trade restrictions and eventually remove them as a requirement put forward by the European Union and the World Trade Organization and as a condition for Ukraine signing a European Union Association Agreement, which was planned to take place in November (Mineral.ru, 2013f, h).

Production

Production of many mineral commodities decreased in 2013. The output of aluminum decreased by 76%; that of manganese metal, by 51%; ferromanganese, by 46%; and peat for horticultural use, by 38%. The output of several other mineral commodities also decreased significantly, including that of anthracite coal, which decreased by 30%; other ferroalloys, by 28%; refinery products, by 19%; sulfuric acid, by 15%;

kaolin, by 13%; and lime, by 12%. On the other hand, output of rutile concentrate increased by 179%; that of ilmenite concentrate, by 171%; zirconium concentrates, by 105%; ferrosilicon, by 27%; manganese ore and concentrate, by 24%; and lignite, by 16%. These and other production data are in table 1.

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

Mineral Trade

The total value of Ukraine's exports of goods and services decreased to about \$76.4 billion in 2013 from \$82.4 billion in 2012; exports of goods decreased to \$63.3 billion in 2013 from \$68.8 in 2012. The value of exports was equal to about 41% of Ukraine's GDP in 2013. Ukraine's leading export category in terms of value was ferrous metals, and in 2013, exports of ferrous metals were valued at \$14.3 billion and made up 22.6% of the total value of all exports of goods; exports of cinder, ores, and slag were valued at \$3.9 billion and made up 6.1% of the total value of commodity exports. Another \$2.9 billion (4.5% of the total value of exports) was contributed by exports of mineral fuels and petroleum products. The value of exports of mineral products and metals made up about 23.8% of the value of total commodity exports. The main export partners of Ukraine were Russia (which received 23.8% of Ukraine's commodity exports), Turkey (6.0%); China and Egypt (4.3% each), Poland (4.0%), Italy (3.7%), and Kazakhstan (3.3%) (State Statistics Service of Ukraine, 2014c).

The total value of Ukraine's imports of goods and services was about \$84.6 billion in 2013 and \$91.4 billion in 2012. The total value of Ukraine's imports of goods only was \$77.0 billion in 2013 and \$84.7 billion in 2012. The leading imported commodities were mineral fuels and refined petroleum products, which made up about 27.6% of the value of total commodity imports in 2013. The country's main import partners in 2013 were Russia (which supplied 30.2% of Ukraine's imports), China (10.3%), Germany (8.8%), Poland (5.3%), Belarus (4.7%), and the United States (3.6%) (State Statistics Service of Ukraine, 2014c).

Commodity Review

Metals

Gold.—Ukraine did not produce gold in 2013; however, companies continued to invest in future gold projects. Lugansk Gold Ltd., which was a subsidiary of Korab Resources (Korab) of Australia, planned to invest a total of \$50 million in a gold project at the Bobrikovskoye gold sulfide deposit in Luhans'ka Oblast'. In March, the company started a prefeasibility study of the deposit and eventually planned to produce between 60,000 and 70,000 troy ounces per year (about 2,000 kilograms per year) of gold. The project included construction of a beneficiation plant that would have the capacity to process up to 500,000 metric tons per year (t/yr) of ore. The preliminary resources of the deposit were estimated to be 2,040,000 troy ounces, or 63.5 t. In August, Korab updated

the Joint Ore Reserves Committee (JORC) Code-compliant assessment of the deposit to 102.6 t of gold and 507 t of silver. The new resource evaluation was about a 62% increase compared with the previous evaluation, the results of which were announced in October 2012. Korab expected that the resources were likely to increase further as the diamond drilling of the deposit at depths of between 200 and 250 meters is completed (Mineral.ru, 2013c; MinerJob.ru, 2013a, b, d).

In April 2013, the value of the shares of Korab were almost halved because of the drop in the world gold prices. As a reaction to this development, Korab temporarily halted its development projects, including the construction of the mine in Bobrikovo. Nevertheless, the company continued its prefeasibility work and was still planning to construct the new mine by 2018. The new mine, when fully operational, was expected to create 250 new jobs (MinerJob.ru, 2013b).

In August, OAO Irgiredmet of Russia completed the first stage of exploration work at the Saulyak deposit, which is located in Zakarpatskaya Oblast. The engineers developed an effective production scheme that involved a beneficiation procedure that included gravitational extraction and flotation and smelting at the site. Such a procedure would retain between 94% and 95% of the mined gold in the marketable products. It was not clear when the development of the deposit would start and how much it would cost (Mineral.ru, 2013d).

Titanium.—The titanium industry in Ukraine consisted of ilmenite and rutile concentrate production, titanium sponge production at the Government-owned Zaporozhye Titanium & Magnesium Complex (ZTMK), and titanium ingot production by a small number of producers, including OOO Antares, OOO Fiko, and ZTMK, which had a combined capacity to produce about 12,000 t/yr of titanium ingots. Titanium dioxide pigment was produced by ChAO Crimea Titan and OAO Sumykhimprom. Ukraine did not have the ability to produce titanium metal products used in the aerospace industry and other industries that require more technically advanced titanium metal products (Metall Ukrainy, 2010, p. 61).

