

# LIMESTONE AND DOLOMITE: GEOLOGISTS AND PERCENTAGE DEPLETION ALLOWANCES

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## ABSTRACT

The Revenue Act of 1926 provided for five simple categories of natural resources to have the benefit of depletion allowances. In the 1947 Revenue Act, the number was increased to twenty-five, and in the 1951 Revenue Act to fifty-four. Of this number, fourteen were allowed 5 per cent; nine, 10 per cent; twenty-nine, 15 per cent; one, 23 per cent; and one (oil and gas), 27.5 per cent.

The 1951 Revenue Act created a host of difficulties, including application of the "end-use criterion" and determination of the commonly accepted meaning of such terms as limestone, dolomite, chemical- and metallurgical-grade limestone, marble, calcium carbonates, and magnesium carbonates. Dolomite, for example, was listed at 10 per cent depletion allowance, but without definition.

In the great amount of litigation growing out of the 1951 Revenue Act and its administration, it became essential to understand the derivation and subsequent usage of these common geologic terms. One thing that became clear was that our definitions changed significantly between the time that the 1951 Revenue Act became law and the time that later cases were tried. Some geologists neglected to learn about first usages of such terms as metallurgical limestone, and about meanings that were applicable when the 1951 Revenue Act was written and passed. Legal meanings in this paper are discussed in the light of certain famous cases that have been tried and settled.

Percentage depletion was originally provided for in the Revenue Act of 1926 (Section 204, C-2), and provided for reasonable depletion allowances for "mines, oil and gas wells, other natural deposits, and timber," according to the "peculiar conditions in each case." Extension of depletion allowances to cover the metal-mining industry was advocated by the American Mining Congress in 1928 and, as a result of action initiated in that year, the now famous Parker Report of September, 1929, was prepared.

This report examined three alternatives by which depletion allowances could be computed: (1) fixed rate per production unit, (2) percentage of gross income, and (3) percentage of net income. Exhibit 31 of the Parker Report provided the historical basis for depletion in the metal-mining industries by showing that the average depletion allowed in metal mines from 1922 to 1926 amounted to 17 per cent of gross income.

The 1932 Revenue Act subsequently awarded metal mines a 15 per cent depletion allowance, oil and gas wells 27.5 per cent, coal 5 per cent, sulphur 23 per cent, and all other natural deposits and timber as individually determined by regulations. The 1932 Act caused relatively few problems in administration, and the provision for depletion allowances went unchanged until 1942, when fluorspar, ball and sagger clays, and rock asphalt were added, each at 15 per cent depletion allowance.

The Revenue Act of 1943 added to the list of specific materials covered by 15 per cent depletion allowances the following: flake graphite, vermiculite, beryl, feldspar, mica, talc, lepidolite, spodumene, barite, and potash—almost trebling the number of cited allowances. The Revenue Act of 1947 added, at the 15 per cent rate, the following additional members: bauxite, phosphate rock, trona, bentonite, gilsonite, and thenardite, thus boosting the total specifically provided for to twenty-three.

In 1948, K. K. Landes undertook a study for the National Lime Association, which developed information showing the relative scarcity of metallurgical limestone deposits. He presented this report in 1950 before the House Ways and Means Committee. His testimony set a high standard for technical excellence and

for derivation of a practical basis for classifying metallurgical-grade limestones into four classes based on their definitive carbonate ingredient (for A-1 and A-2 subclasses it was calcium carbonate, and for B-1 and B-2 classes it was calcium-magnesium carbonate) and on limits of amounts of deleterious impurities.

