



2009 Minerals Yearbook

VIRGINIA [ADVANCE RELEASE]

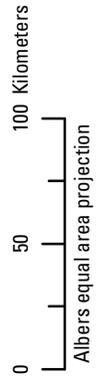
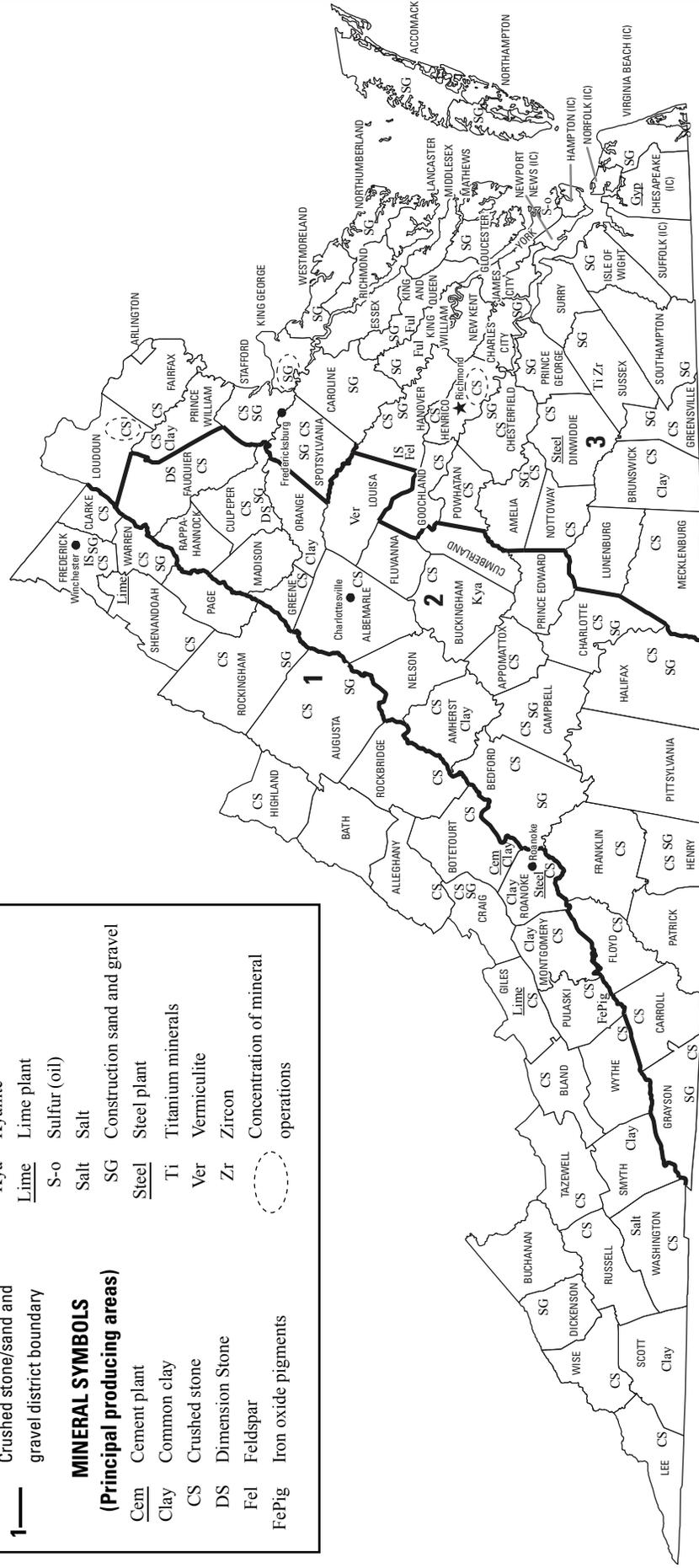
VIRGINIA

LEGEND

- County boundary
- (IC) Independent city
- ★ Capital
- City
- 1— Crushed stone/sand and gravel district boundary

MINERAL SYMBOLS
(Principal producing areas)

- Cem Cement plant
- Clay Common clay
- CS Crushed stone
- DS Dimension Stone
- Fel Feldspar
- FePig Iron oxide pigments
- Ful Fuller's earth
- Gyp Gypsum plant
- IS Industrial sand
- Kya Kyanite
- Lime Lime plant
- S-o Sulfur (oil)
- Salt Salt
- SG Construction sand and gravel
- Steel Steel plant
- Ti Titanium minerals
- Ver Vermiculite
- Zr Zircon
- Concentration of mineral operations



Source: Virginia Department of Mines, Minerals, and Energy/U.S. Geological Survey (2009).

THE MINERAL INDUSTRY OF VIRGINIA

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Virginia Department of Mines, Minerals and Energy for collecting information on all nonfuel minerals.