Crimea Titan was the leading producer of titanium dioxide in Eastern Europe. In December 2012, the DF Group obtained 100% ownership of Crimea Titan. In April 2013, the company announced that it planned to build a new titanium dioxide plant in Crimea with the annual capacity to produce 80,000 t/yr. The company indicated that the plant's capacity would be expanded to 120,000 t/yr eventually, and the production capacity at the current plant would also be expanded to 120,000 t/yr. The company was planning to employ a modernized sulfate technology in its production. As a result, Crimea Titan expected to double its world market share of titanium dioxide to 4%. The company planned to invest about \$300 million in its titanium dioxide production through 2015 and as much as \$2.5 billion through 2017 (Mineral.ru, 2013a).

At the end of July, Velta LLC opened the second stage of its mining and beneficiation complex at the Birzulovskoye ilmenite deposit. The first stage officially started operations in December 2011. The total investment in the new complex was approximately \$90 million, out of which \$80 million was used to fund the development of the first stage, and the rest was invested in the second stage. The second stage included a

gravitational extraction complex and reconstruction of some facilities built during the first stage. Velta expected that the second stage would increase the annual capacity of the mine to 300,000 t/yr from 185,000 t/yr of ilmenite concentrate. The company stated that, in 2014, it planned to produce 250,000 t of ilmenite with between 54% and 58% TiO₂ content. In addition to the Birzulovskoye deposit, Velta had a development license for the Lekarevskoye deposit, which was located within 7 kilometers of the Birzulovskoye deposit and whose resources were estimated to be 3 Mt of ilmenite concentrate. Velta expected to start mine construction at Lekarevskoye in 2014 (Yarosh, 2013).

The DF Group planned to build two new production lines at ZTMK—one for the production of titanium slag and another for the production of titanium sponge. The titanium slag line would have the capacity to produce 150,000 t/yr of titanium slag and the other one would include two stages, each with the capacity to produce 20,000 t/yr of titanium sponge. The ZTMK investment plan was agreed upon by the Fund of the Government Property of Ukraine; the plan assumed that of \$110 million in total investment, \$63.5 million would be allocated to the construction of the new capacity for titanium slag production. The DF Group stated that the new facilities would make Ukraine a significant world producer of titanium (Metalinfo.ru, 2013).

In July 2012, a world-leading titanium producer, VSMPO-Avisma of Russia, acquired 75% of the shares of Limpeza Ltd. of Cyprus, which owned the Demurinskiy GOK. The Demurinskiy GOK had a license to mine the Volchanskiy deposit, which contains alluvial titanium and zirconium. The GOK was expected to be able to reach its design capacity of 50,000 t/yr of ilmenite concentrate, 13,000 t/yr of rutile concentrate, and 3,000 t/yr of zircon in 2014. VSMPO-Avisma reportedly invested \$30 million into the GOK and was planning to build a beneficiation plant. In October 2013, VSMPO-Avisma also expressed its interest in purchasing a share in ZTMK should the GOK be privatized (MinerJob.ru, 2013c, e).

Mineral Fuels and Related Materials

Uranium.—Uranium ore was mined in Ukraine from underground mines by the state-owned company Vostochnyi GOK, and it was processed into concentrate at the company's hydrometallurgical plant at Zheltye Vody. In 2013, uranium was mined at three mines—the Ingulskaya, the Novokonstantinovskaya, and the Smolinskaya Mines. The concentrate was then sent to Russia to be processed by OAO TVEL of Russia into nuclear fuel for use in Ukraine; the remaining nuclear fuel required for Ukraine's nuclear powerplants was purchased from TVEL. In 2013, domestic uranium production accounted for 38% of all uranium used in Ukraine's nuclear powerplants, which amounted to about 2,400 t. Ukraine imported nuclear fuel for its four nuclear powerplants from the Czech Republic, Russia, and Sweden (Mineral.ru, 2013f, g).

The Novokonstantinovskaya Mine in Kirovohrads'ka Oblast' was the newest uranium mine in the country. The Vostochnyi GOK began uranium ore production from the

Novokonstantinovskaya Mine in July 2011. In June 2012, the Government of Ukraine approved the construction plan for a new uranium processing plant at the Novokonstantinovskoye deposit with a total cost of about \$800 million. The projected capacity of the plant would be 2,500 t/yr of uranium, and the proven reserves of the mine [converted to uranium oxide (U₃O₈)] were 100,000 t. As of May 2013, most of the project's infrastructure was constructed. The mine elements still to be built or installed were the central mine shaft, the mine elevator, the ventilation system, and a railway line. As of 2013, the company was trying to find funding for the remaining components (Mineral.ru, 2013e; MinerJob.ru, 2013g).

In 2013, the Vostochnyi GOK decreased its production of U₃O₈ by 4% (compared with its output in 2012) to 922 t. The director of the Vostochnyi GOK explained that the reduction in output was related to difficulties signing sales contracts with NAEK Energoatom of Russia, which was the company's primary customer, and to delays with payments and intermittent production by some of the company's suppliers, in particular the ChAO Severodonetskoye Obyedineniye Azot, which was a part of OstChem Holding. The Vostochnyi GOK was planning to extend the existing long-term contract with Energoatom to supply 1,200 t of U₃O₈ in 2014. On December 25, 2013, the long-term contract was reportedly extended, but the precise details of the extended contract were not disclosed (Mineral.ru, 2013e; 2014).