In his now-famous report, "Metallurgical Limestone Reserves in the United States," dated February 5, 1949, A-1 and A-2 classes are high-calcium limestones in which alumina, sulphur, and magnesia are not present in amounts exceeding 1.5, 0.1, and 5.0 per cent, respectively, with A-1 and A-2 containing less than 1 per cent and less than 3 per cent silica, respectively. His B-1 and B-2 classes of metallurgical limestone are high-magnesium dolomites, the former with less

TABLE 1  
*Depletion allowances specifically provided for in the Revenue Act of 1951*

At rate of 5 per cent	
Sand	Clam shells
Gravel	Granite
Slate	Marble
Stone	Sodium chloride
Brick and tile clay	Calcium chloride (wells)
Shale	Magnesium chloride (wells)
Oyster shells	Bromine (wells)
At rate of 10 per cent	
Coal	Perlite
Asbestos	Wollastonite
Brucite	Calcium carbonates
Dolomite	Magnesium carbonates
Magnesite	
At rate of 15 per cent	
Metal mines	Aplite
Bauxite	Fluorspar
Flake graphite	Vermiculite
Spodumene	Garnet
Feldspar	Mica
Talc (including pyrophyllite)	Lepidolite
Trona	Barite
Gilsonite	Ball, sagger, china clays
Borax	Phosphate Rock
Tripoli	Bentonite
Quartzite	Thenardite
Metallurgical-grade limestone	Fullers Earth
Potash	Refractory and fire clays
Diatomaceous earth	Chemical-grade limestone
At rate of 23 per cent	
Sulphur	
At rate of 27.5 per cent	
Oil and gas wells	

than 1 per cent silica and the latter with less than 3 per cent silica, and both containing less than 1.5, 0.1, and 21.8 per cent of alumina, sulphur and magnesia, respectively. In his summary, Landes stated as follows: "In this report, 'limestone' will be used as in industry for both limestone and dolomite, except as the latter is specifically mentioned."

Congress did not revise its depletion allowances in 1950 in the light of the Landes testimony, but did so in 1951, when it increased the number of specific percentage depletion-allowance categories to fifty-four (see Table 1). Fourteen

were granted 5 per cent, nine were given 10 per cent, twenty-nine were allowed 15 per cent, sulphur was allowed 23 per cent, and oil and gas were allowed 27.5 per cent. The number was again increased in 1954, to cover 92 categories (Table 2), as follows: eleven at 5 per cent depletion allowance, seven at 10 per cent, thirty-six at 15 per cent, thirty-nine at 23 per cent, and oil and gas at 27.5 per cent. The 1954 provisions for depletion allowances are still in effect.

As indicated in Table 1 the 1951 Revenue Act provided depletion allowances for limestones and dolomites as follows: calcium carbonates, magnesium carbonates, and dolomites at 10 per cent, stone and marble at 5 per cent, and chemical and metallurgical grade limestone at 15 per cent. As might have been suspected, the industries producing limestone and dolomite interpreted these allowances one way, while the government was much more stringent in applying depletion allowances to specific deposits.

Out of the 1951 Act, there arose a large number of court cases that centered around certain fundamental questions, including:

- (1) What are the meanings of the terms, limestone, dolomite, and marble?
- (2) To what do the terms "calcium carbonates" and "magnesium carbonate" refer in the 1951 regulations?
- (3) Does actual *use* of a given company product determine the applicability of the 5, 10, or 15 per cent depletion allowance under a use category?
- (4) How much magnesium carbonate or magnesia must a carbonate rock contain in order to be a dolomite?
- (5) What do chemical-grade and metallurgical-grade limestones include?

The government argued its position on these questions in the court cases growing out of the 1951 Revenue Act by using technical witnesses, and so did industry. Some of the government experts took positions that were on occasion ludicrous and indefensible. Geologist "X" deprecated the opinions of all experts who did not agree with him, and also rejected many authoritative publications of the government by saying all were "untrustworthy," whereupon he interposed his own definitions and added "I am more definite about it than most people who work with the field."

In the Blue Ridge Stone Corporation case, an attempt was made to prove that the company's stone, a dolomite or dolomitic limestone (thus entitled to 10 per cent depletion allowance) was a "marble" and only entitled to 5 per cent. This amazing identification was based on the evidence of a sawed piece purported to take a high polish. But this tenuous evidence faded away when the polish was demonstrated to be a glaze created by an extraneous liquid coating which had been added to the sawed surface, allowed to harden, and was later buffed to a polish. The "marble" testimony was completely discredited and Blue Ridge won its case for 10 per cent depletion allowance on its impure dolomite, which was used mainly as crushed stone.

