

ORIGINS OF THE WORD “ASBESTOS”

The various words used in antiquity to denote the asbestos minerals—including asbestos, asbestus, asbestinon, asbest, asbeste, asbeston, abeston, amiantos, amiantus, amianthus, amiant, and amiante—can be traced back to the writings of the ancient Greek philosophers and their use of two words—**αμιαντος** and **ασβεστος**. The Greek word **αμιαντος** (transliterated as “amiantos”), when used as a noun is synonymous with the English word asbestos, and when used as an adjective can mean pure or undefiled (G.E.L., 1940, p. 83). The Greek word **ασβεστος** (properly transliterated as “asvestos”—not “asbestos”), when used as a noun means lime, quicklime, or unslaked lime (CaO), and when used as an adjective, can mean inextinguishable, unquenchable, or not quenched (G.E.L., 1940, p. 255). Note, that quenching or slaking of calcium oxide with water produces calcium hydroxide. Latin translations of the Greek words for asbestos and quicklime have caused some confusion that is perhaps related to the difficulty of translating the complex noun and adjective declensions of Greek into Latin, an equally complex language, to the interchange of noun modifiers and nouns, and to the Greek versus Latin transliteration of the letter β. The Greek physician, Pedanius Dioscorides of Cilicia (40–90 A.D.) reports of an “undefiled stone,” **αμιαντος λιθος**— transliterated as “aminatos lithos,” that occurs in Cyprus and resembles fissile alum that can be woven and is not consumed by fire (*Materia Medica*, 5, 138; see also G.E.L., 1940, p. 83 and O.E.D., 1933, p. 280). In Modern Greek usage, the noun **λιθος** (“lithos”) is omitted and replaced with **αμιαντος** (“amiantos”), synonymous with the Latin and English noun asbestos, the German and Russian noun asbest, the French nouns asbeste and amiante, and the Italian and Spanish nouns asbesto and amianto.

The ancient Greek writers (e.g., Dioscorides, *Materia Medica*, 5, 115; see also G.E.L., 1940, p. 255 and O.E.D., 1933, p. 480) used the noun **ασβεστος** (“asvestos”) to mean quicklime; a meaning retained in modern Greek; however, Pliny the Elder (Caius Pliny Secundus, 23–79 A.D., *Natural History*, Book 19, paragraph 20; see also Rackham, 1961, p. 432–433), apparently misunderstanding the use of this word by the early Greek philosophers, replaced the Greek noun for quicklime (**ασβεστος**) with the dubious Greek word **ασβεστινον** (G.E.L., 1940, p. 255), which he interpreted to mean a non-combustible material. Pliny then transliterated **ασβεστινον** into the Latin noun “asbestinon,” alluding to incombustible linen, cleansed by fire, and used as shrouds for royalty during cremation. Pliny also refers to this incombustible linen as *linum vivum*—live linen. Pliny was undoubtedly referring to what we now know as asbestos cloth but reported that the material came from a plant that “grows in the deserts and sun-scorched regions of India” (Rackman, 1961, p. 433). A computer search for the many variations of the word for asbestos that possibly may have been used in the 37 books of Pliny’s *Natural History* (which is copied onto an Internet website; Thayer, 2002) revealed that Pliny, in addition to “asbestinon” (Book 19, 20), used the words “amiantus” (Book 36, 139; see also Bailey, 1932, p. 120–123, 256–257) and “asbestos” (Book 37, 146, Thayer, 2002). Pliny states that “amiantus”

resembles alumen in appearance and is not destroyed by fire. The alumen of Pliny is probably not alum as we know it (potassium aluminum sulfate), but possibly an iron sulfate efflorescent produced by decomposition of pyrite (see Hoover and Hoover 1950, footnote 11, p. 572). In using the word “amiantus,” Pliny may indeed be describing an asbestos mineral, but relating it to alumen because of similarity of certain physical properties. In Book 37, 146, Pliny states that iron colored “asbestos” is found in the Arkadian mountains (located in the central Peloponnesus of Greece) perhaps suggesting that this fibrous material has a mineral origin. Here Pliny has taken the Greek word “asbestos” (quicklime) to mean something quite different—a fibrous mineral, now referred to as “asbestos” in both the Latin and English languages. It is not at all clear whether Pliny really understood the geological origin of asbestos, whereas ancient Greek writers, such as Strabo, Dioscorides, and Theophrastus, certainly did.

References

Bailey, K.C., 1932, The Elder Pliny’s chapters on chemical subjects, part II: Edward Arnold & CO, London, 299 p., v. 2, p. 911–921.