Outlook

Ukraine's mining and metallurgy sectors had significant setbacks in the past few years. The country's aluminum production was essentially halted because of the high electricity prices, and coal mines and petroleum refineries were outdated and required significant investments to become competitive or even to break even. In terms of energy production, Ukraine was trying to increase its domestic production of petroleum and natural gas, ramp up coal and uranium production, and reduce its reliance on imported natural gas from Russia.

Going forward, Ukraine is likely to remain one of the leading world producers of manganese ore, titanium ores, and titanium sponge. Remaining competitive in metallurgy may prove to be difficult because of the high energy requirements, a need for new investments, and the often differing interests of plant owners and the Government. It remains to be seen if the Government and the owners of privately owned industrial facilities will be able to reach compromises and if the country will be able to attract new investments to move the mineral and metallurgical industries of the country forward.

References Cited

- Bedinger, G.M., 2015a, Titanium and titanium dioxide: U.S. Geological Survey Mineral Commodity Summaries 2015, p. 170–171.
- Bedinger, G.M., 2015b, Titanium mineral concentrates: U.S. Geological Survey Mineral Commodity Summaries 2015, p. 172–173.
- Corathers, L.A., 2015, Manganese: U.S. Geological Survey Mineral Commodity Summaries 2015, p. 100–101.
- Fenton, M.D., 2015, Iron and steel: U.S. Geological Survey Mineral Commodity Summaries 2015, p. 78–79.
- Jaskula, B.W., 2015, Gallium: U.S. Geological Survey Mineral Commodity Summaries 2015, p. 58–59.

