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TALC AND SOAPSTONE IN THE UNITED STATES

(Exclusive of Alaska and Hawaii)

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Introduction

The locations of talc and soapstone deposits in the United States (exclusive of Alaska and Hawaii) are shown on the accompanying map. The two types are distinguished by the shape of symbols; the relative importance of the deposits, expressed in broad ranges of tonnage, is indicated by the size of symbols. Two persistent belts in the Southeastern States are shown by patterns, and the locations of the principal deposits within these belts are shown by appropriate symbols.

All map locations are numbered consecutively in each state and identified in the Locality Index, which gives the name, geographic coordinates, and brief geologic description. The map and text were compiled from published reports and unpublished information in the files of the Geological Survey. At least one reference is given for each locality if reports on it have been published.

Geology

Talc is essentially a hydrous magnesium silicate; its formula is generally given as $Mg_3Si_4O_{10}(OH)_2$. Small amounts of iron commonly substitute for magnesium, and very small amounts of aluminum probably substitute for silicon and magnesium. The pure mineral is pale green to white, soft (1 on Mohs' scale), and has a greasy or slippery feel. It varies in habit from fine grained and massive to coarsely flaky and schistose.

In industrial usage, the term "talc" designates a wide variety of rocks that range in composition from nearly pure talc, through rocks with only moderate or minor proportions of talc and large proportions of carbonate, serpentine, amphibole, chlorite, and other silicates, to rocks composed almost entirely of tremolite. The term "soapstone" designates impure varieties of massive talc rock; it is now generally applied to varieties of talcose rocks used for the manufacture of sawed and shaped slabs. The term "steatite" has been variously used in the past as an alternative mineralogical name for talc, as a synonym for soapstone, and as a name for virtually pure talc rock. In geological usage, steatite now generally designates a rock composed almost entirely of talc; in industrial usage the term implies, in addition, that the material is suitable for the manufacture of high-grade ceramic bodies such as high-frequency insulators.

Deposits of talc and soapstone are virtually restricted to areas of folded and metamorphosed rocks and are characteristic of such terranes of various ages in many parts of the world. Within the conterminous United States, they are scattered throughout the eastern and western cordilleras and in the south-central states.

Commercial deposits are of two classes: those derived from or associated with sedimentary rocks; and those derived from or associated with ultramafic and mafic igneous rocks. Dolomite is the characteristic host rock for talc deposits in sedimentary rocks, but many deposits are in quartzite, phyllite, mafic volcanic rocks, and even in adjacent granitic rocks. Most of the talc associated with ultramafic and mafic igneous rocks is derived from serpentinite; in a few places, mafic igneous rocks are altered extensively to soapstone-type deposits.

Talc deposits are products of both contact and regional metamorphic processes. In many of the deposits in carbonate rocks and in some deposits in ultramafic rocks, adjacent or nearby bodies of igneous rock, including both granitic rock bodies and diabase sills and dikes, were clearly the source of heat and of introduced constituents. Many, perhaps most, deposits associated with serpentinite, and many deposits in sedimentary rocks, appear to have formed under conditions in which both the heat and the introduced constituents were of regional metamorphic origin.

Talc deposits formed by regional metamorphism of carbonate rock commonly have a complex history of progressive and retrograde metamorphism, and the mineralogy of the deposits may therefore be correspondingly complex; many such deposits contain abundant tremolite, serpentine, and other silicates. Deposits formed by contact metamorphism of otherwise relatively unmetamorphosed carbonate rock commonly are mineralogically simple and contain a large proportion of relatively pure talc rock. Deposits formed by regional metamorphism of ultramafic rocks differ greatly, but many contain a relatively thick inner zone of talc-carbonate rock surrounded by a thin shell of virtually carbonate-free talc rock. Contact metamorphic deposits in serpentinite, such as those adjacent to granitic pegmatites, consist largely of talc rock that contains relatively little carbonate. Deposits in mafic igneous rock commonly are mineralogically complex; most contain only small to moderate proportions of talc and large proportions of chlorite, amphibole, and other silicates.

Although there is considerable variation in each class of deposit, talc associated with sedimentary rock tends to be whiter and purer than talc associated with ultramafic igneous rock. By far the most important commercial sources of high-quality talc are in dolomitic marble, but some deposits of very pure talc are in quartzite and granite. Fibrous varieties of talc consist largely or entirely of tremolite and are in dolomitic marble. The talc in most deposits in ultramafic rock is relatively high in iron, both as disseminated very fine grained magnetite and in the form of Fe^{+2} substituting for Mg in the talc itself.

Production and uses

The United States produces a little more than half a million tons of talc annually. The largest producers are New York, California, Georgia, Vermont, Texas, Montana, North Carolina, Maryland, and Virginia. In recent years Washington, Nevada, Arkansas, Alabama, and Oregon have been sporadic producers.

Talc and soapstone are highly versatile materials in industry; there are many different grades and many uses for each grade. Properties that make talc desirable for industrial use include extreme softness, whiteness, luster, high slip, chemical inertness, and low electrical and thermal conductivity. The workability of raw talc and the exceptionally high mechanical strength, bending and impact resistivity, electrical resistivity, and high fusion point of fired ceramic products made from talc make it especially suited for the manufacture of high-frequency insulators. Six industries—ceramics, paint, rubber, insecticides, roofing, and paper—consume from 70 to 75 percent of the talc produced annually. Special uses are diverse: it is used in white shoe polishes, as a dusting powder for salami, to impart a finish to leather and nails, as a filler in plastics, as an abrasive for peanuts and grains of gunpowder, and as a component of some cup greases.

