

New York State 2006 Mineral Fact Sheets

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Division of Mineral Resources
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**Remember if it Can't be Grown
It has to be Mined !**

Products of New York Mines

New York State law does not require mine operators to report how much their facilities produce. However, every year the U.S. Geological Survey (USGS) collects information on a voluntary basis for over 100 mined commodities nationwide. The federal agency's schedule for publishing survey results varies by commodity and tends to run one to three years behind. Therefore, USGS production and ranking information included in this section ranges in date from 2004 to 2006. While figures from a single year would be preferable, USGS ranking of minerals both within New York and nationwide tends to remain the same or change only slightly from year to year. The production figures should also be treated as minimums since the surveys do not cover every mine operator producing a particular commodity and not every operator responds resulting in need for estimates. USGS also regularly revises its statistics as more information becomes available. However, the figures are still very valuable for showing rough levels of production for New York's major mined commodities.

As far as economic importance within the State, USGS reported that in 2004 crushed stone remained New York's leading non-fuel mineral, and salt moved up to second place, followed by cement (portland and masonry), construction sand and gravel, and wollastonite. These five commodities typically account for 98% of the State's nonfuel mineral value which USGS ranked at \$1.11 billion in 2004. USGS noted that other important minerals mined in New York include bluestone, sandstone, granite, shale, slate and clay.

Looking at the picture nationwide, USGS reported for 2004 that New York retained its first-place rank for quantity of industrial garnet. 2005 statistics showed that New York remained the only wollastonite producing state in the country and continued to rank second in the quantity of sandstone (including bluestone) produced. For 2005 USGS also reported that New York continued to rank third in nationwide production of salt. USGS's figures for 2006 show that New York remained in 4th place for quantity of talc.



In world production, the State of New York ranks 3rd in wollastonite, behind countries China and India.



In U.S. production, New York ranks

- 1st in wollastonite and garnet
- 3rd in salt
- 4th in talc



New Yorkers use 50 pounds of minerals per person per day.



Sand and gravel mines are New York’s most common type of mine with 1,838 active mines spread across the State. Suffolk, Dutchess and Rensselaer Counties are New York’s leading producers of sand and gravel due to their proximity to large markets and the occurrence of high quality glacial deposits. Sand and gravel is New York’s fourth most economically important nonfuel mineral.

In 2005 New York’s production of construction grade sand and gravel decreased roughly 6% to 31,100,000 metric tons. The value rose to \$204 million, an increase of 8% from the previous year. The vast majority of this material was used for road and building construction and maintenance. Figures for 2006 are not yet available from USGS.

Table 1 - Sand and Gravel Mines Over 125 Permitted Acres, 2006

<u>Company</u>	<u>County</u>	<u>Town</u>	<u>Acres</u>
Callanan Industries	Rensselaer	North Greenbush	412
Country Side Sand & Gravel	Cattaraugus	Dayton	375
Hanson Aggregates NY, Inc.	Oswego	Sandy Creek	273
Hanson Aggregates NY, Inc.	Livingston	Caledonia	200
Frey Concrete, Inc.	Genesee	Alexander	188
Peckham Materials Corp.	Warren	Chester	183
Valley Sand & Gravel, Inc.	Livingston	Caledonia	172
Coram Materials Corp.	Suffolk	Brookhaven	160
Hanson Aggregates NY, Inc.	Herkimer	Russia	160
F S Lopke Contracting, Inc.	Tioga	Tioga	158
Lafarge North America, Inc.	Cattaraugus	Freedom	149
Hanson Aggregates NY, Inc.	Ontario	Phelps	149
Gernatt Asphalt Products, Inc.	Erie	Sardinia	148
Buffalo Crushed Stone, Inc.	Cattaraugus	Farmersville	146
JML Quarries, Inc.	Sullivan	Mamakating	136
Blades Construction Products	Steuben	Howard	135