Hoover, H.C., and Hoover, L.H., 1950, Translation of De Re Metallica by Georgius Agricola (1556), Dover Publications, Inc., New York, 638 pp.

G.E.L., 1940, A Greek-English Lexicon, 9th Ed., Oxford University Press, Oxford, England, 2111 pp.

O.E.D., 1933, The Oxford English Dictionary, v. 1 (A-B), Oxford University Press, Oxford, England, 1240 pp.

Kykkotis, I., 1947, English-Greek and Greek English Dictionary, Lund Humphries & CO, Ltd, London, England, 766 pp.

Rackham, H., 1961, Pliny Natural History with an English translation in ten volumes, v. 5, (Books 17–19): Harvard University Press, Cambridge, MA, 544 pp.

Thayer, B., 2002, Pliny the Elder: the Natural History, Books 1–37 (in Latin): http://www.ku.edu/history/index/europe/ancient_rome/E/Roman/Texts/Pliny_the_Elder/home.html).

Notes

1) O.E.D., p. 480, (quote) "*Asbestos* was applied by Dioscorides to *quicklime* (unslaked). Erroneously applied by Pliny to incombustible fire, which he believed to be vegetable, but which was really the *Amiantos* of the Greeks. Since the

identifiacation of this, *Asbestos* has been the more popular synonym for Amiantos or Amiant".

2) **ασβεστινον**, when used as an adjective, means a non-combustible material (Greek-English Lexicon, p. 255). Pliny, apparently used this word as a noun to mean the mineral "asbestinon" or asbestos.

3) **ασβεστος** ("asvestos"), when used as an adjective, means not quenched, unquenchable, or inextinguishable. When used as a noun **ασβεστος** means lime, unslaked lime, or quicklime (Greek-English Lexicon, p. 255).

4) **αμιαντος** ("aminatos"), when used as an adjective means pure, undefiled, free from stain of ungodliness. When used as a noun, **αμιαντος** means asbestos

5) Asbestos (L.) or asbestus (modern L.), when used as an adjective means inextinguishable, unquenchable (OED, 480). Old French adopted from Latin is *absestos*, later *asbestos*.

6) Amiant(h)us The correct Latin spelling is amiantus, from Greek, undefiled, O.E.D., p. 280. The first citation to the Latin word amiantus word is Wilkins, 1668, "Prized stones -- Incombustible nature" (O.E.D., p. 280).

7) Kykkotis, 1947. (1) p.10, amianthus=**αμιαντος** ("amiantos"); (2) p. 16, asbestos=**αμιαντος** ("amiantos") (masculine); (3) p. 154, lime=**ασβεστος** ("asvestos") (feminine) or **ασβεστης** (masculine); (4) p. 448, **ασβεστης**=lime or quicklime (masculine), p. 448, **ασβεστος**=asbestos (feminine) or as an adjective extinguishable or unquenchable; (5) p. 417, **αμιαντος** ("amiantos")=asbestos, amianth (masculine) or as an adjective unsullied or unspotted; (6) p.235, quenchless=**ασβεστος** (feminine); (7) p.133, inextinguishable=**ασβεστος** (adjective).Limestone is **ασβεστολιθος**, (or lime rock)

8) Google Hits for the various words for asbestos found on the Web: amiantus (347), amianthus (1,120), amiant (1,120), amiante (70,500), amianto (65,500), amiantos (1,050), asbestos (753,000), asbestus (1,020), asbestinon (9), asbest (56,800), asbeste (1,030), asbeston (180), abeston (39), and asbesto (14,200).

9) I visited my Greek friend, Avyeris Andonyadis, with a modern map of Greece showing town names both in Greek and English (phonetically transliterated to the Roman alphabet). In trying to find the locality of the Zindi asbestos mine in

northern Greece and I noted the town "Asvestospetra" which I interpreted to mean "Asbestos Rock". Avyeris stated that I my interpretation was incorrect. The name "Asvestospetra" is a transliteration from the Greek name, **ασβεστοςπετρα**, and actually means "limestone" or "lime rock". Thus **ασβεστος** = avestos (lime) and **πετρα** = petra (stone). In short, Avyeris had no idea that "asvestos" meant anything but lime (or quicklime).

I gather that the misinterpretation of the meaning of the Greek word for lime "**ασβεστος**" is related to the Greek versus English pronunciation of the Greek letter "beta". The first three Greek letters of the Greek word "**ασβεστος**" are alpha, sigma, and beta. The alpha-sigma is pronounced both in Greek and English as "As". However, beta is pronounced in Greek with a "v" ("asvestos"), whereas in English it is pronounced with a "b" (asbestos). You would combine the letters mu and pi to pronounce the b sound in Greek.

M. Ross, December 9, 2002