Locality Index

Locality	Lat. N.	Long. W.
Alabama		
1. Talladega. Talc probably derived from dolomite. McMurray and Bowles, 1941.	33°19′	86°13′
2. Dadeville area. Soapstone probably associated with mafic igneous rocks. Maynard and others, 1923; Pallister, 1955.	32°53′	85°40′
Arkansas		
1. Benton area, Wallis quarry. Talc-carbonate and talc rock probably associated with serpentinite. Ladoo, 1923.	34°42′	96°36′
California		
1. Ganim mine. Talc rock in altered zone in metaandesite. Wright, 1957.	40°37′	122°34′
2. McLean mine. Soapstone associated with serpentinite. Wright, 1957.	39°44′	121°27′
3. Prouty mine. Soapstone associated with serpentinite. Wright, 1957.	38°38′	120°57′
4. Swift and Pacific Minerals Company mines. Soapstone associated with serpentinite.	38°34′	120°56′
Inyo Range-Northern Panamint Range district. Deposits in this district consist predominantly of talc rock associated with and derived from sedimentary rocks, chiefly dolomite. In places some of the talc, and locally a large proportion of it, is derived from quartzite. Norman and Stewart, 1951; Page, 1951; Wright, 1957.		
5. Longhorn and Nikolaus mines.	37°13′	117°54′
6. Blue Star mine.	37°07′	118°26′
7. Blue Stone mine.	36°53′	118°05′
8. Willow Creek, White Eagle, Gray Eagle mines; Eleanor and Doris Dee prospects	36°50′	117°56′
9. Hilderman mine.	36°44′	117°53′
10. Homestake prospect.	36°38′	117°34′
11. Ubehebe (Stone Pencil) and White Horse mines.	36°38′	117°30′
12. Gold Belt mine.	36°36′	117°27′
13. Bonham, Alberta, Florence, Mass, and Skinner mines; Branson prospect.	36°35′	117°48′
14. Lenbeck, Lakeview, and Eclipse mines; Powder Puff prospect.	36°35′	117°57′
15. White Swan, Smith, and Viking mines.	36°21′	117°43′
16. Frisco, Talc City, Trinity, Silver Dollar, Alliance, Irish, and Victory mines; Bob Cat prospects.	36°20′	117°41′
Southern Death Valley-Kingston Range district. Deposits of this district consist predominantly of talc and tremolite formed by the alteration of a carbonate member of the Crystal Spring Formation, of late Precambrian age. Deposits are adjacent to diabase sills. Norman and Stewart, 1951; Wright, 1957; Wright and others, 1953.		
17. Death Valley and Bonnie mines.	36°01′	116°55′
18. Seal prospects.	36°00′	116°56′
19. Montgomery mine.	35°59′	116°56′
20. Warm Springs mine.	35°58′	116°54′
21. Panamint prospect.	35°57′	116°53′
22. Owlshead prospects.	35°52′	116°43′
23. Unnamed prospect.	35°56′	116°38′
24. Brown prospect.	35°48′	116°27′
25. Eclipse, Markley, Arletta, Giant, and Mammoth mines; unnamed prospect.	35°50′	116°24′
26. Ibex, Monarch, and Pleasonton mines.	35°47′	116°24′
27. A. C. prospect.	35°47′	116°16′
28. Amargosa mine and unnamed prospect.	35°44′	116°14′
29. Western and Acme mines.	35°47′	116°08′
30. Donna Loy mine.	35°48′	116°05′
31. Booth mine.	35°44′	116°05′
32. Rogers and Tecopah mines.	35°46′	116°00′
33. Crystal Springs mine.	35°48′	115°57′
34. Harry Adams mine and Kingston prospect.	35°47′	115°55′
35. Excelsior mine and Kingston No. 1 prospect.	35°47′	115°50′
36. Pongo, Superior, White Cap, and Saratoga mines.	35°42′	116°24′
37. Grimshaw, BFJ, and BBJ.	35°41′	116°21′
38. Sheep Creek mine.	35°35′	116°22′
39. Annex and Berryhill mines, Anderson	35°31′	116°06′

and Van Talc prospects.

40. Ceramic mine, Patricia and Blue White prospects. 35°30′ 116°02′

Silver Lake-Yucca Grove district. Deposits of this district are replacements of dolomite strata in early(?) Precambrian metasedimentary and intrusive rocks. Ore consists of intermixed massive tremolite rock and schistose talc rock. Wright, 1954; 1957.

41. Silver Lake mine. 35°27′ 116°00′

42. Yucca mine. 35°23′ 115°49′

43. Halloran Spring (Calmasil Extension, Great Wanamingo) prospect 35°24′ 115°48′

44. Yucca Grove and Calmasil mines. 35°25′ 115°48′

45. Katz mine. Soapstone associated with serpentinite. Wright, 1957. 34°28′ 118°10′

46. Arrow Point deposit (Santa Catalina mine). Soapstone probably associated with serpentinite. Tucker, 1927; Wright, 1957. 33°28′ 118°33′

Connecticut

1. Torrington-New Hartford area. Soapstone probably related to serpentinite. Rice and Gregory, 1906. 41°51′ 73°02′

2. Maltby Lakes. Soapstone associated with serpentinite. 41°18′ 72°58′

Georgia

Murphy Marble belt. Talc rock derived from dolomitic rocks of the Murphy Marble. Belt extends into North Carolina. Hopkins, 1914; Van Horn, 1948.

