



# 2012 Minerals Yearbook

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## ARMENIA

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# THE MINERAL INDUSTRY OF ARMENIA

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Armenia ranked seventh in the world in mine output of molybdenum in 2012. Besides molybdenum, Armenia produced such other metals as copper, gold, silver, and zinc, and industrial minerals and products thereof, which included cement, diatomite, gypsum, limestone, and perlite. The country also produced aluminum foil from aluminum imported from Russia, and ferromolybdenum, molybdenum metal, and rhenium salts (ammonium perrhenate and potassium perrhenate) from local ores. It also had developed a diamond-cutting industry based on imported diamond. Armenia possesses resources of copper, gold, iron ore, lead, molybdenum, and zinc. It also has resources of construction materials, such as basalt, granite, limestone, marble, and tuff; semiprecious stones, such as agate, jasper, and obsidian; and other nonmetallic minerals, such as bentonite, diatomite, perlite, and zeolites (Arm3a.org, 2013; Polyak, 2013).

The country had almost no domestic fuel production; most domestically produced electricity was generated by one nuclear powerplant and several hydroelectric powerplants. Armenia imported uranium fuel for its nuclear powerplant and natural gas from Russia. Armenia also had been receiving natural gas from Iran through a direct pipeline (built in 2009) between the two countries and, since 2006, liquefied natural gas (LNG) that was transported in tanker trucks. In 2012, Armenia and Iran were in the process of building a new oil pipeline between the two countries that was expected to be completed in 2014 (Black Sea-Kavkaz.org, 2012; Mineral.ru, 2012a).

## Minerals in the National Economy

In 2012, Armenia's real gross domestic product (GDP) increased by 7.2% compared with an increase of 4.7% in 2011. The nominal GDP in 2012 amounted to \$10.1 billion.<sup>1</sup> The share of industrial production in the total GDP was 37.7%, and the share of the mineral industry in total industrial production was 17.0%. In 2012, industrial production increased by 8.8% in real terms compared with that of 2011. In 2011 (the latest year for which the data were available), mining of metallic ores dominated the mining and quarrying sector, accounting for 97.3% of the value of production in this sector (National Statistical Service of the Republic of Armenia, 2012; U.S. Central Intelligence Agency, 2013).

## Government Policies and Programs

In November 2011, Armenia's Parliament adopted a new mining code and a package of accompanying bills that were to go into force in the beginning of 2012. The mining code regulates use of all mineral resources except oil and gas,

<sup>1</sup>Where necessary, values have been converted from Armenian drams (AMD) to U.S. dollars (US\$) at an annual average exchange rate of AMD0.002489=US\$1.00 for 2012, AMD0.0026845=US\$1.00 for 2011, and to European euros (€) at an average annual exchange rate of AMD0.0019363=1€ for 2012.

radioactive materials, and fresh underground water. The new code contains major regulations concerning the use of mineral resources, exploration and mining, the procedures for obtaining mining and exploration licenses, and the environmental responsibility of companies. One of the accompanying bills passed by the Parliament outlines environmental fees and fees for the use of mineral resources; in particular, it replaces the fees paid for the use of mineral resources with royalty payments. Under the new law, metals mining is taxed based on the metal content of the produced concentrates as opposed to the gross volume of the extracted ore, which was used as a taxation base previously. The new code also establishes the criteria for issuing mining licenses. Under the new code, the mining project description submitted for obtaining a license must contain a plan for environmental monitoring, measures for social development of the local community, and a plan for projected closure of the mine and the demolition of the equipment when the resources are depleted. During mine exploitation, the mining companies are to make payments to a restoration fund, which is to be used to restore the land after the mine closure. The new code also modifies the royalty computation scheme. The new formula for computing royalties assumes a floor level of 4% and increases when profits constitute a higher percentage of total sales. The companies expected the total royalties to reach between 10% and 12% of the metal content value. In the first quarter of 2012, the total amount of royalties collected by the Government was 6.3 billion drams (about \$16 million), which was 2.3 times higher than the amount collected in 2011 (Arka.am, 2011; News.am, 2011, 2012).

The Government expected that the new code would stimulate production by the mineral industry and result in Government tax revenues in 2013 that would be about 3.5 billion drams (\$8.8 million) higher than in 2011. Armenian environmentalists, on the other hand, were against the new code because it does not prohibit mining in the forests and other lands of national significance, does not specify how the mining companies are to treat mine tailings, and changes the taxation mechanism so that the companies do not pay any taxes on produced tailings and mining waste (Manukyan, 2011).