Table 1 - Sand and Gravel Mines Over 125 Permitted Acres, 2006 (Continued)

<u>Company</u>	<u>County</u>	<u>Town</u>	<u>Acres</u>
Graymont Materials NY, Inc.	Clinton	Schuyler Falls	135
Hanson Aggregates NY, Inc.	Steuben	Bath	134
Knight Settlement S & G, Inc.	Steuben	Bath	134
Material Sand & Gravel	Herkimer	Russia	133
I A Construction Corp.	Cattaraugus	Allegany	128
Hanson Aggregates NY, Inc.	Ontario	Victor	127

Table 2 - Largest Sand and Gravel Mine Operators, Total Permitted Acres, 2006

<u>Company</u>	<u>Counties</u>	<u>Acres</u>
Hanson Aggregates NY, Inc.	Cattaraugus, Chemung, Herkimer, Livingston, Monroe, Montgomery, Oneida, Ontario, Oswego, Steuben, Schuyler, Wayne	1,890
Lafarge North America, Inc.	Cattaraugus, Erie, Genesee, Wyoming	579
Buffalo Crushed Stone, Inc.	Allegany, Cattaraugus, Genesee	550
Graymont Materials NY, Inc.	Clinton, Essex, Franklin, Hamilton, St. Lawrence	531
Gernatt Asphalt Products, Inc.	Erie, Cattaraugus, Chautauqua	486
F S Lopke Contracting, Inc.	Tioga, Broome	479
Dalrymple Gravel & Constructing	Steuben, Chemung	457
Callanan Industries, Inc.	Albany, Rensselaer	422
Cranesville Aggregate Co., Inc.	Columbia, Fulton, Jefferson, Saratoga, Schenectady	412
Country Side S & G, Inc.	Cattaraugus, Chautauqua	395

**New York
Limestone &
Dolostone**

Limestone and dolostone make up the second biggest category of New York mines with 100 scattered across the State. These mines produce roughly 90% of the stone sold in New York State. They collectively encompass 12,554 permitted acres with nearly half of that acreage in the DEC Region 4 (Mid-Hudson) and DEC Region 8 (west-central New York) areas.

New York’s most important products from these mines are crushed stone and cement which are used predominantly in building and road construction and maintenance. Based on value, crushed stone is usually New York’s leading nonfuel mineral, followed by cement.

USGS figures for 2005 show New York production of crushed stone remained the same as 2004 at 52,700,000 metric tons, but the value of that stone increased nearly, 28% to \$445 million. While limestone and dolostone represent the vast majority of the State’s crushed stone production, New York also produces crushed granite, marble, traprock, sandstone and quartzite.

USGS last published cement figures for New York in 2001 when the State produced almost 3 million metric tons of cement worth over \$230 million. New York remains an active cement manufacturer with production concentrated in the upper Hudson Valley area where a relatively pure limestone is quarried from the Coeymans formation. In 2004 USGS still listed cement (portland and masonry) in New York State’s top five most valuable non-fuel mineral products.

Table 3 - Limestone and Dolostone Mines Over 250 Permitted Acres, 2006

<u>Company</u>	<u>County</u>	<u>Town</u>	<u>Acres</u>
Hanson Aggregates NY, Inc.	Onondaga	Dewitt	839
Lafarge N. American Cement	Albany	Coeymans	759
Tilcon NY, Inc.	Dutchess	Poughkeepsie	682
Buffalo Crushed Stone, Inc.	Erie	Lancaster	600
St. Lawrence Cement Co.	Greene	Catskill	318
Hanson Aggregates NY, Inc.	Livingston	Lima	289
St. Lawrence Cement Co.	Columbia	Greenport	281
Hanson Aggregates NY, Inc.	Onondaga	Skaneateles	270
Glens Falls Lehigh Cement Co.	Greene	Catskill	267