1. Sweetgun area, J. L. Grey, and unnamed prospects. 34°58′ 84°12′

2. Mineral Bluff area (John Harper, J. B. Dickey, and W. T. S. and G. M. Dickey mines and prospect). 34°54′ 84°15′

3. Blue Ridge area, J. W. Wishon property. 34°50′ 84°21′

Chatsworth district. Deposits consist of talc-carbonate and talc rock probably altered from dolomitic portions of the Cohutta Schist but possibly derived from ultramafic igneous rocks. Furcron and Teague, 1947; Hopkins, 1914.

4. Fort Mountain, Mill Creek, Earnest, and Lindsay mines. 34°47′ 84°42′

5. Southern, Cohutta, and Latch mines; Fields, Hammock, and Russell prospects. 34°46′ 84°43′

6. Old Cohutta, Judge's Pit, Georgia, and Bramlet mines; Bramlet prospect. 34°44′ 84°43′

7. Pickering, Rock Creek Road, and Chicken Creek mines. 34°43′ 84°43′

8. Dillards area. Soapstone probably associated with ultramafic igneous rocks. Hopkins, 1914. 34°57′ 83°26′

9. Mack and Wolfpit Mountains. Soapstone and talc rock probably associated with ultramafic igneous rocks. Hopkins, 1914. 34°46′ 83°37′

10. Cleveland. Soapstone probably associated with ultramafic igneous rocks. Hopkins, 1914. 34°37′ 83°45′

11. Cornelia. Anthophyllite probably derived from mafic igneous rocks, but parent rock unknown. Hopkins, 1914. 34°33′ 83°33′

12. Soapstone Ridge. Anthophyllite probably derived from mafic igneous rocks, parent rock unknown. 34°26′ 83°52′

13. Dahlonega area. Soapstone probably associated with mafic igneous rocks. Hopkins, 1914. 34°33′ 83°56′

14. Elberton area, near Bethlehem Church. Soapstone probably associated with mafic or ultramafic igneous rocks. Hopkins, 1914. 34°03′ 82°42′

15. Center. Soapstone probably associated with mafic or ultramafic igneous rocks. Hopkins, 1914. 34°05′ 83°24′

16. Ballground. Talc rock associated with Murphy marble. Hopkins, 1914. 34°20′ 84°25′

17. Holly Springs. Soapstone probably associated with mafic or ultramafic igneous rocks. Hopkins, 1914. 34°10′ 84°31′

18. Dallas area, Harris property. Soapstone probably associated with mafic or ultramafic igneous rock. Hopkins, 1914. 33°59′ 84°52′

19. Conley. Soapstone probably associated with mafic or ultramafic igneous rocks. Hopkins, 1914. 33°46′ 84°20′

20. Phinizy area, near Appling. Soapstone probably associated with mafic or ultramafic igneous rocks. Hopkins, 1914; LeGrand and Furcron, 1956. 33°38′ 82°14′

21. Villa Rica area. Soapstone probably associated with mafic or ultramafic igneous rocks. Hopkins, 1914. 33°44′ 84°56′

22. Carrollton area. Soapstone probably associated with mafic or ultramafic igneous rocks. Hopkins, 1914; Maynard and others, 1923. 33°35′ 85°04′

23. Centralhatchee Creek. Soapstone probably associated with mafic or ultramafic igneous rocks. Hopkins, 1914 Maynard and others, 1923. 33°24′ 85°08′

24. St. Marks. Soapstone probably associated with mafic or ultramafic igneous rocks. Hopkins, 1914. 33°08′ 84°50′

25. West Point area. Soapstone probably associated with mafic or ultramafic rocks. Hopkins, 1914. 32°54′ 85°10′

26. Chipley area. Soapstone probably associated with mafic and ultramafic igneous rocks. Hopkins, 1914; May- 32°52′ 84°52′

nard and others, 1923.

27. Mountain Creek area. Soapstone associated with mafic and ultramafic igneous rocks. Hopkins, 1914. 32°48′ 84°59′

28. Moore property. Soapstone probably associated with mafic or ultramafic igneous rocks. Hopkins, 1914. 33°41′ 84°21′

IDAHO

1. Unnamed prospect near Riggins. Talc-carbonate and talc rock associated with and largely derived from serpentinite, but also appears to be transitional into and partly derived from carbonate rock. 45°22′ 116°18′

MAINE

1. Spencer area. Talc-carbonate and talc rock associated with serpentinite. Wing, 1951. 45°21′ 70°14′

MARYLAND

1. Rock Springs quarries. Talc rock associated with serpentinite in contact with pegmatite. Pearre and Heyl, 1960. 39°43′ 76°08′

2. Bald Friar quarry. Talc rock associated with serpentinite in contact with pegmatite. Pearre and Heyl, 1960. 39°42′ 76°12′

3. Dublin and Scarboro quarries. Talc-carbonate and talc rock in serpentinite in contact with pegmatites. Pearre and Heyl, 1960. 39°39′ 76°17′