## Mineral Trade

In 2012, the country's exports, which were valued at \$1.38 billion, were much lower than the country's imports of \$4.26 billion. Mineral commodities contributed a significant share of the country's export revenue. The main export commodities were diamond, energy (electric power), foodstuffs, nonferrous metals, pig iron, unwrought copper, and other mineral products. Overall, exports of industrial minerals accounted for \$403 million, or 29.2% of the country's export revenue; ferrous and nonferrous metals and articles made out of them accounted for \$342 million (24.8%); and precious

metals and precious stones accounted for \$173 million (12.5%). The main export partners of Armenia were Russia (which accounted for 20.2% of Armenia's export revenue), Bulgaria (9.4%), Belgium (9.2%), Iran (7.9%), Germany (7.6%), the United States (6.3%), Canada (6.2%), the Netherlands (5.8), Switzerland (5.2%), and Georgia (5.1%). In 2012, Armenia's imports of mineral products included rough diamond, natural gas, and petroleum. The main trade partners for imports were Russia (which provided 24.9%, by value, of Armenia's imports), China (9.4%), Germany (6.2%), Iran (5.1%), Turkey (5.0%), Italy (4.0%), and the United States (3.6%) (National Statistical Service of the Republic of Armenia, 2012; U.S. Central Intelligence Agency, 2013).

## Production

In 2012, Armenia produced 497% more bentonite than it produced in 2011. Production of molybdenum metal increased by 39%; that of molybdenum concentrate, by 35%; caustic soda, by 30%; zinc concentrate, by 26%; copper concentrate, by about 23%; and copper metal, by about 13.5%. At the same time, production of salt decreased by 21%; estimated production of rhenium, by 12.5%; and silver, by 12%. Data on other mineral production are in table 1.

## Commodity Review

### Metals

**Aluminum.**—The ARMENAL aluminum foil rolling mill was one of the leading production facilities in Armenia and the only producer of aluminum foil in the Caucasus and Central Asia regions. It was formed from the Kanaker aluminum plant in Yerevan in 2000 and became a part of United Company RUSAL's packaging division. In 2012, ARMENAL produced 26,264 metric tons (t) of aluminum foil, which was an increase of 3.8% compared with the 2011 production volume. In 2012, the plant fulfilled about 1,800 export orders, which was a 2.7% increase compared with the number of orders filled in 2011. During the year, worker productivity at ARMENAL increased by 5.5%. In 2012, the plant paid 1,641 million drams (about \$4.1 million) in taxes, which was a 15% increase compared with that of 2011. The plant employed about 700 workers at an average monthly wage of 260,000 drams (\$650), which was about 2.2 times higher than the average wage in Armenia. The plant had several small efficiency-improving projects underway and was planning to increase production to between 30,000 and 31,000 metric tons per year (t/yr) of aluminum foil in the near future (MetalDaily.ru, 2013a; United Company RUSAL, 2013).

**Copper and Molybdenum.**—The leading producer of copper and molybdenum concentrates in Armenia was the Zangezur copper-molybdenum complex (ZCMC) followed by the Agarak copper-molybdenum mining and processing complex (ACMC). The ZCMC was developing the Kajaran deposit, which had resources that were estimated to be 4.5 million metric tons (Mt) of copper and 722,000 t of molybdenum. The owners of ZCMC in 2012 were Cronimet Mining GmbH of Germany, which owned 60% of the shares; OAO Pure Iron Plant (15%);

and Armenian Molybdenum Production LLC (AMP) and Zangezur Mining LLC (12.5% each). Since privatization in 2004, the company had invested about \$300 million in production facilities, and another \$150 million was spent on social projects. As of 2012, ZCMC was processing about 17 million metric tons per year (Mt/yr) of ore and was planning to increase its annual processing capacity to 25 Mt/yr in the next several years (Aniarmenia.ru, 2012; Regnum.ru, 2012f).

The ACMC included the Agarak Mine and a beneficiation plant. The ACMC was acquired by GeoProMining, Ltd. (GPM) of Russia in 2007 and had been undergoing expansion and modernization since then. In April 2012, ACMC announced that it had completed construction of the new beneficiation plant and acquired 19 new production vehicles. The new plant was equipped with new flotation machines that would increase the annual capacity by about 20% to 3.5 Mt/yr and would increase the company's ability to extract metals by between 3% and 5% (Mineral.ru, 2012b; Yerkrmas.org, 2012; GeoProMining, Ltd., 2013).

