



# 2009 Minerals Yearbook

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**SWITZERLAND [ADVANCE RELEASE]**

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# THE MINERAL INDUSTRY OF SWITZERLAND

By Harold R. Newman

Switzerland's mineral resources were limited. Mining, exclusive of industrial minerals for construction, played a minor role in Switzerland's economy. No metal mining took place in 2009 owing to the depletion of metalliferous ores in the past. Metal processing, which was restricted to primary and secondary aluminum, secondary lead, and steel, depended on imported raw materials or scrap. Industrial minerals produced by mining and processing included cement, gypsum, and lime, which were used domestically. The saline plants at Bex, Riburg, and Schweizerhalle produced salt for domestic consumption and export.

Switzerland was a member of the European Free Trade Association, and trade has been the key to prosperity in Switzerland. As the world's 18th ranked exporter, Switzerland shipped \$207 billion worth of exports in 2009. Principal exports in 2009 were agricultural products, chemicals, machinery, metals, and watches. The principal recipients were Germany, (19.7%), the United States (9.6%), Italy (8.7%), France (8.6%), and the United Kingdom (5.2%). Switzerland imported \$192 billion worth of foreign goods in 2009. Major imports included agricultural products, chemicals, fuels, machinery, metals, and vehicles. The principal suppliers were Germany (33.3%), Italy (11%), France (9.4%), the United States (5.8%), and the Netherlands (4.5%). The Swiss economy shrank by an estimated 1.5% in 2009 as a result of the global economic downturn (U.S. Central Intelligence Agency, 2010).

## Production

Data on mineral production are in table 1.

## Structure of the Mineral Industry

The Swiss mineral industry was owned privately or by regional governments (Cantons). Regulatory control was administered by the national Government. The 26 regional Cantons granted mining and processing licenses and directly operated electricity generating facilities, gas utilities, and water resource facilities. The final authority for the mineral industry was vested in the Federal Council. Table 2 is a list of major mineral industry facilities with their locations and capacities.

## Commodity Review

### Metals

**Aluminum.**—Novelis Inc. of the United States was a global leader in aluminum rolled products in terms of production and technology. Novelis continued using its Novelis Fusion™ technology at its 130,000-metric-ton-per-year (t/yr) facility in Sierre. Novelis rolled sheets for the automotive, building, industrial, and transport markets. The site had cold- and hot-rolling and heat-treatment capabilities. The automotive

market was a particular specialty (Novelis Inc., 2009b). The company announced that it had recycled an estimated 39 billion aluminum beverage cans, which was a company record. By recycling the used containers back into aluminum sheet, Novelis estimated that it reduced its need for primary aluminum by more than 530,000 t/yr, saving about 73 million British thermal units of energy, and avoiding the production of about 5 million metric tons (Mt) of greenhouse gases. Used beverage cans accounted for about one-half of all aluminum scrap processed by Novelis each year (Novelis Inc., 2009a).

**Copper.**—Schmelzmetall AG was, in terms of production, a leading manufacturer of copper-based high-performance alloys in the European Union (EU). Schmelzmetall HOVADUR® manufactured the alloys from raw material to finished product. The materials were smelted and cast in inductively heated vacuum furnaces. The proprietary process produces alloys with a high grade of purity. These technologically advanced alloys are heat treated to achieve required properties of hardness and thermal and electrical conductivity (Schmelzmetall AG, 2009).

**Gold.**—Although Switzerland is not a gold miner, it is home to several refineries. They include Argor-Heraeus S.A. at Mendrisio, Produits Artistiques de Métaux Précieux S.A. at Castel San Pietro, and Valcambi S.A. at Balerna.

The gold, investment, and securities bankers in Switzerland reported that they were running out of suitable storage space for their customers' gold. The Zurich Cantonal Bank reported that the Gold Index Fund, where physical gold was deposited, was so successful that the bank ran out of storage space. The Swiss National Bank operated other gold storage facilities but would not state where the gold was stored except that it was in different locations in Germany and abroad (deCarbonnel, 2009).

**Iron and Steel.**—About 1 million metric tons per year (Mt/yr) of scrap steel was collected through a network of collection points, scrap processors, and traders. Stahl Gerlafingen AG was a major consumer of steel scrap and operated a modern high-efficiency electric arc furnace for melting the scrap at its plant at Gerlafingen. Gerlafingen was the leading supplier of reinforced steel products in Switzerland (Stahl Gerlafingen AG, 2009).