4. Rocks (Airs) quarry. Soapstone associated with serpentinite. Pearre and Heyl, 1960. 39°38′ 76°25′

5. Oursler and Marriotsville quarries. Soapstone associated with serpentinite. Pearre and Heyl, 1960. 39°22′ 76°55′

MASSACHUSETTS

1. Rowe quarries. Talc-carbonate and talc rock derived from ultramafic igneous rocks. Pearre, 1956. 42°43′ 72°55′

2. Cummington quarry. Soapstone probably derived from mafic igneous rocks. Pearre, 1956. 42°29′ 73°07′

3. Middlefield prospects. Soapstone probably derived from mafic igneous rocks. Pearre, 1956. 42°22′ 72°59′

4. Unnamed quarry. Soapstone probably derived from mafic igneous rocks. Pearre, 1956. 42°11′ 72°58′

5. Blandford quarry. Soapstone probably derived from mafic igneous rocks. Pearre, 1956. 42°10′ 72°55′

6. Granville quarry. Soapstone probably derived from mafic igneous rocks. Pearre, 1956. 42°03′ 72°55′

7. Tully Mountain quarry. Soapstone probably derived from mafic igneous rocks. Hadley, 1949; Pearre, 1956. 42°39′ 72°15′

8. Petersham quarries. Soapstone probably derived from mafic igneous rocks. Pearre, 1956. 42°29′ 72°15′

MONTANA

Dillon-Ennis district. Deposits consist of talc rock associated with and derived from dolomitic rocks of the Cherry Creek Series, of Precambrian age. Perry, 1948.

1. Lausche mine. 45°15′ 112°21′

2. Treasure, Beaverhead, and Brown mines; Whitney and Ruby View prospects 45°14′ 112°18′

3. Keystone and Sweetwater mines. 45°10′ 112°25′

4. Smith-Dillon mine. 45°07′ 112°32′

5. Estelle mine. 45°07′ 112°18′

6. Pettus No. 1 and Pettus No. 2 prospect. 45°06′ 112°01′

7. Yellowstone (Johnny Gulch) mine. 45°04′ 111°44′

NEVADA

Palmetto-Oasis district. Deposits consist of talc rock associated with and derived from sedimentary rocks, chiefly dolomite; in some deposits some of the talc is derived from quartzite. The deposits are similar to those of the Inyo Range-Panamint Range district.

1. Nevada Talc and Nevada No. 1 mines 37°31′ 117°46′

2. Mae Talc, High Ridge, Shaw, White Eagle Nos. 1 and 2, Emma, Laura Bell, and Camp View mines. 37°29′ 117°44′

3. Oasis, Roseamelia, Reed, White Eagle, White Swan, and Oversight mines. 37°26′ 117°45′

4. White Cloud No. 1, Hideout and Cowhide, Mac Boyles Blue, White King, Sunny Side, Paramount, Alta, Lone Springs, Belle, and White Bird mines. 37°25′ 117°43′

5. Tamarack and Log Spring mines 37°24′ 117°39′

NEW HAMPSHIRE

Deposits consist of soapstone probably associated with ultramafic or mafic igneous rocks. Meyers and Stewart, 1956; Pearre and Calkins, 1957b.

1. Page quarry. 44°07′ 71°59′

2. Cottonstone Mountain quarry. 43°55′ 72°06′

3. Orfordville prospects. 43°54′ 72°04′

4. Orfordville quarry. 43°52′ 72°06′

5. Unnamed quarry. 43°19′ 71°35′

6. Hodgdon quarry. 43°15′ 71°45′

7. Hodgdon quarry. 43°03′ 71°46′

8. Francestown Soapstone Company quarry. 43°00′ 71°47′

9. Richmond quarry. 42°45′ 72°13′

NEW JERSEY

1. Phillipsburg. Talc rock derived from Precambrian dolomite similar to the Grenville Formation. Ladoo, 1923; Peck, 1905. 40°42′ 75°10′

NEW MEXICO

1. Hembrillo and Red Rock mines. Talc rock derived from dolomite and phyllite. 32°58′ 106°32′

NEW YORK

Balmat-Edwards (Gouverneur) district. Deposits consist of talc rock, tremolite, and anthophyllite derived from dolomites of the Precambrian Grenville Series. Engel, 1949; Gilluly, 1945; Luedke and others, 1959.

1. Talcville area. 44°19′ 75°18′
2. American, Woodcock (Loomis), Wright, and Arnold mines and nearby deposits. 44°16′ 75°24′
3. Natural Bridge area. Tremolite, talc rock, and anthophyllite, derived from dolomite and granitic rocks. Newland, 1921. 44°05′ 75°28′

NORTH CAROLINA

Northwestern North Carolina. Deposits consist of soapstone and talc rock principally derived from and associated with ultramafic igneous rocks, peridotite and serpentinite; some are derived from gabbro and other mafic igneous rocks. Pratt and Lewis, 1905.

1. Crab Creek near Edmonds. 36°33′ 81°00′
2. Sparta. 36°30′ 81°09′
3. Phoenix Gap 36°27′ 81°26′
4. Jefferson area. 36°24′ 81°28′
5. Bee Ridge. 36°20′ 81°32′
6. Black Mountain. 36°19′ 81°35′
7. Green Knob area. 36°17′ 81°40′
8. Rocky Mountain-Cook Gap area. 36°12′ 81°36′
9. Oak Grove Church, near Reddies River. Hunter and Gildersleeve, 1946. 36°15′ 81°14′
10. Bayleaf area. Conley, 1958; Stuckey and George, 1940. 35°58′ 78°38′
11. Frank deposit. Hunter, 1941; Hunter and Gildersleeve, 1946. 36°02′ 81°59′
12. Bellvue. 36°01′ 82°02′
13. Cane Creek Church. 36°01′ 82°04′
14. Micaville area. Hunter, 1941. 35°56′ 82°12′
15. Gillespie Gap area. Hunter and Gildersleeve, 1946. 35°50′ 82°01′
16. Day Book deposit. Hunter, 1941. 35°59′ 82°16′
17. Caney River. 35°56′ 82°24′