- Metalinfo.ru, 2013, Na ZTMK planiruetsya rost proizvodstva titanovoy gubki [An increase in titanium sponge production is planned for ZTMK]: Metalinfo.ru, March 21. (Accessed March 15, 2015, at <http://www.metalinfo.ru/ru/news/62648.>)
- Metall Ukrainy [Metal of Ukraine], 2010, Rynok titana [The titanium market]: Metall Ukrainy, no. 16, August 16–31, 70 p.
- Mineral.ru, 2013a, Group DF postroit na “Krymskom Titane” novoye proizvodstvo vysokokachestvennogo dioksida titana [The DF Group will build a new facility for production of high-quality titanium dioxide]: Mineral.ru, April 11. (Accessed March 26, 2015, at [http://www.mineral.ru/News/52560.html.](http://www.mineral.ru/News/52560.html))
- Mineral.ru, 2013b, Kabinet ministrov Ukrainy vvvel kvotu na import uglja [The cabinet of ministers introduced a quota on coal imports]: Mineral.ru, April 15. (Accessed March 26, 2015, at [http://www.mineral.ru/News/52606.html.](http://www.mineral.ru/News/52606.html))
- Mineral.ru, 2013c, Korab Resources otsenila resursy Bobrikovo (Ukraina) v 103 t [Korab resources evaluated Bobrikovo’s (Ukraine) resources at 103 tons]: Mineral.ru, August 5. (Accessed March 26, 2015, at [http://www.mineral.ru/News/53882.html.](http://www.mineral.ru/News/53882.html))
- Mineral.ru, 2013d, Razvitiye zolotodovychi na Ukraine [Gold production development in Ukraine]: Mineral.ru, August 2. (Accessed March 26, 2015, at [http://www.mineral.ru/News/53865.html.](http://www.mineral.ru/News/53865.html))
- Mineral.ru, 2013e, Ukraina planiruet v 2013 godu uvelichit’ dobychu urana [Ukraine plans to increase uranium production in 2013]: Mineral.ru, May 28. (Accessed March 26, 2015, at [http://www.mineral.ru/News/53090.html.](http://www.mineral.ru/News/53090.html))
- Mineral.ru, 2013f, Ukraina v 2012 g. importirovala yadernogo topliva na 623 mln dol. [In 2012 Ukraine imported \$623 million worth of nuclear fuel]: Mineral.ru, January 25. (Accessed March 26, 2015, at [http://www.mineral.ru/News/51595.html.](http://www.mineral.ru/News/51595.html))
- Mineral.ru, 2013g, Ukraina vvvela kvoty na import uglja s tsel’yu podderzhki otechestvennykh shaht [Ukraine imposed quotas on coal imports to support domestic mines]: Mineral.ru, March 18. (Accessed March 26, 2015, at [http://www.mineral.ru/News/52232.html.](http://www.mineral.ru/News/52232.html))
- Mineral.ru, 2013h, Ukraina vvvela minimal’nye kvoty na import koksa [Ukraine introduced minimal quotas for coke imports]: Mineral.ru, July 9. (Accessed March 26, 2015, at [http://www.mineral.ru/News/53599.html.](http://www.mineral.ru/News/53599.html))
- Mineral.ru, 2013i, Viktor Yanukovich trebuet uskorit’ zamenu gaza uglom [Viktor Yanukovich demands to replace gas with coal faster]: Mineral.ru, May 25. (Accessed March 26, 2015, at [http://www.mineral.ru/News/53056.html.](http://www.mineral.ru/News/53056.html))
- Mineral.ru, 2014, Dobycha urana na Ukraine opyat’ sokratilas’ [Uranium production in Ukraine is reduced again]: Mineral.ru, February 7. (Accessed March 26, 2015, at [http://www.mineral.ru/News/56981.html.](http://www.mineral.ru/News/56981.html))
- MinerJob.ru, 2013a, Avstraliyskaya firma budet dobyvat’ zoloto v Luganskoy oblasti [Australian company will produce gold in Luganskaya Oblast’]: MinerJob.ru, March 19. (Accessed March 26, 2015, at <http://minerjob.ru/viewnew.php?id=23762.>)
- MinerJob.ru, 2013b, Avstraliyskiy proekt po dobyche zolota na Ukraine zamorozhen [The Australian project of gold production in Ukraine is mothballed]: MinerJob.ru, November 28. (Accessed March 26, 2015, at <http://minerjob.ru/viewnew.php?id=25612.>)
- MinerJob.ru, 2013c, Il’menitovyi kontsentrat na Demurinskom kombinat [Ilmenite concentrate at the Demurinskiy Complex]: MinerJob.ru, August 19. (Accessed March 26, 2015, at <http://minerjob.ru/viewnew.php?id=24756.>)
- MinerJob.ru, 2013d, Korab Resources uvelichila otsenku zapasov zolota na Donbasse [Korab Resources increased gold resources estimate in Donbass]: MinerJob.ru, July 17. (Accessed March 26, 2015, at <http://minerjob.ru/viewnew.php?id=24552.>)
- MinerJob.ru, 2013e, Rossiyskaya gosudarstvennaya kompaniya “VSMPO-Avisma” zainteresovana v privatizatsii “Zaporozhskogo titanomagniyevogo kombinata [The Russian state company VSMPO-Avisma is interested in privatization of Zaporozhye Titanium and Magnesium Complex]: MinerJob.ru, October 18. (Accessed March 26, 2015, at <http://minerjob.ru/viewnew.php?id=25268.>)
- MinerJob.ru, 2013f, Ukraina uvelichivaet kvoty na import koksa i uglja [Ukraine is increasing quotas on coke and coal imports]: MinerJob.ru, October 31. (Accessed March 26, 2015, at <http://minerjob.ru/viewnew.php?id=25393.>)
- MinerJob.ru, 2013g, Ukrainskiy VostGOK sokhranil na proshlogodnem urovne ob’emy proizvodstva kontsentrata urana [Ukraine’s VostGOK kept uranium production at last year’s level]: MinerJob.ru, September 5. (Accessed March 26, 2015, at <http://minerjob.ru/viewnew.php?id=24946.>)
- State Statistics Service of Ukraine, 2014a, Gross domestic product [1990–2013]: State Statistics Service of Ukraine. (Accessed March 12, 2015, at [http://www.ukrstat.gov.ua/druk/publicat/kat_u/2015/zb/02/NR2013pdf.zip.](http://www.ukrstat.gov.ua/druk/publicat/kat_u/2015/zb/02/NR2013pdf.zip))
- State Statistics Service of Ukraine, 2014b, Statistical yearbook of Ukraine for 2013: State Statistics Service of Ukraine, 533 p. (Accessed March 12, 2015, at [http://www.ukrstat.gov.ua/druk/publicat/kat_u/2014/zb/10/sz_2013_engl.zip.](http://www.ukrstat.gov.ua/druk/publicat/kat_u/2014/zb/10/sz_2013_engl.zip))
- State Statistics Service of Ukraine, 2014c, Ukraine’s foreign trade, 2013: State Statistics Service of Ukraine, 52 p. (Accessed March 12, 2015, at [http://www.ukrstat.gov.ua/druk/publicat/kat_u/2014/zb/06/zb_ztU_13.zip.](http://www.ukrstat.gov.ua/druk/publicat/kat_u/2014/zb/06/zb_ztU_13.zip))
- Tuck, C.A., 2015, Iron ore: U.S. Geological Survey Mineral Commodity Summaries 2015, p. 84–85.
- Yarosh, Yaroslav, 2013, V pogone za 2% [Chasing 2%]: Minprom.ua, August 15. (Accessed March 26, 2015, at [http://minprom.ua/articles/129981.html.](http://minprom.ua/articles/129981.html))