**Lead.**—Metallum Group (Switzerland) AG was located in Pratteln 70 kilometers (km) west of Zurich. Collected scrap metal was processed in shredding and sorting plants. The material was run through shears and presses and a nonferrous high-frequency separator. A flotation plant was used to separate the light and heavy materials. Metallum was active in the international trade of primary and secondary metals and their residues [Metallum Group (Switzerland) AG, 2009].

### Industrial Minerals

**Cement.**—Holcim (Schweiz) AG was the leading cement, concrete, and gravel producer in Switzerland. Holcim operated seven cement plants and grinding stations, and had a production

capacity of 4.3 Mt/yr. Holcim reported that whereas cement and ready-mix sales remained about the same as in 2008, the building materials market remained under pressure owing to decreased demand (Holcim Ltd., 2009).

**Diamond.**—Switzerland was involved in the cutting and polishing of diamond and played a large role in international diamond trade activities. The country was a member of the Kimberley Process Certification Scheme.

### *Mineral Fuels*

**Natural Gas.**—Switzerland did not produce natural gas in 2009. Imported natural gas met 12% of Switzerland's energy requirements. Most of the imported gas was secured in the form of long-term supply agreements with its EU partners (France, Germany, Italy, and the Netherlands). These countries, with the exception of the Netherlands, imported most of their gas from Algeria, Norway, and Russia. Swissgas AG imported three-quarters of the gas used in Switzerland. Although Switzerland uses some Russian gas for its domestic needs, there were no direct contracts with OAO Gazprom of Russia and Swissgas anticipated no restrictions to supply as a result of the Russia/Ukraine pricing dispute. Swiss natural gas consumption was low with respect to total consumption of other countries in the EU (Swissinfo, 2009).

**Petroleum.**—Celtique Energie Ltd.'s 803-square-kilometer (km<sup>2</sup>) permit is located in northwest Switzerland in the Jura region. The permit contained the very large Cygne Blanc structural prospect, which had a mapped area of about 1,700 hectares. The reservoir objective was the Triassic Bunter Sands, which are thick and porous in nearby wells. An effective top seal was provided by thick overlying lenses of Triassic anhydrites and salts. Recoverable reserves of 343 million barrels had been estimated in 2009. Celtique's other prospect, the 802-km<sup>2</sup> Vallorbe license, was located immediately to the southwest of the Neuchatel permit. The numerous natural gas and petroleum seeps in the area could indicate an active hydrocarbon area (Celtique Energie Ltd., 2009).

Tamoil (Suisse) S.A.'s Collombey refinery, which was one of two petroleum refineries in Switzerland, is located about 100 km from Geneva. Production was about 2.7 Mt/yr of petroleum products from crude petroleum brought to Collombey from the Port of Genoa, Italy, through a 340-km-long pipeline. Products produced by the refinery included diesel, gasoline unleaded 98, gasoline unleaded 95, heating oil light and heavy, kerosene, and liquefied petroleum gas; in addition, the refinery supplied about 22 megawatts per year of electricity to the electric power grid. Refinery production represented about 19% of Swiss consumption of petroleum products [Tamoil (Suisse) S.A., 2009].

Petroplus Refining Cressier S.A.'s Cressier refinery (the other petroleum refinery in Switzerland) was an integrated

atmosphere-vacuum distillation visbreaking and thermal cracking refinery with a nameplate capacity of 68,000 barrels per day. Cressier's crude petroleum supply arrived by way of a direct pipeline from the marine shipping terminal at Fos-sur-Mer, France. The refinery's diesel and gasoline production meets the EU's mandatory 10 parts per million (ppm) sulfur limit. Cressier's production of light and middle distillates, such as blended diesel, diesel, gasoline, and jet fuel, were sold mostly in Switzerland. Cressier also produced EcoClean, which is a grade of heating oil with less than 50 ppm sulfur (Petroplus Holdings AG, 2009).

### **Outlook**

The outlook for Switzerland's mineral industry is for little change. Metal mining is not likely to be initiated. Industrial minerals will be produced according to local demand. Limited exploration for natural gas and petroleum is expected to continue.