17a. Burnsville deposit. 35°55′ 82°19′

18. Possumtrot Creek. 35°53′ 82°25′
19. Holcombe Branch deposit, Carter mine. Hunter, 1941. 35°50′ 82°27′
20. Democrat deposit. Hunter, 1941. 35°47′ 82°29′
21. Laurel Creek area. Hunter and Gildersleeve, 1946; Murdock, 1950. 35°55′ 82°40′
22. Marshall area. Murdock, 1950; Stuckey and Conrad, 1958. 35°48′ 82°43′
23. Weaverville area. 35°41′ 82°36′
24. Newfound Gap-Newfound Creek area. 35°36′ 82°46′
25. Newfound Mountain. 35°36′ 82°52′
26. Middleton deposit. Conley, 1958; Hunter, 1941. 35°26′ 83°05′
27. Addie deposit. Conley, 1958; Hunter, 1941. 35°23′ 83°10′
28. Wolf Mountain. 35°15′ 83°00′

Murphy Marble belt. Deposits consist of talc rock derived from a dolomite zone near the stratigraphic center of the Murphy Marble. Van Horn, 1948.

29. Nantahala mine. 35°19′ 83°39′
30. Maltby and Biltmore mines. 35°10′ 83°56′
31. Moore, Regal, and Hayes mines. 35°08′ 84°00′
32. Nancy Jordan Nos. 1-3 and Cold Springs mines. 35°05′ 84°03′
33. Kinsey, Carolina, and Mineral and Metals mines. 35°03′ 84°06′

Southwestern North Carolina. Deposits consist of talc rock and soapstone associated with ultramafic and mafic igneous rocks. Pratt and Lewis, 1905.

34. Elf area. Hunter and Gildersleeve, 1946. 35°02′ 83°44′
35. Franklin area. 35°11′ 83°23′
36. Ellijay area. Hunter, 1941. 35°11′ 83°18′
37. Terrapin Mountain. 35°04′ 83°04′
38. Otto area. 35°05′ 83°23′
39. Mulberry Creek. 35°00′ 83°24′

PENNSYLVANIA

1. Easton area. Talc rock derived from and associated with Precambrian dolomite similar to the Grenville Formation. Ladoo, 1923. 40°42′ 75°12′
2. Gladwyne and Princes quarries. Soapstone associated with serpentinite. Pearre and Heyl, 1960. 40°03′ 75°16′
3. West Goshen prospect. Soapstone and talc rock associated with serpentinite. Pearre and Heyl, 1960. 39°59 75°36′
4. Indian Soapstone prospect. Soapstone associated with serpentinite. Pearre and Heyl, 1960. 39°56′ 75°43′

RHODE ISLAND

1. Limerock area. Talc-carbonate and talc rock associated with serpentinite. Quinn and others, 1949.	41°56′	71°28′

SOUTH CAROLINA

All deposits consist of soapstone associated with ultramafic gabbro. Parent rock is commonly unknown. Sloan, 1908.

1. Soapstone Hill.	34°55′	83°06′
2. Fair View Church.	34°46′	82°56′
3. Central.	34°44′	82°49′
4. Cedar Springs.	34°56′	81°52′
5. Catawba River, near Nation Ford	34°58′	81°00′
6. Catawba Junction.	34°55′	80°58′
7. Halselville.	34°34′	81°15′
8. Edgefield.	33°41′	81°55′

TEXAS

Allamore district. Deposits consist of talc rock in interbedded phyllites, volcanic rocks, and carbonate rocks of Precambrian age. The deposits were probably derived from dolomitic beds or magnesium-rich volcanic rocks. Flawn, 1958; King and Flawn, 1953.

1. Southwestern No. 4 and Rossman mines.	31°09′	105°10′
2. Glen Ray prospect.	31°10′	105°07′
3. Milwhite mine and Escondido prospects.	31°09′	105°05′
4. Section 18 prospect.	31°08′	105°01′
5. Lone Star, Texas Talc, and Southern Clay mines.	31°07′	105°00′
6. Buck Spring prospect.	31°06′	104°57′

Llano district. Deposits consist of soapstone associated with serpentinite derived from ultramafic igneous rocks, but many small bodies are isolated in schist or gneiss near serpentinite bodies. Barnes, 1952; Barnes and others, 1950; Dietrich and Lonsdale, 1958.

7. Bratton Ranch area.	30°56′	99°20′
8. Esbon School and Rough Mountain areas.	30°50′	98°54′
9. Llano area.	30°46′	98°42′
10. Graphite area	30°45′	98°32′
11. Oxford area.	30°36′	98°42′
12. Sandy Mountain area.	30°37′	98°28′
13. Keener Brook and Crabapple Creek West areas.	30°31′	98°47′
14. Crabapple Creek East and Legion Creek areas.	30°29′	98°44′
15. Cedar Mountain and Comanche Creek areas.	30°31′	98°35′
16. Youngblood Creek, Coal Creek, and Big Branch areas.	30°26′	98°36′

VERMONT

All deposits are associated with and chiefly derived from serpentinite. The deposits consist principally of talc-carbonate rock bordered by thin shells of talc rock. Bain, 1942; Chidester and others, 1951, 1952; Pearre and Calkins, 1957a.