Table 3 (Continued) - Limestone & Dolostone Mines Over 250 Permitted Acres, 2006

<u>Company</u>	<u>County</u>	<u>Town</u>	<u>Acres</u>
Buffalo Crushed Stone, Inc.	Genesee	Alabama	264
Hanson Aggregates NY, Inc.	Oneida	Marshall	264
Hanson Aggregates NY, Inc.	Jefferson	Pamelia	263
Seneca Stone Corp.	Seneca	Fayette	259
Callanan/ Iroquois Rock Prod.	Monroe	Sweden	251

Table 4 - Largest Limestone & Dolostone Mine Operators, Total Acres*, 2006

<u>Company</u>	<u>Counties</u>	<u>Acres</u>
Hanson Aggregates NY, Inc.	Genesee, Herkimer, Jefferson, Livingston, Oneida, Onondaga, Ontario, St. Lawrence, Orleans, Cayuga, Montgomery, Wayne	3,251
Callanan Industries, Inc.**	Albany, Monroe, Montgomery, Madison Ulster	1,035
Buffalo Crushed Stone, Inc.	Erie, Genesee	1,013
Tilcon NY, Inc.	Dutchess, Rockland, Ulster	838
Lafarge N. American Cement	Albany	759
Dolomite Products Co., Inc.	Genesee, Monroe, Ontario, Wayne	705
St. Lawrence Cement***	Columbia, Greene	599
Barrett Paving Materials, Inc.	Herkimer, Jefferson, Oneida, St. Lawrence	589
Redland Quarries NY, Inc.	Niagara	489
Glens Falls Lehigh Cement Co.	Greene, Saratoga	416
Cobleskill Stone Products, Inc.	Schoharie	300
Seneca Stone Corp.	Seneca	259

* Acres Under Permit

** Includes Callanan dba Iroquois Rock Products

*** Includes St Lawrence Cement, LLC and Co.

New York Garnet

USGS statistics for 2004 showed that New York State continued to rank first in industrial garnet-production in the United States. Since there are just a few companies that account for all U.S. industrial garnet production, USGS does not publish detailed production statistics for New York State. However, generally speaking, Barton Mines in Warren County is the largest U.S. garnet producer. NYCO Minerals probably ranks third in the country; the company produces accessory garnet with its main product, wollastonite.

Table 5 - New York Garnet Mine, Permitted Acres, 2006			
<u>Company</u>	<u>County</u>	<u>Town</u>	<u>Acres</u>
Barton Mines Co., LLC	Warren	Johnsburg	107

Barton currently extracts garnet from its Ruby Mountain mine in the Town of Johnsburg. However the company’s nearby Gore Mountain mine, which opened in 1878 and ran until 1983, was the largest garnet mine in the world during its operation. Garnets from the company’s current Ruby Mountain site make especially high-quality abrasives. Most New York garnet is used for sandpaper. Garnet is also used in grinding and polishing glass and metal, sandblasting, water filtration and waterjet stone cutting. Garnet is a well-known gemstone, but most New York garnets have too many internal imperfections to be used in jewelry.



Garnet boulder on display at the New York State Fair in Syracuse. The boulder was donated by the Barton Garnet Mine.

New York Wollastonite

New York is the only commercial producer of wollastonite in the country and the State’s four mines, located in the Adirondacks, account for all U.S. production. Since only a relatively small quantity of wollastonite is imported into the U.S, this means New York supplies almost all of the wollastonite used in the country. On a global scale, New York is the third largest producer, accounting for between 20-25 percent of world output. A significant portion of New York’s wollastonite output is specially milled and/or surface treated to achieve specific industrial properties.

To protect proprietary data, the USGS does not publish detailed quantity and value statistics for NY wollastonite. However, USGS quoted industry experts who estimated that the country’s, and therefore New York’s, production was less than 125,000 metric tons per year in 2005 (USGS statistics from previous years quote a range of 115,000 to 127,000 metric tons). Within the State, wollastonite usually ranks as New York’s fifth most valuable nonfuel mineral.