TABLE 1
UKRAINE: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2009	2010	2011	2012	2013
METALS					
Alumina	1,524,000	1,534,000	1,601,000	1,429,000	1,493,500
Aluminum:					
Primary	50,000	25,000	24,830	14,829	--
Secondary ^e	130,000	130,000	130,000	90,000	25,000 ^e
Total ^c	180,000	155,000	155,000	105,000	25,000
Copper, metal, secondary ^e	20,000	20,000	20,000	15,000	15,000
Gallium ^e	13	13	13	11	10
Germanium ^e kilograms	690 ³	700	700	700	700
Iron and steel:					
Iron ore, marketable ore and concentrate:					
Gross weight	66,476,000	78,170,700	80,580,800	81,966,400	83,500,000 ^e
Fe content ^e	36,600,000	43,000,000	44,300,000	45,100,000	45,900,000
Metal:					
Pig iron	25,682,900	27,361,000	28,881,100	28,484,000 ^f	29,089,000
Ferroalloys, electric furnace:					
Ferromanganese	129,400	280,100	180,500	163,921 ^f	88,626
Ferronickel ^e					
Gross weight	61,449 ³	62,000	62,000	119,652 ^{f,3}	121,586 ³
Ni content	12,392 ³	12,400	12,400	23,900 ^f	24,300
Ferrosilicon	150,300	195,500	150,900	150,265 ^f	191,207
Silicomanganese	741,900	940,400	843,500	823,131 ^f	724,892
Other ^e	23,900	28,500	28,500	22,115 ^{f,3}	15,908 ³
Total ^c	1,120,000	1,520,000	1,280,000	1,300,000	1,170,000
Steel:					
Crude	29,855,000	33,559,000	35,332,000	33,511,000 ^f	33,199,000
Finished products:					
Rolled	16,097,600	17,549,300	19,511,000	18,457,300	17,782,764
Pipe	1,742,000	1,928,400	2,371,800	2,014,000	1,812,980
Lead, refined, secondary ^e	7,000	7,000	13,500	13,700	13,500
Magnesium metal ^e	2,000	2,000	2,000	--	--
Manganese, marketable ore and concentrate:					
Gross weight	932,000 ⁴	1,589,300 ⁴	971,500	1,234,007 ^f	1,524,696
Mn content ^e	317,000	540,000	330,000	396,000	515,000
Manganese, metal	14,330	16,137	16,100 ^e	14,575	7,200
Nickel, laterite ore ^e	--	--	--	--	NA
Titanium:					
Ilmenite concentrate ^e :					
Gross weight	500,000	500,000	260,700 ³	246,800 ³	670,000 ^e
TiO ₂ content	295,000	295,000	153,800 ³	145,640 ³	295,000
Rutile concentrate, 95% TiO ₂ ^e	60,000	60,000	60,000	58,000	162,000
Metal, sponge ^e	6,830 ³	7,400	9,000	10,300 ^f	9,400
Zirconium concentrates ^e	31,000	30,000	26,000	20,000	41,000 ³
INDUSTRIAL MINERALS					
Bromine ^e	4,121 ³	4,100	4,100	4,100	4,100
Cement, hydraulic	9,495,700	9,456,500	10,515,300	9,843,000 ^f	9,857,000 ^f
Clays:					
Ball clay ^e	600,000	600,000	600,000	600,000	NA
Bentonite ^e	195,000	185,000	211,000	219,000 ^{f,3}	220,000
Kaolin thousand metric tons	764	1,085	1,317	1,218 ^f	1,056
Kaolinitic clays do.	354	306	575	580	551
Feldspar	84,757	146,000	179,000	146,000 ^f	134,000
Graphite ^e	5,500	6,000	6,000	5,800	5,500
Gypsum	711,000	679,000	676,000	436,200	430,000 ^e

See footnotes at end of table.

TABLE 1—Continued
UKRAINE: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2009	2010	2011	2012	2013
INDUSTRIAL MINERALS—Continued					
Lime thousand metric tons	4,101	4,220	4,487	4,415 ^r	3,892
Limestone do.	18,000	20,600	22,800	20,582 ^r	18,652
Nitrogen, N content of ammonia ^c do.	2,500	3,400	4,300	4,160	4,237 ³
Salt	5,395,000	4,908,000	5,938,000	6,189,446	5,796,000
Soda ash	680,000	706,700	700,000 ^e	720,000	720,000 ^e
Sulfuric acid thousand metric tons	890	1,296	1,537	1,371 ^r	1,165
Sulfur, native ^c	120,000	130,000	130,000	120,000	120,000
Vermiculite ^e	55,000	60,000	60,000	60,000	60,000
MINERAL FUELS AND RELATED MATERIALS					
Coal, raw: ^c					
Anthracite thousand metric tons	13,000	14,000	14,059 ³	20,763 ³	14,602 ³
Bituminous do.	59,000	61,000	67,600 ³	64,690 ³	63,313 ³
Lignite do.	5,000 ^r	5,000 ^r	5,000 ^r	5,000 ^r	5,782 ³
Total do.	77,000	80,000 ^r	86,659 ^{r,3}	90,453 ^{r,3}	83,697 ³
Marketable do.	54,820 ³	54,444 ³	62,700 ³	66,700	63,600
Coke	17,424,000	18,599,700	19,599,100	18,939,100	17,569,000
Natural gas ⁵ thousand cubic meters	21,545,000	20,458,000	19,934,900	20,492,000 ^r	21,313,000
Peat:					
Fuel use	449,000	321,000	301,000	446,000 ^r	467,000
Horticultural use	242,000	138,000	129,000	210,000 ^r	131,000
Total	691,000	459,000	430,000	656,000 ^r	598,000
Petroleum:					
Crude and gas condensate ⁶ 42-gallon barrels	28,500,000	25,400,000	24,000,000	24,342,000 ^r	22,348,000
Refinery products ⁷ do.	85,700,000	80,300,000	69,000,000	33,766,000 ^r	27,303,000
Uranium, mine output: ^c					
U content	830	850	890	960	922
U ₃ O ₈ content	980	1,000	1,050	1,130	1,080

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do. Ditto. NA Not available. -- Zero.