In the Erie Stone Company case, Geologist "Y" identified as "sloppy" those definitions of limestone that did not agree with his own, and said he felt very poorly toward some geologists because of their sloppy definitions. Geologist "Z" appeared as a government witness in the James River Hydrate Company's case and argued that dolomites were not classed with limestone by most geologists. I think these gentlemen missed the main point that was before the courts; their individual opinions were irrelevant. The really critical question was this: Did "limestone" as used when the 1951 Revenue Act was written include dolomite? The answer can only be found in geologic literature and in the literature of the trades.

In the James River Hydrate Company's case, it seemed absolutely essential to go back into the geologic literature and the trade magazines, such as *Rock Products*, and trace the derivation and usage of "metallurgical limestone" or "metallurgical-grade limestone," in order to determine whether that designation,

TABLE 2  
*Depletion allowances specifically provided for in Revenue Act of 1954*

At rate of 5 per cent	
Brick and tile clay	Sand
Gravel	Scoria
Mollusk shells	Stone
Peat	Shale
Pumice	Brine wells containing bromine,
Material sold for riprap, ballast, road	calcium chloride, and
material, rubble, concrete aggregates	magnesium chloride
At rate of 10 per cent	
Asbestos	Perlite
Brucite	Sodium chloride
Coal	Wollastonite
Lignite	
At rate of 15 per cent	
Ball, sagger, china clays	Slate
Metal mines (not listed at higher rate)	Soapstone
Rock asphalt	Dimension and ornamental stone
Vermiculite	Thenardite
Aplite	Tripoli
Barite	Trona
Borax	Bauxite
Calcium carbonates	Beryl
Refractory and fire clays	Flake graphite
Diatomaceous earth	Fluorspar
Dolomite	Lepidolite
Feldspar	Mica
Fullers Earth	Spodumene
Garnet	Talc (including pyrophyllite)
Gilsonite	
Granite	Marble
Limestone	Phosphate Rock
Megnesite	Potash
Magnesium carbonates	Quartzite
At rate of 23 per cent	
Sulphur	Ores of following metals:
Uranium	Antimony
Anorthosite (where aluminum extracted)	Bismuth
Asbestos	Cadmium
Bauxite	Cobalt
Beryl	Columbium
Celestite	Lead
Chromite	Lithium
Corundum	Manganese
Fluorspar	Mercury
Graphite	Nickel
Ilmenite	Platinum group
Kyanite	Tantalum
Mica	Thorium
Olivine	Tin
Quartz crystals (radio grade)	Titanium
Rutile	Tungsten
Block steatite talc	Vanadium
Zircon	Zinc
At rate of 27.5 per cent	
Oil and gas wells	

in the 1951 Act, would include high-magnesium dolomites as well as high-calcium limestones. The evidence assembled in a 180-page document showed overwhelming evidence that "metallurgical limestone" as first used and as subsequently used included both high-calcium and high-magnesium stones. On this basis, Judge Thomas Michie found that the company's stone, a high-purity dolomite, qualified as chemical- and metallurgical-grade limestone. In the light of the different findings in the earlier Wagner Quarries and Erie Stone cases, the James River Hydrate Company's case is of critical importance. In writing the opinion on the James River Hydrate case, handed down by Judges Haynsworth, Bryan, and Craven in the U. S. Court of Appeals for the Fourth Circuit, Judge Haynsworth wrote as follows:

*The district court in its opinion considered and discussed prior judicial opinions bearing on the question [of whether high-magnesium dolomites are properly included in the 1951 Statute's designation "chemical and metallurgical limestone"] and the reasons for its inclusion as to the proper construction of the statute in light of the evidence in this case. We need not repeat all of that discussion here, but, approvingly, refer the reader to it. The essential difference between this case and earlier ones discussed by the district Judge [including the Fannin Investment Company's case, the Halquist case, the Erie Stone Company's case, the Vulcan Materials Company's case, Frazier case, the Wagner Quarries case], however, is the presence here of compelling testimony that dolomite, historically and geologically, is one of two subclasses of limestone, and, when of requisite purity, is metallurgical or chemical grade limestone as those terms were used by the Congress of 1951 and by industrial engineers experienced in that field. The Court's conclusions followed naturally from its findings, which, in this case have a solid foundation in the evidence. Affirmed."*