One of wollastonite’s most unusual characteristics is its ability to cleave into needle-like (acicular) crystals. These fibrous particles make it useful both as an asbestos replacement and as reinforcement material in products ranging from plastics, ceramics and brake pads to paint, coatings and sealants.

U.S. End-Uses of Wollastonite 2005

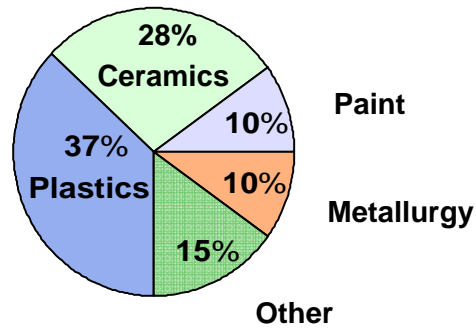


Table 6 - New York Wollastonite Mines, Permitted Acres, 2006

<u>Company & Mine</u>	<u>County</u>	<u>Town</u>	<u>Acres</u>
NYCO/ Oak Hill Mine	Essex	Lewis	127
NYCO/ Lewis Mine	Essex	Lewis	90
Gouverneur Talc/ No. 4 Mine	Lewis	Diana	49
NYCO/ Willsboro Mine	Essex	Willsboro	4

New York Salt

More than 10,000 square miles of central and western New York are underlain by the Salina formation which contains roughly 3.9 trillion metric tons of rock salt. This large salt resource has been very important throughout the State's history. There are currently two active rock salt mines in New York State: Cargill's Cayuga Mine centered around Cayuga Lake in Tompkins and Seneca counties, and American Rock Salt's Hampton Corners Mine in Livingston County. Salt is also produced from five solution mining facilities in Schuyler and Wyoming counties.

For 2005 the U.S. Geological Survey estimated New York's combined salt output from underground mines and solution salt mining wells at roughly 6.84 million metric tons worth \$327 million. New York's estimated brine production figures for 2004 subtracted from the total leave an estimated rock salt production of roughly 4.36 million metric tons. USGS statistics for 2005 showed that New York continued to rank third nationally in salt production. Within the State, salt typically ranks third in the value of New York's nonfuel mineral commodities.

The Cargill Lansing mine, near Ithaca, is the larger of the State's two salt mines. It is also the deepest underground salt mine in the western hemisphere. The much smaller American Rock Salt mine in Livingston County began production in December 2000 to replace the abandoned AKZO Retsof mine near Geneseo. When the Retsof mine was in operation, it was one of the largest underground salt mines in the world.



Road salt is crucial
to winter travel.

Salt has been mined in the area of Cayuga Lake since at least 1915, but Cargill did not take over the mine until the 1970s. The company extracts salt from a depth of roughly 2,000 feet under portions of the lake and surrounding lands. Cargill leases the underwater land from the NY State Office of General Services and pays a basic royalty of 2% per ton of the market unit-value of the marketable rock salt with adjustments for production in excess of 1,500,000 tons. Virtually all the salt from this particular mine is sold as road deicing salt. However, salt also has a broad array of uses in food and chemical products.



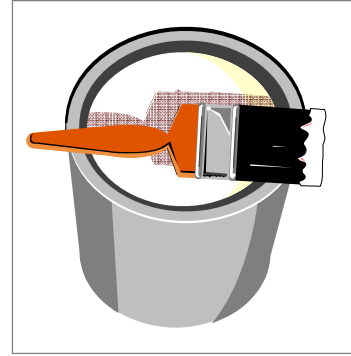
Worker installing roof bolts at Cargill's Lansing Mine. Photograph by Simon A. Wheeler, Elmira Star Gazette 2002, copyright 2004.