In 2012, ZAO Teghut was preparing for production of copper and molybdenum at the Teghut deposit, which was scheduled to start in 2014. The Teghut copper-molybdenum deposit was the second largest copper-molybdenum deposit in Armenia; its resources were estimated to be 1.6 Mt of copper and 100,000 t of molybdenum. The company expected to mine between 8 and 12 Mt/yr of ore and to produce more than 70,000 t of copper concentrates with between 28% and 30% copper content and 1,200 t of molybdenum concentrates with 50% molybdenum content. The Vallex Group, of which ZAO Teghut was a part, was planning to invest a total of \$320 million in the project, and, as of March 2012, the company had already invested \$130 million. The Vallex Group also included ZAO Armenian Copper Programme (ACP), which managed the copper smelter in Alaverdi, and Base Metals Co., which operated the Drmbon gold-copper deposit in Nagorno-Karabakh. Environmental activists in Armenia and abroad were demanding that the Government annul the Teghut project because it posed a threat to the Teghut Forest. Although the company offered to plant trees in the areas adjacent to the forested area that would be cut, the ecologists responded that this measure would jeopardize biodiversity because the Teghut Forest is home to 55 species of mammals (21 of which are endangered), 86 species of birds, and 191 types of plants (9 of which are endangered). By yearend, it was still unclear whether or not the construction of the Teghut Mine would proceed as planned (table 2; MinerJob.ru, 2012c; Regnum.ru, 2012e, g).

In March 2012, the Vallex Group signed an agreement with the Government of Nagorno-Karabakh regarding the mining of another significant copper-molybdenum deposit, the Kashen deposit, which is located in the Martakert region, 15 kilometers (km) east of the already exploited Drmbon Mine. The Kashen deposit reportedly contained about 41 Mt of ore. About 1.6 Mt/yr of ore from the Kashen Mine was expected to be processed. The Vallex Group was planning to invest about \$80 million in the project, and the mine was expected to open in 2015 (Regnum.ru, 2012c, d).

ACP, which was a part of the Vallex Group, was an Armenian producer of crude copper metal. ACP processed

copper concentrates from ZAO Base Metals, which was located in Nagorno-Karabakh, and from the ZCMC. In 2012, ACP increased its crude copper metal production by 13.5% to 10,075 t. ACP's entire output was exported to Europe (Express.am, 2013a).

OAO Pure Iron Plant (PIP), which was located in Yerevan, was the major producer of ferromolybdenum and molybdenum metal in Armenia. The plant processed mostly molybdenum concentrate produced by the APMC. Cronimet Mining owned 51% of the PIP, and the other 49% was owned by the residents of Armenia. In 2012, the plant reduced its ferromolybdenum production slightly by 0.3% to 2,997.7 t and increased its production of molybdenum metal by 38.8% to 675 t. In 2012, the company produced ferromolybdenum metal valued at 22.1 billion drams (about \$55 million) and exported most of it, for 22.01 billion drams (about \$54.8 million). The production of molybdenum metal was valued at 7.6 billion drams (about \$18.9 million), and the company exported all of it. Cronimet Mining was the company involved in the exporting of molybdenum products produced at the PIP. The PIP employed about 600 people, and the average monthly wage rate was 220,000 drams (about \$548). The plant was planning to increase its production of ferromolybdenum in 2013 to 3,200 t, and that of molybdenum metal, to 750 t (MetalDaily.ru, 2011; Express.am, 2013b; News.am, 2013).

AMP was another leading molybdenum producer in Armenia; the company was also located in Yerevan and processed copper concentrate produced at the ZCMC. In 2012, AMP produced 2,840 t of ferromolybdenum valued at 20.1 billion drams (\$50 million). In addition to molybdenum, the company produced ammonium perrhenate with a rhenium content of 69.4%. AMP was planning to open a new hydrometallurgical plant in the summer of 2013 that would produce molybdenum metal. The company's investment in the new plant would exceed 1 billion drams (about \$2.5 million). AMP employed about 500 workers at an average wage rate of 208,000 drams per month (about \$518 per month) (Newsarmenia.ru, 2013; Versia.am, 2013).