In 2009, Virginia's nonfuel raw mineral production¹ was valued at \$955 million, based upon annual U.S. Geological Survey (USGS) data. This was a decrease of \$219 million, or nearly 19%, from the State's total nonfuel raw mineral production value of \$1.17 billion in 2008, which had decreased \$2 million, or less than 1%, from a total production value of almost \$1.18 billion in 2007. Virginia rose in rank to 19th from 21st in 2008 among the 50 States in total nonfuel raw mineral production value and accounted for 1.6% of the U.S. total.

Crushed stone was, by value, Virginia's leading nonfuel mineral commodity, accounting for 60% of the State's total nonfuel mineral value in 2009 (table 1). From 1990 through 2009, the State produced nearly 1.22 billion metric tons of crushed stone, or an average of 63 million metric tons per year (Mt/yr) during that 19-year period. In 2009, Virginia produced 42.2 million metric tons (Mt) of crushed stone, with granite and limestone accounting for 32.7 Mt (table 2). Construction sand and gravel was the second leading nonfuel mineral commodity by production value, followed by portland cement, lime, and zirconium concentrates (data withheld for portland cement, lime, and zirconium concentrates—company proprietary data). These five mineral commodities represented 87% of the State's total nonfuel mineral value.

In 2009, salt was the only mineral commodity produced in Virginia to increase in production value (actual production value

¹The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All 2009 USGS mineral production data published in this chapter are those available as of September 2011. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

withheld—company proprietary data). All other commodities produced in the State declined in production value, led by decreases in crushed stone, which decreased by \$135 million, portland cement and zirconium concentrates, and construction sand and gravel, down by \$17 million. Decreases in the production values of ilmenite, lime, and fuller's earth clay (montmorillonite) (in descending order of decrease; production values withheld—company proprietary data) also accounted for significant portion of the total decrease in the State's total production value.

Salt was the only mineral commodity that increased in production quantity in 2009 (quantity withheld—company proprietary data). The quantity of all other commodities produced in the State decreased, led by a 15-Mt decrease in the quantity of crushed stone produced, followed by a 2.2-Mt decrease in construction sand and gravel. Other notable declines in production occurred with portland and masonry cement, down by an average of 22% from those of 2008; iron oxide pigments, down by 73%; and zirconium concentrates, down by 42%.

Virginia continued to be the only U.S. producer of kyanite and to rank first of two titanium mineral (ilmenite) producers. The State remained 2d in rank for feldspar and crude vermiculite among 7 and 2 producing States, respectively; 3d in rank for iron oxide pigments out of 3 States; and remained 4th for fuller's earth clays out of 11 montmorillonite-producing States. All other commodities produced in the State declined in rank, including from 1st to 2d in the production of zirconium concentrates among two producing States, from 7th to 9th in common clays out of 38 States, from 9th to 10th in masonry cement out of 26 States, and from 8th to 10th in crushed stone production among 50 producing States.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN VIRGINIA^{1,2}

(Thousand metric tons and thousand dollars)

Mineral	2007		2008		2009	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays, common	725	7,840	766	8,540	505	5,830
Kyanite	118	29,100	97	25,500	71	20,000
Mica, crude	(3)	1	--	--	--	--
Sand and gravel, construction	12,400 ^r	116,000 ^r	10,400 ^r	111,000 ^r	8,180	93,100
Stone, crushed	62,600	713,000	57,400 ^r	712,000 ^r	42,200	577,000
Combined values of cement, clays (fuller's earth), feldspar, gemstones (natural), iron oxide pigments (crude), lime, salt, sand and gravel (industrial), stone (dimension), titanium concentrates (ilmenite), vermiculite (crude), zirconium concentrates	XX	310,000	XX	318,000 ^r	XX	260,000
Total	XX	1,180,000	XX	1,170,000 ^r	XX	955,000

^rRevised. XX Not applicable. -- Zero.

¹Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

²Data are rounded to no more than three significant digits; may not add to totals shown.

³Less than ½ unit.

TABLE 2
VIRGINIA: CRUSHED STONE SOLD OR USED, BY TYPE¹

Type	2008			2009		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Limestone ²	45 ^r	19,800 ^r	\$226,000 ^r	51	15,300	\$189,000
Dolomite	3	1,900	17,600 ^r	--	--	--
Granite	32 ^r	22,800 ^r	309,000 ^r	30	17,400	258,000
Sandstone and quartzite	7 ^r	1,110 ^r	12,200 ^r	6	1,070	15,200
Traprock	10	10,100	130,000 ^r	10	7,130	99,400
Slate	3	454	2,850	2	202	1,230
Miscellaneous stone	4	1,280	14,700 ^r	6	1,050	14,200
Total	XX	57,400 ^r	712,000 ^r	XX	42,200	577,000

^rRevised. XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes limestone-dolomite reported with no distinction between the two.