Now for the answers to the fundamental questions raised about limestone and dolomite:

Lime is from the Latin word *limus* meaning mud and dates back to Gallic tongues in which it literally meant mortar. Limestone is stone from which lime can be made. Naturally, there are both dolomitic and calcitic limes, so there are reasons to include the rock from which both varieties of lime are made in the general term limestone, which thus includes dolomites and calcitic limestones. The dual usage of limestone as a broad general class name including dolomites, magnesian limestones, and limestones has an irrefutable basis in fact; dolomite as a rock name was not introduced until 1794.

Dolomite is the name of a mineral as well as a rock. Both are ingrained in geologic literature. The courts have found that, if a rock contains more than 50 per cent of the mineral dolomite, that mineral is the major ingredient and dolomite is the proper name for such a rock. A dolomite therefore does not have to have 44 to 45 per cent magnesium carbonate in it to be a dolomite; it could have as little as 22.5 per cent magnesium carbonate, 27.5 per cent calcium carbonate, and anything less than 50 per cent impurities and still be called a dolomite. Pettijohn's definitions (1956, p. 418) seem quite reasonable and compatible. Many impure dolomites, some full of chert or quartz sand or both, are rocks any or all of us have called dolomites. The Virginia Limestone case was the first to find that dolomite did not have to be pure to qualify as dolomite under the Tax Code of 1951.

The meaning of "chemical-grade" and "metallurgical-grade" limestone, which the courts have recently upheld, is clear. These categories include all high-calcium and all high-magnesium varieties of limestone whose impurities, as commonly evaluated, are sufficiently low so that the rocks are suitable for use under restricted chemical specifications and/or for use in metallurgical processing. The dolomite in the James River Hydrate Company's quarry, which is in the well-known Shady Dolomite, is both chemical- and metallurgical-grade limestone. This meaning is the same as that conveyed in U. S. Bureau of Mines Bulletin

299, "Metallurgical Limestones: Problems in Production and Utilization." In this 1929 publication, Oliver Bowles apparently was the first geologist to apply the name "metallurgical limestone."

Whether we like it or not, we are stuck with the name limestone as a term with duality of meaning. One meaning is narrow and applies to essentially calcitic sedimentary rocks; where as the other is much broader and includes both calcitic limestones, magnesian limestones, and dolomites. Chemical- and metallurgical-grade limestones are a very restricted subcategory of limestone as used in its broad sense.

Perhaps the two most enigmatic terms awarded depletion allowances in the 1951 Revenue Act were "calcium carbonates" and "magnesium carbonates," especially the latter, which certainly was not meant to refer to magnesium carbonate in the mineral form, for that mineral—magnesite— was listed by name. To my knowledge no court has ever made a finding of what Congress meant by magnesium carbonates as listed separately in the 10 per cent depletion grouping that also included dolomite and magnesite.

"Calcium carbonates" is also a problem—what is this supposed to refer to? The case of the H. Frazier Company, Inc., vs the United States, which was tried in the United States Court of Claims and decided in favor of the Frazier Company, May 9, 1962, sheds light on what "calcium carbonates" was supposed to include. Judge Laramore, in his opinion, developed an interesting and logical approach to "calcium carbonates." He said:

The Government avers that the terms "stone" and "calcium carbonates" are mutually exclusive, and since "limestone" by definition is clearly "stone" the rate applicable is five per cent. . . . Although all limestone is "stone," not all "stone" is limestone. . . . The term "calcium carbonates" is not defined in the statute. The test adopted by Congress and approved by the Courts is whether the product meets the commonly understood commercial meaning of the substance in respect to which depletion was granted. . . . In the instant case the evidence fails to show that the term "calcium carbonates" has a commonly understood commercial meaning. Absent this showing, it is the duty of the court to arrive at a reasonable interpretation of the intent of Congress in employing that term. . . . At least one court expressed the view that "calcium carbonates" means ordinary limestone (Riddell vs Victorville Lime Rock Co.). . . . Limestone in petrography is a rock consisting essentially of calcium carbonate. . . . Any rock consisting of at least 50 per cent calcium carbonate may be properly termed limestone. . . . If "calcium carbonates" do not include limestone, we can give no meaning to that term as used in the statute . . . We think it is inconceivable that Congress would not have provided specifically for limestone, which is the most common source of calcium carbonate if it had intended to remove limestone from the classification of "calcium carbonates." Thus the plaintiff's product [limestone] comes under the express provision of the statute allowing for depletion at the rate of 10 per centum [as "calcium carbonates"]. . . ."

Judges Durfee and Whitaker, and Chief Judge Jones, concurred.

The 1954 Revenue Act (Table 2) provides 15 per cent depletion allowances for calcium carbonates, limestone, magnesium carbonates, magnesite, and dolomite. Thus, there is no need for the category, *chemical and metallurgical grade limestone*, as given in the 1951 statute. But the old humbug "end-use" as a measure of percentage depletion entitlement is back in the 1954 statute, which established depletion allowances according to class of use rather than on quality and scarcity of the depleted substances. In this respect, the 1954 Revenue Act expresses a very different philosophy of depletion allowances from the 1951 Act. Somewhere, the sound idea of depleting materials at rates that vary directly according to their quality and inversely with their scarcity has been lost—the

logical basis on which depletion allowance should have been based to be deserving of the name.

It happens that three Virginia tax-depletion cases were the classic cases that decided certain fundamental issues. In the Virginia Limestone Corporation's case, the "end-use" criterion was knocked down by showing that, although the corporation sold nearly all of its product as crushed stone, it was nonetheless dolomite and entitled to 10 per cent depletion allowance as dolomite instead of 5 per cent depletion allowance because it happened to be used as "stone." Also, the Government's contention that to be called a dolomite a rock had to be composed of at least 90 per cent of the mineral dolomite was rejected in the Tax Court's decision that the corporation's stone was dolomite, even though it contained only 35 to 37 per cent magnesium carbonate.

In the Blue Ridge Stone Corporation's case, the material quarried was affirmed as dolomite despite the fact that the analysis of certain portions dipped below 35 per cent magnesium carbonate. Also, the identification of the Blue Ridge stone as "marble" was repudiated.

The James River Hydrate Company's case has been settled in favor of the company by finding that the company's stone, a high-magnesium dolomite, qualifies as "chemical- and metallurgical-grade limestone."

Reviewing the record on these cases, it would appear in each of them, that the company won, because the commonly accepted commercial meaning of the critical terms in each instance was argued, not on the basis of what the companies' technical witnesses construed to be the meaning of the terms in question, but what their meaning actually was as documented in the published record. The Government's own Minerals Yearbooks and many additional publications have used the critical words as they were construed by these three companies.

There is a lesson for geologists to learn from the litigations arising out of the 1951 Revenue Act. In espousing the meaning of geologic terms in court testimony, the published word is the only true documentation of what given terms have meant at any given time. Since 1950, geologists have gradually come to use the term limestone more and more in the restrictive sense and less and less in the broad connotation. The dual usage of limestone is now commonly avoided by substituting the fatuous term, "carbonate rocks" for all rocks formerly included in the general category of limestones, but this evolutionary change in usage of limestone cannot be applicable to the 1951 statute.

It is important to remember that, in legal matters, the long-hair, academic, scholarly approach to meanings of geological terms is relatively unimportant. The commonly accepted commercial meanings may not be to our liking, but such meanings must prevail in courts of law, because the courts are not trying cases in which the plaintiff and defendant are geologists; the courts are trying cases involving commercial enterprises. The professional geologist must and should know all the meanings in historical perspective, or when who said what. The geologist is the one person qualified to search geological literature for answers to legal questions. What he finds in the record will be far more valuable to his client than his personal opinions and definitions.

#### LITERATURE CITED

Pettijohn, F. J. 1956. *Sedimentary Rocks*, 2nd ed. Harper & Bros., 526 p.