1. Troy-East Hill deposits.	44°54′	72°23′
2. Montgomery Center prospect.	44°53′	72°38′
3. Belvidere Mountain area.	44°46′	72°32′
4. Johnson mines and nearby deposits.	44°40′	72°38′
5. Rousseau prospect.	44°40′	72°47′
6. Sterling Pond deposits.	44°33′	72°46′
7. Barnes Hill prospect.	44°25′	72°43′
8. Waterbury mine.	44°19′	72°44′
9. Mad River mine.	44°14′	72°48′
10. Roxbury deposits.	44°05′	72°44′
11. East Granville mine.	44°01′	72°45′
12. Williams and McPherson mines and nearby deposits.	43°52′	72°46′
13. Greeley mine.	43°48′	72°46′
14. Hammondsville quarry.	43°29′	72°33′
15. Proctorsville deposits.	43°23′	72°39′
16. Perkinsville quarry.	43°22′	72°32′
17. Carleton quarry and Chester Reservoir mine.	43°16′	72°38′
18. Davis (Holden) and Barton quarries	43°14′	72°38′
19. Windham quarry and nearby deposit	43°12′	72°43′
20. South Windham deposits.	43°08′	72°42′
21. Grafton prospects.	43°08	72°36′
22. Dover-Newfane deposits.	43°00′	72°45′
23. Marlboro deposits.	42°52′	72°46′
24. Waterville quarry.	44°44′	72°45′
25. Valentine mine.	43°24′	72°41′

VIRGINIA

All deposits are associated with ultramafic and mafic igneous rocks. They are mostly of the soapstone variety. The Schuyler deposits, which are soapstone chiefly suitable for dimension stone, are derived from metagabbros and metapyroxenites.

1. Falls Church	38°53′	77°11′
2. Annandale Dietrich, 1953.	38°50′	77°12′
3. Clifton Dietrich, 1953.	38°48′	77°25′
4. Rhoadesville Dietrich, 1953.	38°17′	77°55′
5. Louisa Burfoot, 1930.	38°01′	77°59′

6. Ferncliff 37°56′ 78°03′
Burfoot, 1930.

7. Alberene area quarries. 37°52′ 78°35′
Burfoot, 1930; Hess, 1933; Hopkins, 1957.

8. Schuyler area quarries. 37°47′ 78°42′
Burfoot, 1930; Hess, 1933; Hopkins, 1957.

9. Walnut Creek 37°18′ 78°10′
Dietrich, 1953.

10. Cullen 37°07′ 78°40′
Dietrich, 1953.

11. Otter River 37°14′ 79°07′
Dietrich, 1953.

12. Rocky Mount 36°59′ 79°54′
Dietrich, 1953.

13. Henry 36°53′ 79°58′
Dietrich, 1953.

14. Axton 36°40′ 79°43′
Burfoot, 1930.

15. Floyd 36°53′ 80°22′
Dietrich, 1953.

16. Blue Ridge Mill 36°37′ 80°52′
Dietrich, 1955; Stose and Stose, 1957.

17. The Glades 36°37′ 80°55′
Dietrich, 1955; Stose and Stose, 1957.

18. Troutdale 36°42′ 81°25′
Dietrich, 1953.

WASHINGTON

1. Clear Lake mine. Soapstone and talc rock associated with serpentinite. Valentine, 1949; Wilson and Pask, 1936. 48°26′ 122°11′

2. Skagit Talc, Alvard, McMyrl-Wilson, and Dad's Girl mines. Soapstone and talc rock associated with serpentinite. Valentine, 1949; Wilson and Pask, 1936. 48°37′ 121°23′

3. Londonderry mines. Soapstone and talc rock occurring at contact between schist and granite. Valentine, 1949; Wilson and Pask, 1936. 48°31′ 121°24′

4. Sadie Cudworth. Soapstone of unknown origin. Valentine, 1949; Wilson and Pask, 1936. 48°31′ 121°15′

5. Williams Creek. Soapstone associated with asbestos, probably associated with ultramafic rocks (?). Valentine, 1949; Wilson and Pask, 1936. 47°57′ 120°47′

6. Tumwater Canyon. Soapstone; steeply dipping, thick tabular body in contact with biotite schist. Parent rock unknown. Valentine, 1949; Wilson and Pask, 1936. 47°39′ 120°42′

7. Entiat and Roaring Creek. Soapstone and talc rock; Parent rock unknown. Valentine, 1949; Wilson and Pask, 1936. 47°41′ 120°20′

8. Lockwood and Cole. Soapstone; parent rock unknown. Valentine, 1949; Wilson and Pask, 1936. 47°39′ 120°16′

9. Kaaba-Texas mine. Talc rock; parent rock unknown. Valentine, 1949; Wilson and Pask, 1936. 48°58′ 119°40′

10. Republic. Talc rock associated with serpentinite. Valentine, 1949; Wilson and Pask, 1936. 48°37′ 118°32′

11. Firminhac deposits: talc rock derived from dolomite. F. C. Allen deposit: talc-carbonate rock associated with serpentinite. Valentine, 1949; Wilson and Pask, 1936. 48°05′ 118°00′

12. Mondove mine. Talc rock in calcareous schist. Valentine, 1949; Wilson and Pask, 1936. 47°48′ 118°00′

WYOMING

1. Badger Creek. Soapstone in olivine diabase cut by granite. Beckwith, 1939; Osterwald and Osterwald, 1952; Osterwald and others, 1959. 43°53′ 110°55′