**Gold.**—The Ararat Gold Recovery Co. (AGRC), which was also known as GPM Gold, continued to mine the Sotk (Zod) deposit. As of 2011, AGRC was a subsidiary of GPM. AGRC had a gold processing facility in the city of Ararat. In October, the company announced that it had invested \$45 million in technical modernization of the Sotk Mine and completed the first stage of innovations. These included acquisition of 30 units of mining equipment and remodeling of buildings used for vehicle maintenance and machine oil storage. The next step in technical modernization would cost a total of \$100 million and include application of the Albion Process™ technology and completion of a new beneficiation plant in Ararat City. The Albion Process™ was initially developed by Xstrata plc of the United Kingdom and was first used to treat refractory gold and silver concentrates in the Dominican Republic; Armenia would be the second place in the world where the technology is applied to treat refractory gold. The main benefit of the Albion Process™ is that it allows processing of a variety of ore types. The ores found in Sotk are of the sulfide type, and it is usually more expensive to extract gold from such ores.

GPM expected to increase annual gold production to 3.7 t in 2013 and 4.6 t in 2015 from 1.3 t in 2011 (MinerJob.ru, 2012b; GeoProMining, Ltd., 2013).

In 2012, ZAO Geoteam of Armenia, which represented Lydian International Ltd. of the United Kingdom, invested \$52 million in exploration and preparation for development of the Amulsar gold deposit located in the south of Armenia. The company had already invested \$30 million in exploration between 2006 and 2012. Geoteam expected that the company's total investment in exploration and development would reach \$250 million and that another \$200 million would be invested in mining. According to company data, the deposit contained about 2.4 million troy ounces (75 t) of gold and 9.6 million troy ounces (300 t) of silver. The company planned to conduct open pit mining and recovery using the heap-leach method; it was planning to build a processing plant and to start mining in 2015. The expected life of the mine was 16 years. It was expected that, in the mining stage, Geoteam would pay about \$86 million in taxes, which would be used to support the local economy (Mineral.ru, 2012c; MinerJob.ru, 2012a).

Residents of the nearby city of Jemruk were concerned about possible harmful effects of the future Amulsar Mine, not only on the environment, but on the livelihoods of the people of the area as well. The city of Jemruk is a mineral water resort, and the proximity of the mine could damage the water quality and reduce the city's attractiveness to tourists. Geoteam responded to those environmental concerns by stating that the Amulsar deposit is located 13 km from the city, that the deposit does not contain significant amounts of either uranium or lead, and that the ore processing was unable to harm Sevan Lake, which is considered a natural treasure of Armenia. The mining and metallurgical complex was planned to be located more than 4 km from Spandaryan Lake, from which it was thought pollutants could leak into Sevan Lake. Moreover, the company conducted simulations showing that all particles that would be emitted during explosions used during the mining stage would settle within a 1-km radius of the mine, which would be far away from Jemruk city. As of 2012, the Ministry of Environmental Protection was continuing to consider the environmental safety aspects of the Amulsar project (Arminfo.am, 2012; Mineral.ru, 2012d; Regnum.ru, 2012b).

Another company mining gold in Armenia was ZAO Dundee Precious Metals Kapan (DPMK) (formerly known as ZAO Deno Gold Mining), which was a subsidiary of Dundee Precious Metals Inc. of Canada. DPMK was mining the Shahumian deposit located in the Kapan ore field. In 2012, the company continued work to assess the total resources of the deposit. In addition to gold, the ore contained copper, silver, and zinc. The company was producing two concentrates—copper-silver-gold and zinc-silver-gold. In 2012, DPMK reduced gold production by 19%, to 679 kilograms (kg) from 836 kg in 2011. Silver production decreased by 13.5% to 13,968 kg; copper, by 18% to 1,357 t; and zinc, by 22% to 6,996 t. In 2012, the company's sales decreased by 26% to \$54 million and the gross profits plummeted to \$3.4 million from \$25.7 million in 2011. In 2008, independent consulting company Coffey International Ltd. of Australia had produced a resource estimate based on exploration results from the Soviet period and limited drilling

work conducted previously by Deno Gold Mining. According to Coffey's report, the probable resource with gold content between 0 and 2.0 grams per metric ton (g/t) was estimated to be 1,836 t, and the probable resource with gold content between 1.0 and 2.0 g/t was estimated to be 400 t. Gold content ranges were between 0.37 and 1.68 g/t; silver, between 6.5 and 20.87 g/t; copper, between 0.09% and 0.19%; and zinc, between 0.32% and 0.83%. To obtain a more precise estimate of the deposit's resources, DPMK decided to conduct drilling of the entire deposit. The company was planning to complete the new estimate of the deposit's resources by the end of 2012, but it was not known if this task was completed on schedule (MinerJob.ru, 2012a; Dundee Precious Metals Inc., 2013; Erndjakyan, 2013).