¹Table includes data available through February 27, 2015.

²In addition to the commodities listed, other mineral commodities may be produced, but available information was inadequate to make reliable estimates of output.

³Reported figure.

⁴Includes secondary production.

⁵The data series for natural gas production is based on natural gas production as reported by the State Statistics Service of Ukraine and includes associated petroleum gas production.

⁶Figures were converted to barrels from metric tons, which were reported as follows: 2009—3,916,600; 2010—3,493,400; 2011—3,297,800; 2012—3,345,000; and 2013—3,071,000.

⁷Figures were converted to barrels from metric tons, which were reported as follows: 2009—10,947,000; 2010—10,333,000; 2011—8,787,000; 2012—4,300,000; and 2013—3,477,000.

TABLE 2
UKRAINE: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners ^{1,2}	Location or deposit names	Annual capacity ^c
Alumina and aluminum:			
Alumina	Nikolaevskiy alumina refinery [United Company RUSAL (RUSAL)]	20 kilometers south of Mykolaiv	1,601,000
Do.	Zaporozhye refinery [United Company RUSAL (RUSAL)]	Zaporizhia	275,000
Aluminum, primary	Zaporozhye smelter [United Company RUSAL (RUSAL)]	do.	114,000
Coal	About 150 active surface and underground mines, including: Donbass Fuel and Energy Co. (DTEK) (System Capital Management, 100%): DTEK Pavlogradugol DTEK Komsomolets Donbassa Mine DTEK Dobropolyeugol DTEK Sverdlovanthracite DTEK Rovenkyanthracite Krasnoarmeiskaya-Zapadnaya No. 1 JSC Krasnodon Coal Co. (Metinvest B.V.) Smaller producers	About 95% of coal produced in Donetsk, Dnipropetrovs'ka, and Luhans'ka Oblasts 10 mines in Dnipropetrovs'ka and Donetsk Oblasts Kirovskoe, Donetsk Oblast' 5 mines near Dobropillya, Donetsk Oblast' 5 mines and 3 processing plants in Luhans'ka Oblast' 6 mines and 3 processing plants in Luhans'ka Oblast' 1 mine at Krasnoarmeisk, Donetsk Oblast' 7 mines and 2 processing plants in Luhans'ka Oblast' Donetsk, Dnipropetrovs'ka, Luhans'ka, Lviv's'ka, and Volyn's'ka Oblasts	90,000,000 ³
Coke	Evrast Group: OAO Dneprkoks coke plant OAO Baglykoks coke plant OAO Dniprodzerzhinsk coke plant	Dnipropetrovs'ka Oblast': Dnipropetrovsk Dniprodzerzhinsk do.	3,000,000
Do.	Metinvest B.V.: JSC Avdiivka coke plant	Avdeyevka, Donetsk Oblast'	4,000,000
Do.	JSC Azovstal Iron and Steel Works	Mariupol, Donetsk Oblast'	3,182,000
Do.	OJSC ArcelorMittal Kryviy Rih	Kryviy Rih, Dnipropetrovs'ka Oblast'	3,300,000
Do.	JSC Donetskkoks (Metinvest B.V., 24.5%, and OJSC Ilyich Iron and Steel Works, 12.96%)	Donetsk, Donetsk Oblast'	390,000
Do.	Yenakievo coke plant	Yenakievo, Donetsk Oblast'	NA
Do.	OAO Zaporozhkoks (JSC Zaporizhstal, 42%, and Metinvest B.V., 25%)	Zaporizhia	NA
Do.	Makeevka coke plant	Makeevka, Donetsk Oblast'	NA
Do.	OAO Yasinovskiy coke plant	do.	NA
Do.	OAO Alchevsk coke plant [Industrial Union of Donbass (ISD Corp.)]	Alchevsk, Luhans'ka Oblast'	3,700,000
Do.	Horlivka coke plant	Horlivka, Donetsk Oblast'	440,000
Do.	Kharkiv coke plant	Kharkiv	225,000
Ferroalloys:			
Ferromanganese	Zaporozhye ferroalloys plant (PrivatBank Group)	Zaporizhia	100,000
Do.	Nikopol ferroalloys plant (PrivatBank Group and EastOne Group)	Nikopol	300,000
Do.	Stakhanov ferroalloys plant (PrivatBank Group)	Luhans'ka Oblast'	250,000

See footnotes at end of table.