TABLE 3
 VIRGINIA: CRUSHED STONE SOLD OR USED BY
 PRODUCERS IN 2009, BY USE¹

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Macadam	149	1,060
Riprap and jetty stone	189	2,630
Filter stone	578	6,170
Other coarse aggregate	847	15,100
Coarse aggregate, graded:		
Concrete aggregate, coarse	766	9,370
Bituminous aggregate, coarse	982	13,300
Bituminous surface-treatment aggregate	208	3,000
Railroad ballast	730	8,550
Other graded coarse aggregate	6,050	96,900
Fine aggregate (-¾ inch):		
Stone sand, concrete	508	6,120
Stone sand, bituminous mix or seal	236	2,940
Screening, undesignated	318	3,370
Other fine aggregate	1,570	18,800
Coarse and fine aggregates:		
Graded road base or subbase	865	9,530
Unpaved road surfacing	344	3,350
Terrazzo and exposed aggregate	W	W
Crusher run or fill or waste	1,390	14,300
Roofing granules	W	W
Other coarse and fine aggregate	4,020	49,400
Other construction materials	114	1,040
Agricultural:		
Limestone	646	12,100
Other agricultural uses	123	5,490
Chemical and metallurgical:		
Cement manufacture	W	W
Lime manufacture	W	W
Glass manufacture	W	W
Special:		
Mine dusting or acid water treatment	W	W
Other fillers or extenders	W	W
Other miscellaneous uses and specified uses not listed	3	64
Unspecified: ²		
Reported	13,200	182,000
Estimated	7,390	94,700
Total	42,200	577,000

W Withheld to avoid disclosing company proprietary data; included in "Total."

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Reported and estimated production without a breakdown by end use.

TABLE 4
 VIRGINIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2009, BY USE AND
 DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch) ²	1,040	10,600	W	W	W	W
Coarse aggregate, graded ³	2,260	25,000	W	W	W	W
Fine aggregate (-¾ inch) ⁴	1,400	16,400	W	W	W	W
Coarse and fine aggregate ⁵	2,790	25,200	W	W	W	W
Other construction materials	89	652	25	390	--	--
Agricultural ⁶	W	W	W	W	W	W
Chemical and metallurgical ⁷	W	W	--	--	--	--
Special ⁸	W	W	--	--	--	--
Other miscellaneous uses	3	64	--	--	--	--
Unspecified: ⁹						
Reported	202	3,000	2,650	36,800	10,300	142,000
Estimated	5,740	73,600	1,640	21,100	--	--
Total	15,100	187,000	7,400	98,200	19,700	292,000

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregates.

³Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate ballast, railroad (coarse), and other graded coarse aggregates.

⁴Includes screening (undesignated), stone sand (bituminous mix or seal), stone sand (concrete), and other fine aggregates.

⁵Includes crusher run or fill or waste, graded road base or subbase, roofing granules, terrazzo and aggregate, exposed unpaved road surfacing, and other coarse and fine aggregates.

⁶Includes limestone and other agricultural uses.

⁷Includes chemical, lime, and glass manufacture.

⁸Includes mine dusting or acid water treatment and other fillers or extenders.

⁹Reported and estimated production without a breakdown by end use.

TABLE 5
 VIRGINIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2009,
 BY MAJOR USE CATEGORY¹

Use	Quantity		
	(thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate and concrete products ²	2,420	\$34,700	\$14.32
Asphaltic concrete aggregates and other bituminous mixtures	223	1,590	7.13
Road base and coverings	25	195	7.80
Fill	926	4,370	4.72
Snow and ice control	7	52	7.43
Other miscellaneous uses	6	74	12.33
Unspecified: ³			
Reported	1,470	16,600	11.26
Estimated	3,100	35,600	11.48
Total or average	8,180	93,100	11.38

¹Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

²Includes plaster and gunite sands.

³Reported and estimated production without a breakdown by end use.

TABLE 6
 VIRGINIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2009,
 BY USE AND DISTRICT¹

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products	W	W	W	W	2,340	33,700
Fill	(²)	1	(²)	1	926	4,360
Other miscellaneous uses ³	100	1,140	41	444	201	1,320
Unspecified: ⁴						
Reported	66	691	28	164	1,380	15,700
Estimated	732	8,430	1,060	12,100	1,310	15,000
Total	899	10,300	1,130	12,700	6,160	70,100

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses."

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Less than ½ unit.

³Includes asphaltic concrete aggregates, road base materials, and snow and ice control.

⁴Reported and estimated production without a breakdown by end use.