**Iron and Steel.**—A new metallurgical plant was under construction in the city of Charentsavan in the Kotaiks region, which is located 25 km from Yerevan, and it would be the first such plant in Armenia. The construction was being done by ASCE Group Armenia, and the equipment was expected to be supplied by Siemens VAI branches located in Austria, Italy, and Russia; the Russian branch was to provide automation of the two electric arc furnaces already owned by the ASCE Group. The new plant was expected to produce steel-reinforcing bar (rebar) from metal scrap collected in Armenia. The rolling mill of the plant would have the capacity to produce 125,000 t/yr of steel. The total cost of construction was estimated to be €4 million (about \$5 million), and the cost of equipment would amount to another €20 million (about \$25 million). ZAO Ameriabank of Armenia was financing \$15 million of the total cost of the project, and, in November 2011, the Government allowed ASCE Group to delay payment of the value-added tax on imported equipment for up to 3 years. The total area of the plant was planned to be 100,000 square meters, and it was expected to employ about 300 workers. The project was scheduled to be completed in 2013 (Regnum.ru, 2012a; MetalDaily.ru, 2013b).

### *Mineral Fuels and Related Materials*

**Uranium.**—In 2012, ZAO Armenian Russian Mining Co. was continuing exploration for uranium in Syunik Marz and Vayots Dzors Marz Provinces. The company, a joint enterprise of the Government of Armenia and the Government of Russia, was created in 2008, with the goal of exploration for and subsequent mining of uranium in Armenia. Initially, Russia invested \$3 million that was expected to fund exploratory drilling in Syunik Marz. According to various preliminary estimates, uranium resources in Armenia were thought to be between 30,000 and 100,000 t. In 2010, residents of the Syunik region (led by environmental activists) held demonstrations against the uranium program in Armenia because of environmental concerns (Kavkaz-uzel.ru, 2010; Zarobyan, 2010).

### **Outlook**

In the next few years, Armenia is likely to continue with its development of facilities used to process copper, gold, and molybdenum. Several new gold and iron ore mining projects were underway in 2012 and could be operational in the next

3 to 5 years. The mining code that went into effect in the beginning of 2012 is likely to make the mineral industry of Armenia more attractive to potential investors. At the same time, many residents of the country appear concerned about the potential harm mining projects could do to environmentally sensitive areas in the country. Over time, the resolution of tensions between mining companies and environmental activists could become more difficult. Success of mining and mineral processing projects in Armenia will depend on the ability of the Government to provide a solid legal basis for reconciling often contradictory goals of economic development and environmental protection.

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TABLE 1  
ARMENIA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity	2008	2009	2010	2011	2012	
<b>METALS</b>						
Aluminum, foil	22,694	21,456	24,617	25,314 <sup>r</sup>	26,264	
Copper:						
Concentrate, Cu content	18,800	23,233	31,062	33,597	41,220	
Blister, smelter, primary	6,480	6,858	7,644	8,876	10,075	
Ferromolybdenum	5,323	5,144	5,126	5,525	5,836	
Gold, mine output, Au content	kilograms	1,359	944	974	2,736 <sup>r</sup>	2,896
Molybdenum:						
Concentrate, Mo content	4,472	4,365	4,335	4,817	6,500	
Metal	520	500	469	486	675	
Rhenium <sup>c</sup>	kilograms	400	400	400	350	
Silver	do.	40,434	52,876	68,428	25,227 <sup>r</sup>	22,200
Zinc, concentrate, Zn content	4,200	3,800	7,808	8,475	10,700	
<b>INDUSTRIAL MINERALS</b>						
Barite <sup>c</sup>	600	500	550	600	600	
Caustic soda	4,476	1,138	960	63	82	
Cement	thousand metric tons	770	467	488	422	438
Clays:						
Bentonite	40,000	38,000	1,397	835	4,987	
Bentonite, powder	1,100	1,000	1,100	1,100	1,200	
Diamond, cut	carats	100,945	49,573	65,000	65,000	67,000
Diatomite <sup>c</sup>	200	180	220	220	220	
Gypsum	45,900	40,100	38,700	34,000	32,000	
Limestone	thousand metric tons	18,000	15,000	18,000	18,000	17,500
Perlite <sup>c</sup>	35,000	35,000	95 <sup>r, 2</sup>	229 <sup>r, 2</sup>	181 <sup>2</sup>	
Salt	37,300	29,400	29,400	35,600	38,000	

<sup>c</sup>Estimated; estimated data are rounded to no more than three significant digits. <sup>r</sup>Revised. do. Ditto.