TABLE 2—Continued
UKRAINE: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners ^{1, 2}	Location or deposit names	Annual capacity ^c
Ferroalloys—Continued:			
Ferromanganese, blast furnace	Konstantinovka Iron and Steel Works	Konstantynivka, Donetsk Oblast'	NA ⁴
Do.	Kramatorskiy ferroalloys plant	Kramatorsk, Donetsk Oblast'	NA
Ferronickel	Pobuzhskiy ferronickel plant	Pobuzhye, Kirovohrads'ka Oblast'	100,000
Ferrosilicon	Stakhanov ferroalloys plant (PrivatBank Group)	Luhans'ka Oblast'	120,000
Do.	Zaporozhye ferroalloys plant (PrivatBank Group)	Zaporizhia	100,000
Silicomanganese	Stakhanov ferroalloys plant (PrivatBank Group)	Luhans'ka Oblast'	50,000
Do.	Zaporozhye ferroalloys plant (PrivatBank Group)	Zaporizhia	250,000
Do.	Nikopol ferroalloys plant (PrivatBank Group and EastOne Group)	Nikopol	1,000,000
Gallium	Nikolaevskiy alumina refinery [United Company RUSAL (RUSAL)]	20 kilometers south of Mykolaiv	13
Germanium	Zaporozhye titanium-magnesium plant	Zaporizhia	19,000
Graphite	Zavalyevskiy graphite complex	Zavalyevskiy deposit	NA
Iron ore:			
Underground mining	Krivorizhskiy Iron Ore Complex (Metinvest B.V., 50%, and PrivatBank Group, 50%)	4 mines, in Kryvorizkiy iron ore basin	7,000,000
Do.	Sukha Balka (Evraz Group)	2 mines in Dnipropetrovs'ka Oblast'	3,100,000
Do.	PJSC ArcelorMittal Kryviy Rih	2 mines at Kryviy Rih	1,500,000
Do.	Zaporozhye Iron Ore Complex	Ekspluatatsionnay Mine in Zaporiz'ka Oblast'	4,500,000
Do.	JSC Central Iron Ore Enrichment Works (Metinvest B.V.)	1 mine in Dnipropetrovs'ka Oblast'	2,200,000
Open pit mining	do.	3 mines in Dnipropetrovs'ka Oblast'	12,000,000
Do.	JSC Northern Iron Ore Enrichment Works (Metinvest B.V.)	2 mines in Dnipropetrovs'ka Oblast'	30,000,000
Do.	JSC Ingulets Iron Ore Enrichment Works (Metinvest B.V.)	Ingulets Mine south of Kryviy Rih	35,000,000
Do.	Yuzhniy GOK (Evraz Holding, 50%, and Smart Holding, 50%)	Mine at Kryviy Rih	22,000,000
Do.	PJSC ArcelorMittal Kryviy Rih	2 mines at Kryviy Rih	26,550,000
Do.	Poltava GOK (Ferrexpo Plc.)	Gorishne-Plavninskoye and Lavrikovskoye (GPL) Mines 15 kilometers east of Kremenchug	30,000,000
Lead, secondary	CJSC Svinets	Kostyantynivka	20,000
Magnesium metal	Magnii concern	Kalush	22,000
Manganese:			
Ore, marketable	Ordzhonikidze GOK (PrivatBank Group)	Ordzhonikidze	700,000
Do.	Marganets GOK (PrivatBank Group)	Marhanets	NA
Metal	Zaporozhye ferroalloys plant (PrivatBank Group)	Zaporizhia	NA
Mercury	OOO Nikitryt	Horlivka, Donetsk Oblast'	300
Natural gas	Yuzovskoye deposit (Royal Dutch Shell plc)	Kharkiv and Donetsk Oblasts	NA
Do.	Olesskoye deposit (Chevron Corp.)	Lvivs'ka and Ivano-Frankivs'ka Oblasts	NA
Nickel, Ni content in FeNi	Pobuzhskiy GOK (comprises three open pit mines and the Pobuzhskiy ferronickel plant)	Pobuzhye, Kirovohrads'ka Oblast'	20,000
Petroleum, refined	42-gallon barrels	Kherson oil refining plant	NA
Do.	do.	Odessa refinery (OAO Lukoil)	Odessa
Do.	do.	Lisichansk refinery (TNK-BP)	Lisichansk
Do.	do.	Halychyna refinery (Ukraine Oil Co.)	Drohobych, Lvivs'ka Oblast'
Do.	do.	Kremenchug refinery (CJSC Ukrtatnafta)	Kremenchug
Do.	do.	JSC Naftokhimik Prykarpattya	Nadvirna, Ivano-Frankivs'ka Oblast'
Do.	do.	Shebelinka refinery	Shebelinka, Kharkivs'ka Oblast'
Steel, crude	Industrial Union of Donbass Corp. (ISD Corp.):		
	OJSC Alchevsk Iron and Steel Works	Alchevsk, Luhans'ka Oblast'	5,200,000
Do.	Dneprovskiy Metallurgical Plant "Dzerzhinsky"	Dniprodzerzhinsk	3,850,000

See footnotes at end of table.