Table 7 - New York Underground Salt Mines, Permitted Acres, 2006

<u>Company</u>	<u>Counties</u>	<u>Acres</u>
American Rock Salt, Inc.	Livingston	672
Cargill, Inc.	Seneca, Tompkins	9,260

New York Talc

For 2006 USGS reported that New York ranked fourth in the country in the quantity of talc produced. Since there are so few talc producing companies in the country, the USGS does not publish detailed production information. Gouverneur Talc is New York's only talc producing company, and their overall land holdings cover roughly 2,000 acres in the northwest Adirondacks. While the company has more than one mine with a current permit, most of its production is from its #1 Mine, an open pit facility also known as the Arnold Mine. Since most talc in the U.S. is sold only after crushing and grinding, Gouverneur Talc has an active milling operation at Balmat.



Industrial talc is a mixture of talc, tremolite, anthophyllite, serpentine and dolomite. Because of the presence of these minerals, New York's industrial talc is fibrous with long, thin white needle-like crystals. Talc is used as a paint extender, a carrier for insecticide dust and in many other products where a white powdery mineral is needed. It is also used in ceramics, filler in asphalt roofing, putty and linoleum.

Table 8 - New York Talc Mines. Permitted Acres, 2006

<u>Company</u>	<u>County</u>	<u>Town</u>	<u>Acres</u>
Gouverneur Talc No. 1 & 2 Mine	St. Lawrence	Fowler	150
Gouverneur Talc No. 3 Mine	St. Lawrence	Edwards	5

New York Zinc

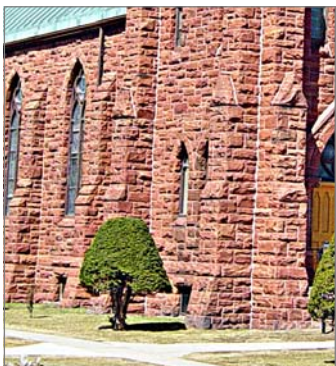
New York has historically been a major zinc producer with 2 of the top 10 zinc mines in the country and a State rank of third or fourth in quantity of zinc produced. However, in 2001 the Pierrepont mine was permanently closed and reclaimed. The Balmat mine was also temporarily shut down in 2001 when the global price for zinc concentrate plunged to \$0.32 a pound. In 2005 the mine was sold to a Canadian company with the goal of reopening it when prices rose again. In 2006 zinc prices soared to near \$2 a pound and settled in the \$1.50 to \$1.65 range, once again making mining economical at this site. Preparations are being made to reopen this facility and to resume mining zinc. The use of older traditional underground mining methods will hopefully reduce the amount of waste rock and increase the percent of marketable zinc produced from the ore.

New York Sandstone

In 2006 there were 21 mines in New York producing sandstone which is widely found across the State in the form of sedimentary sandstones, graywacke, metamorphic quartzite and conglomerate. For 2005 USGS ranked New York second nationwide in the production of sandstone dimension stone (blocks and slabs), taking into account the subcategory of bluestone covered on the next page. Sandstone mine operators produce blocks for building, flagstone and curbing. However, most of the sandstone is crushed for aggregate and some larger blocks are sold for riprap to stabilize waterways and embankments. Pure quartz sandstone can be used to make high-quality glass, but sandstone in New York contains too much iron and alumina for this purpose.

Callanan Industries is the company with the most sandstone mines (5 in eastern New York). The highest concentrations of permitted acreage for sandstone mining is in a roughly 40-mile long trend in Sullivan and Delaware Counties (total 659 permitted acres).

Table 9 - Sandstone Mines Over 50 Permitted Acres, 2006			
<u>Company</u>	<u>County</u>	<u>Town</u>	<u>Acres</u>
Callanan Industries, Inc.	Sullivan	Thompson	375
E. Tetz & Sons, Inc.	Sullivan	Thompson	161
Cobleskill Stone Products, Inc.	Delaware	Hancock	123
Callanan Industries, Inc.	Rensselaer	Brunswick	76
Hanson Aggregates NY, Inc.	Orleans	Murray	68
Blades Construction Products	Steuben	Bath	64
Callanan Industries, Inc.	Sullivan	Cochecton	53



Potsdam sandstone is a well-known type of sandstone found on many public buildings in New York State. In the 1800s it was lauded for its ability to withstand fire better than granite (less cracking and spalling). In fact its fire resistant properties were so well known, it was used to line furnaces.