2. Canyon Creek. Soapstone in greenstones, hornblende schists, and olivine metadiabase. Beckwith, 1939; Osterwald and Osterwald, 1952; Osterwald and others, 1959. 44°06′ 107°08′

3. Beaver Creek. Talc rock and talc-carbonate rock associated with serpentinite. 42°34′ 108°22′

4. Nipper claims. Soapstone in hornblende schist. Beckwith, 1939; Osterwald and Osterwald, 1952; Osterwald ond others, 1959. 42°06′ 105°37′

5. Palmer Canyon. Soapstone in hornblende schist. Beckwith, 1939; Osterwald and Osterwald, 1952; Osterwald and others, 1959. 42°05′ 105°18′

6. Collins deposit. Soapstone in hornblende schist. Osterwald and others, 1959. 42°18′ 105°13′

SELECTED REFERENCES

Bain, G. W., 1942, Vermont talc and asbestos deposits, in Newhouse, W. H., ed., Ore deposits as related to structural features: Princeton, N. J., Princeton Univ. Press, p. 255-258.

Barnes, V. E., 1952, Blowout quadrangle, Gillespie and Llano Counties, Texas: Texas Univ. Bur. Econ. Geology Geol. Quad. Map.

Barnes, V. E., Shock, D. A., and Cunningham, W. A., 1950, Utilization of Texas serpentinite: Texas Univ. Bur. Econ. Geology Pub. 5020.

Beckwith, R. H., 1939, Asbestos and chromite deposits of Wyoming: Econ. Geology, v. 34, no. 7, p. 816, 821–822, 837.

Burfoot, J. D., Jr., 1930, The origin of the talc and soapstone deposits of Virginia: Econ. Geology, v. 25, no. 8, p. 805-826.

Chidester, A. H., Billings, M. P., and Cady, W. M., 1951, Talc investigations in Vermont, preliminary report: U.S. Geol. Survey Circ. 95, 33 p.

Chidester, A. H., Stewart, G. W., and Morris, D., 1952, Geologic map of the Barnes Hill talc prospect, Waterbury, Vermont: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-7.

Conley, J. F., 1958, Mineral localities of North Carolina: North Carolina Dept. Conserv. Devel., Div. Mineral resources, Inf. Circ. 16, 83 p.

Dietrich, J. W., and Lonsdale, J. T., 1958, Mineral resources of the Colorado River Industrial Development Association area: Texas Univ. Bur. Econ. Geology Rept. Inv. no. 37, p. 70-71.

Dietrich, R. V., 1953, Virginia mineral localities: Virginia Polytech. Inst., Eng. Expt. Sta. Bull. 88, p. 37, 41.

__________1955, Additions to Virginia mineral localities: Virginia Polytech. Inst., Eng. Expt. Sta. Bull. 105, p. 21.

Engel, A. E. J., 1949, New York talcs, their geological features, mining, milling, and uses: Am. Inst. Mining Metall. Engineers Trans., v. 184, p. 345-348.

Flawn, P. T., 1958, Texas miners boost talc output: Eng. Mining Jour., v. 159, no. 1, p. 104-105.

Furcron, A. S., and Teague, K. H., 1947, Talc deposits of Murray County, Georgia: Georgia Geol. Survey Bull. 53, 75 p.

Gilluly, James, 1945, Geologic map of the Gouverneur talc district, New York: U.S. Geol. Survey Mineral Inv. Prelim. Map 3-163.

Hadley, J. B., 1949, Bedrock geology of the Mount Grace quadrangle, Massachusetts: U.S. Geol. Survey Geol. Quad. Map GQ-3.

Hess, H. H., 1933, Hydrothermal metamorphism of an ultrabasic intrusive at Schuyler, Virginia: Am. Jour. Sci., 5th ser., v. 26, no. 154, p. 377-408.

Hopkins, H. R., 1957, Nelson-Amherst soapstone belt: Virginia Div. Mineral Resources Prelim. Map.

Hopkins, O. B., 1914, Asbestos, talc, and soapstone deposits of Georgia: Georgia Geol. Survey Bull. 29, p. 190-301.

Hunter, C. E., 1941, Forsterite olivine deposits of North Carolina and Georgia: North Carolina Dept. Conserv. and Devel., Div. Mineral Resources Bull. 41, 117 p.

Hunter, C. E., and Gildersleeve, Benjamin, 1946, Minerals and structural materials of western North Carolina and north Georgia: Tennessee Valley Authority, Regional Products Research Div., Rept. C, 94 p.

King, P. B., and Flawn, P. T., 1953, Geology and mineral deposits of Pre-Cambrian rocks of the Van Horn area, Texas: Texas Univ. Bur. Econ. Geology Pub. 5301, p. 170-172.

Ladoo, R. B., 1923, Talc and soapstone, their mining, milling, products, and uses: U.S. Bur. Mines Bull. 213.

LeGrand, H. E., and Furcron, A. S., 1956, Geology and ground-water resources of central-east Georgia: Georgia Geol. Survey Bull. 64, 113 p.

Luedke, E. M., Wrucke, C. T., and Graham, J. A., 1959, Mineral occurrences in New York State with selected references for each locality: U.S. Geol. Survey Bull. 1072-F, p. 441.

Maynard, T. P., Mallory, J. M., Stull, R. T., 1923, Directory of commercial minerals in Georgia and Alabama along the Central of Georgia Railway: Savannah, Ga., Indus. Dept. Central of Georgia Railway, 134 p.