TABLE 2—Continued
UKRAINE: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners ^{1, 2}	Location or deposit names	Annual capacity ^c	
Steel, crude—Continued	OJSC ArcelorMittal Kryviy Rih	Kryviy Rih, Dnipropetrovs'ka Oblast'	7,400,000	
Do.	Metinvest B.V.:			
	JSC Azovstal Iron and Steel Works	Mariupol, Donets'ka Oblast'	6,200,000	
Do.	JSC Yenakievo Iron and Steel Works	Yenakievo, Donets'ka Oblast'	2,700,000	
Do.	OJSC Ilyich Iron and Steel Works	Mariupol, Donets'ka Oblast'	6,000,000	
Do.	Dnipropetrovsk Metals Plant "Petrovskovo" (DMZP) (Evraz Group S.A., 96.77%)	Dnipropetrovsk	1,360,000	
Do.	JSC Zaporizhstal (Metinvest B.V., 24.9%) (Mechel OAO) ⁶	Zaporizhia	4,350,000	
Do.	Kramatorskiy Metal Plant "Kuibiyshveva"	Kramatorsk, Donets'ka Oblast'	NA	
Do.	Donetskstal	Donetsk	NA	
Do.	Donetsk electrometallurgical plant	do.	1,000,000 ⁶	
Do.	Dneprospsstal	Zaporizhia	918,000	
Do.	OOO Elektrostal	Kurakhovo, Donets'ka Oblast'	NA	
Do.	JSC Energomashspetsstal (OJSC Atomenergomash)	Kramatorsk, Donets'ka Oblast'	NA	
Do.	PJSC Azovelectrostral (JSC Azovmash)	Mariupol, Donets'ka Oblast'	500,000	
Titanium:				
Concentrate:				
Ilmenite	Irshansk GOK [Leased from the Government by Crimea Titan CJSC (Government, 50% plus one share, and OstChem GmbH, 50% minus one share)]	Irshansk, 50 kilometers north of Zhytomyr	400	
Do.	OOO Valki-Ilmenit (OstChem GmbH, 75%)	do.	70	
Do.	Mezhdurechensk GOK (OstChem GmbH, 75%)	Zhytomyrs'ka Oblast'	84	
Do.	Velta LLC	Korobchino, Novomirgorod district, Kirovograds'ka Oblast'	185 ⁷	
Do.	Volnogorsk state mining-metals complex [Leased from the Government by Crimea Titan CJSC (Ukraine Government, 50% plus one share, and OstChem GmbH, 50% minus one share)]	Volnogorsk, 70 kilometers west of Dnipropetrovsk	200	
Do.	Demurinskiy GOK (Limpeza Ltd. of Cyprus, 25%, and VSMPO-Avisma of Russia, 75%)	Dnipropetrovs'ka Oblast'	50,000	
Rutile	do.	do.	13,000	
Sponge	Zaporozhye Titanium & Magnesium Complex (ZTMK) (Government, 51%, and Tolexis Trading Ltd., 49%)	Zaporizhia	NA	
Ingots	Various enterprises: OOO Antares OOO Fiko Zaporozhye Titanium & Magnesium Complex (ZTMK) (Government, 51%, and Tolexis Trading Ltd., 49%)	Of which: Kyev do. Zaporizhia	12,000 ³	
Titanium dioxide pigment	ChAO Crimea Titan	Crimea	NA	
Do.	OAO Sumykhimprom	Sumy	NA	
Uranium:				
Ore	thousand metric tons	Vostochnyi GOK (Government)	Ingulskaya Mine at Kirovohrad	450
Do.	do.	do.	Smolinskaya Mine at Smolino	600
Do.	do.	do.	Novokonstantinovskoye deposit in Kirovohrads'ka Oblast'	100
Concentrate	do.	do.	Hydrometallurgical concentration plant at Zheltye Vody	1,000
Zinc, secondary	Ukrzinc plant	Kostyantynivka	25,000	
Do.	CJSC Svinets	do.	30,000	

See footnotes at end of table.

TABLE 2—Continued
 UKRAINE: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners ^{1,2}	Location or deposit names	Annual capacity ^e
Zirconium:			
Concentrate	Volnogorsk state mining-metals complex [Leased from the Government by Crimea Titan CJSC (Ukraine Government, 50% plus one share, and OstChem GmbH, 50% minus one share)]	Volnogorsk, 70 kilometers west of Dnipropetrovsk	35
	Demurinskiy GOK	Dnipropetrovs'ka Oblast'	3,000
Metal and compounds	State Research and Production Enterprise "Zirconium"	Dniprodzerzhinsk	NA

^eEstimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

¹Inconsistencies in enterprise and location names may appear in this table because both Ukrainian and Russian spellings were used for transliterations.

²GOK is the abbreviation for gorno-obogotitelny kombinat, which translates as "mining and beneficiation complex."

³Capacity estimates are totals for all enterprises that produce that commodity.

⁴Konstantinovka Iron and Steel Works stopped production of blast furnace ferromanganese in 2008.

⁵The Odessa refinery stopped production in the fourth quarter of 2010. Production could restart in the future if business conditions improve.

⁶In December 2011, Mechel OAO of Russia purchased 100% of the shares of the Donetsk electrometallurgical plant.

⁷Velta LLC began production of ilmenite concentrate in December 2011, but its first deliveries of commercial concentrate were not made until April 2012.