**New York
Bluestone**

New York and Pennsylvania are the only sources of bluestone, a specific type of commercial sandstone. The New York State Bluestone Association estimates that the market value of bluestone is approximately \$40 million a year.

In 2006 there were 64 permitted bluestone mines in an area extending from Tompkins County on the west to Albany County on the east. However, the majority of the bluestone activity is in Delaware and Broome Counties. In Broome County roughly 90% of the bluestone mines are in the Pennsylvania border towns of Windsor and Sanford. In Delaware the majority of mines are in the western end of the county with the highest number in Hancock, a long-time stronghold of the bluestone industry.

Bluestone mining is by nature a relatively small-scale operation. Roughly 60% of the bluestone mines are between 1 and 5 acres in size. The operators with the largest mines are shown in Table 10. In 2005 the companies with the highest number of mines were Johnston & Rhodes Bluestone (16), Tompkins Bluestone (5), and Indian Country (3).

While bluestone is a strongly cemented rock, it splits easily or is cut with a saw into smooth thin slabs that are ideal for outdoor patios, building exteriors and indoor floors. Bluestone's current popularity has led to exploration for new deposits and reopening of old mines. In addition, bluestone's recent high prices are enabling mine operators to switch from old-fashioned hand mining to more modern techniques. As an aid to exploration, bluestone miners have the option of applying for a simplified one-year Exploration Authorization (EA) instead the full mining permit. When the EA expires, the operator must apply for a regular mining permit if the site is commercially viable or reclaim the land.

Table 10 - Bluestone Mines Over 15 Permitted Acres, 2006

<u>Company</u>	<u>County</u>	<u>Town</u>	<u>Acres</u>
Heldeberg Bluestone & Marble	Albany	Berne	30
Damascus 535 Quarry & Stone	Broome	Windsor	24
Larry Schaefer	Delaware	Deposit	22
RCS, LLC	Delaware	Multiple Towns	18
Johnston & Rhodes Bluestone	Delaware	Masonville	16
Johnston & Rhodes Bluestone	Delaware	Hancock	15
Fannie E. Kamp	Broome	Sanford	15
Kenneth Decker	Broome	Conklin	15

New York Granite

In 2006 there were 21 granite mines operating mostly in the Adirondack and Taconic regions. Washington County, with 9 mines, has the highest concentration of this type of mine in New York State. While granite had long been used for building exteriors, statues and gravestone monuments, it has recently become very popular for kitchen countertops and other interior decorative uses. New York granite ranges in color from gray and green to black. The larger granite mines produce crushed stone.

Granites are composed mostly of quartz and feldspar. New York granite mines also include anorthosite and granitic gneiss. Anorthosite is well-known as the core rock of the Adirondacks (it's also found on the moon). Granitic gneiss is a banded form of granite.

Table 11 - Granite Mines Over 20 Permitted Acres, 2006

<u>Company</u>	<u>County</u>	<u>Town</u>	<u>Acres</u>
Peckham Materials Corp.	Saratoga	Greenfield	104
Hanson Aggregates NY, Inc.	Oneida	Forestport	100
Graymont Materials NY, Inc.	Franklin	Brandon	67
Wingdale Materials, LLC	Dutchess	Dover	60
Thalle Industries, Inc.	Dutchess	Fishkill	46
Graymont Materials NY, Inc.	Essex	St. Armand	36
Lake Placid Granite Co.	Essex	Jay	28
Lake Placid Granite Co.	Essex	Jay	20



New York State has both above-ground and underground granite mines. Wingdale Materials' underground mine in Dutchess County supplies crushed granite for road and other construction.