McMurray, Lynn, and Bowles, Edgar, 1941, The talc deposits of Talladega County, Alabama: Alabama Geol. Survey Circ. 16, 31 p.

Meyers, T. R., and Stewart, G. W., 1956, The geology of New Hampshire, Part 3, Minerals and mines: Concord, New Hampshire State Plan. and Devel. Comm., 107 p.

Murdock, T. G., [1950], The mining industry in North Carolina from 1937 to 1945: North Carolina Dept. Conserv. and Devel., Div. Mineral Resources, Econ. Paper 65, 57 p.

Newland, D. H., 1921, The mineral resources of the State of New York: New York State Mus. Bull. 223-224, p. 283-295.

Norman, L. A., Jr., and Stewart, R. M., 1951, Mines and mineral resources of Inyo County: California Jour. Mines and Geology, v. 47, no. 1, p. 17-223.

Osterwald, F. W., and Osterwald, D. B., 1952, Wyoming mineral resources: Wyoming Geol. Survey Bull. 45, p. 159-160.

Osterwald, F. W., Osterwald, D. B., Long, J. S., Jr., and Wilson, W. H., 1959, Mineral resources of Wyoming: Wyoming Geol. Survey Bull. 50, 259 p.

Page, B. M., 1951, Talc deposits of steatite grade, Inyo County, California: California Div. Mines Spec. Rept. 8.

Pallister, H. D., 1955, Index to the minerals and rocks of Alabama: Alabama Geol. Survey Bull. 65, 55 p.

Pearre, N. C., 1956, Mineral deposits and occurrences in Massachusetts and Rhode Island, exclusive of clay, sand and gravel, and peat: U.S. Geol. Survey Mineral Inv. Resource Map MR-4.

Pearre, N. C., and Calkins, J. A., 1957a, Mineral deposits and occurrences in Vermont exclusive of clay, sand and gravel, and peat: U.S. Geol. Survey Mineral Inv. Resource Map MR-5.

__________1957b, Mineral deposits and occurrences in New Hampshire exclusive of clay, sand and gravel and peat: U.S. Geol. Survey Mineral Inv. Resource Map MR-6.

Pearre, N. C., and Heyl, A. V., Jr., 1960, Chromite and other mineral deposits in serpentine rocks of the Piedmont Upland, Maryland, Pennsylvania, and Delaware: U.S. Geol. Survey Bull. 1082-K [1961].

Peck, F. B., 1905, The talc deposits of Phillipsburg, N. J., and Easton, Pa.: New Jersey Geol. Survey Annual Rept. 1904, p. 161-185.

Perry, E. S., 1948, Talc, graphite, vermiculite, and asbestos in Montana: Montana Bur. Mines and Geology Mem. 27, p. 1-12.

Pratt, J. H., and Lewis, J. V., 1905, Corundum and peridotites of western North Carolina: North Carolina Geol. Survey [Rept.], v. 1, p. 36-59.

Quinn, A. W., Ray, R. G., and Seymour, W. L., 1949, Bedrock geology of the Pawtucket quadrangle, Rhode Island-Mass-

achusetts: U.S. Geol. Survey Geol. Quad. Map GQ-1.

Rice, W. N., and Gregory, H. E., 1906, Manual of the geology of Connecticut: Connecticut Geol. Survey Bull. 6, p. 100.

Sloan, Earle, 1908, Catalogue of the mineral localities of South Carolina: South Carolina Geol. Survey Bull. 2, ser. 4, p. 122-125.

Stose, A. J., and Stose, G. W., 1957, Geology and mineral resources of the Gossan Lead district and adjacent areas in Virginia: Virginia Div. Mineral Resources Bull. 72, 233 p.

Stuckey, J. L., and Conrad, S. G., 1958, Explanatory text for geologic map of North Carolina: North Carolina Dept. Conserv. and Devel., Div. Mineral Resources, Bull. 71, 51 p.

Stuckey, J. L., and George, D. R., 1940, Soapstone deposits in Wake County [North Carolina] (abs.): Elisha Mitchell Sci. Soc., Jour., v. 56, no. 2, p. 225.

Tucker, W. B., 1927, Mineral resources of Santa Catalina Island: California State Mineralogist, 23d Rept., chap. 1, p. 32-39.

Valentine, G. M., 1949, Inventory of Washington minerals, part 1, nonmetallic minerals; Washington Div. Mines and Geology Bull. 37, p. 96-97.

Van Horn, E. C., 1948, Talc deposits of the Murphy Marble Belt: North Carolina Dept. Conserv. and Div. Mineral Resources Bull. 56.

Wilson, Hewitt, and Pask, J. A., 1936, Talc and soapstone in Washington: Am. Inst. Mining Metall Engineers Contr. 99, 25 p.

Wing, L. A., 1951, Asbestos and serpentine rocks of Maine: Maine Geol. Survey, Rept. State Geologist, 1949-50, p. 35-46.

Wright, L. A., 1954, Geology of the Silver Lake talc deposits, San Bernardino County, California: California Div. Mines Spec. Rept. 38.

__________1957, Talc and soapstone, *in* Mineral commodities of California: California Div. Mines Bull. 176, p. 623-634.

Wright, L. A., Stewart, R. M., Gay, T. E., Jr., and Hazenbush, G. C., 1953, Mines and mineral deposits of San Bernardino County, California: California Jour. Mines and Geology, v. 49, no. 1-2.

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