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TABLE 1  
 SWITZERLAND: ESTIMATED PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Thousand metric tons unless otherwise specified)

Commodity <sup>3</sup>	2005	2006	2007	2008	2009
<b>METALS</b>					
<b>Aluminum:</b>					
Primary metric tons	44,458	40,000	25,000	--	--
Secondary do.	193 <sup>4</sup>	190	175 <sup>r</sup>	50	25
<b>Iron and steel, metal:</b>					
Crude steel	1,158 <sup>4</sup>	1,252 <sup>r,4</sup>	1,264 <sup>4</sup>	1,257 <sup>4</sup>	984 <sup>4</sup>
Semimanufactures	700	700	700	700	600
Lead, refined, secondary metric tons	8,000	9,000	9,000	8,000	5,000
<b>INDUSTRIAL MINERALS</b>					
Cement, hydraulic	4,022 <sup>4</sup>	4,000	4,000	4,000	4,000
Gypsum	300	300	300	300	300
Lime	85 <sup>r</sup>	90 <sup>r</sup>	90 <sup>r</sup>	90 <sup>r</sup>	80
Nitrogen, N content of ammonia	30	30	30	30	30
Salt	566 <sup>4</sup>	560	560	535	435 <sup>4</sup>
Sulfur, from petroleum refining metric tons	3,000	3,000	3,000	3,000	3,000
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
<b>Petroleum refinery products:</b>					
Liquefied petroleum gas thousand 42-gallon barrels	2,285 <sup>r,4</sup>	2,500 <sup>r</sup>	2,343 <sup>r,4</sup>	2,500	2,500
Gasoline do.	10,695 <sup>r,4</sup>	10,000	10,880 <sup>r,4</sup>	10,000	10,000
Distillate fuel oil do.	16,180 <sup>r,4</sup>	18,000 <sup>r</sup>	16,203 <sup>r,4</sup>	16,000 <sup>r</sup>	16,000
Residual fuel oil do.	20,000 <sup>r</sup>	10,000 <sup>r</sup>	3,909 <sup>r,4</sup>	4,000	4,000
Bitumen do.	800	800	800	800	800
Refinery fuel and losses do.	2,321 <sup>r,4</sup>	2,600 <sup>r</sup>	2,500 <sup>r</sup>	2,500	2,500
Total <sup>5</sup> do.	52,281 <sup>r,4</sup>	43,900 <sup>r</sup>	37,000 <sup>r</sup>	35,800	35,800

<sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Table includes data available through June 30, 2010.

<sup>3</sup>In addition to the commodities listed, a variety of crude construction materials (common clay, sand and gravel, and stone) were produced, but available information was inadequate to make estimates of output.

<sup>4</sup>Reported figure.

<sup>5</sup>Total of listed products only.

TABLE 2  
 SWITZERLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum		Novelis Inc. (Hindalco Industries Ltd., 100%)	Plant at Sierre	130
Cement		Holcim (Schweiz) AG (Holcim Group, 100%)	Plants (3) at various locations	3,500
Copper, alloy	metric tons	Schmelzmetall AG	Refinery at Gurtellen	2,400
Gold	kilograms	Produits Artistiques de Métaux Précieux S.A. (MKS Finance SA, 100%)	Refinery at Castel San Pietro	425,000
Do.	do.	Argor-Heraeus S.A.	Refinery at Mendrisio	NA
Do.	do.	Valcambi S.A.	Refinery at Balerna	NA
Lead, secondary		Metallum Group	Smelter at Pratteln	32
Petroleum, refinery	barrels per day	Tamoil (Suisse) S.A. (Colony Capital LLC, 65%, and Government of Libya, 35%)	Refinery at Collombey	72,000
Do.	do.	Petroplus Refining Cressier S.A. (Petroplus Holdings AG)	Refinery at Cressier	68,000
Salt		United Swiss Salt Works (25 Cantons, except Vaud, 100%)	Saline plants at Riburg and Schweizerhalle	500
Do.		Saline de Bex S.A. (Canton of Vaud, 100%)	Saline plant at Bex	50
Steel		Stahl Gerlafingen AG (Schmolz and Bickenbach AG 100%)	Plant at Gerlafingen	650
Do.		von Moss Stahl AG (Schmolz and Bickenbach AG, 100%)	Plant at Emmenbrucke	300

Do., do. Ditto. NA Not available.