<sup>1</sup>Table includes data available through August 15, 2013.

<sup>2</sup>Reported figure.

TABLE 2  
ARMENIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity		Major operating companies, main facilities, or deposits	Location or deposit name	Annual capacity <sup>c</sup>
Aluminum, rolled and foil		ARMENAL (formerly Kanaker aluminum plant) (United Company RUSAL)	Kanaker	25,000
Cement		Araratcement Factory CJSC	Ararat region	NA
Copper:				
Mine output, Cu content	million metric tons	Agarak copper-molybdenum mining and processing complex (ACMC) [GeoProMining, Ltd. (GPM)]	Agarak	3.5
Do.		Dundee Precious Metals Kapan (Dundee Precious Metals Inc.)	Kapan	NA
Do.	million metric tons	Zangezur copper-molybdenum complex (ZCMC) [Cronimet Mining GmbH, 60%; OAO Yerevan Pure Iron Plant, 15%; Armenian Molybdenum Production LLC (AMP), 12.5%; Zangezur Mining LLC, 12.5%]	Kajaran	17
Blister		ZAO Armenian Copper Programme (ACP) (Vallex Group)	Alaverdi	15,000
Diamond, cut stones		Aghavni diamond-cutting works <sup>2</sup>	Nor Geghi	NA
Do.		Amma group diamond-cutting works <sup>2</sup>	Artashat	NA
Do.		Andranik-Dashk diamond-cutting works	Nor Hachyn	NA
Do.		Arevakn diamond producing plant	do.	NA
Do.		Diamond Company of Armenia (DCA)	Yerevan	NA
Do.		Diamond Tech	Talin	NA
Do.		Lori diamond-cutting works	Nor Hachyn	NA
Do.		Lusampor <sup>2</sup>	Melik'gyugh	NA
Do.		Punji diamond-cutting works <sup>2</sup>	Yerevan	NA
Do.		Sapphire diamond-cutting works	Nor Hachyn	NA
Do.	thousand carats	Shoghakan gem-cutting plant	do.	120
Gold	kilograms	Ararat Gold Recovery Co. (AGRC) [GeoProMining, Ltd. (GPM)]	Sotk, Zod	2,000
Do.		Megradzor deposit	Meghradzor	NA
Do.		Lichkvazkoye, Shaumyanskiy Rayon, Sotkskoye, and Terterasarskoye deposits	NA	NA
Do.		ZAO Dundee Precious Metals Kapan (DPMK) (Dundee Precious Metals Inc.)	Shahumian deposit	NA
Iron ore		Hrazdan deposit	Hrazdan region	NA
Molybdenum:				
Mine output, Mo content		Agarak copper-molybdenum mining and processing complex (ACMC) [GeoProMining, Ltd. (GPM)]	Agarak	2,000
Do.		Zangezur copper-molybdenum complex (ZCMC) [Cronimet Mining GmbH, 60%; OAO Yerevan Pure Iron Plant, 15%; Armenian Molybdenum Production LLC (AMP), 12.5%; Zangezur Mining LLC, 12.5%]	Kajaran	20,400
Metal, ferromolybdenum		Armenian Molybdenum Production LLC (AMP) (Cronimet Mining GmbH, 51%, and Armenian residents, 49%)	NA	3,600
Do.		OAO Yerevan Pure Iron Plant	Yerevan	NA
Perlite	thousand metric tons	Aragats perlite mining-beneficiation complex	Aragats deposit	1,110
Rhenium		Agarak copper-molybdenum mining and processing complex (ACMC) [GeoProMining, Ltd. (GPM)]	Agarak	NA
Do.		Zangezur copper-molybdenum complex (ZCMC) [Cronimet Mining GmbH, 60%; OAO Yerevan Pure Iron Plant, 15%; Armenian Molybdenum Production LLC (AMP), 12.5%; Zangezur Mining LLC, 12.5%]	Kajaran	NA
Zinc, mine output, Zn content		Dundee Precious Metals Kapan (Dundee Precious Metals Inc.)	Kapan	NA

<sup>c</sup>Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

<sup>1</sup>Many location names have changed since the breakup of the Soviet Union. Many enterprises, however, are still named or commonly referred to based on the former location name, which accounts for discrepancies in the names of enterprises and that of locations.

<sup>2</sup>Current existence of enterprise cannot be confirmed.