



Standard Terminology for Asbestos-Cement¹

This standard is issued under the fixed designation C 460; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This standard covers terms and definitions, descriptions of terms, and abbreviations of terms relating to asbestos-cement products. Additional definitions of terms relating to asbestos are presented in Terminology D 2946.

2. Referenced Documents

2.1 ASTM Standards:

C 150 Specification for Portland Cement²

C 428 Specification for Asbestos-Cement Nonpressure Sewer Pipe³

C 618 Specification for Fly Ash and Raw or Calcined Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete⁴

C 966 Guide for Installing Asbestos-Cement Nonpressure Sewer Pipe Lines³

D 1067 Test Methods for Acidity or Alkalinity of Water⁵

D 1126 Test Methods for Hardness in Water⁵

D 2946 Terminology Relating to Asbestos³

E 849 Practice for Safety and Health Requirements Relating to Occupational Exposure to Asbestos⁶

3. Terminology Terminology: Terms and Definitions, Descriptions of Terms, and Abbreviations

accessories—subordinate material such as fasteners, backer strips, closure strips, ridge and corner rolls, roofing starters and finishing pieces, couplings, gaskets, pipe fittings or other supplementary material necessary for the proper application of primary asbestos-cement products.

aggressivity index, *n*—a measure of the corrosivity of water toward asbestos-cement defined as $\text{pH} + \log(AH)$ where pH = negative of the logarithm of the hydronium molarity (index of acidity of the water), pH units. A = total alkalinity, ppm as CaCO_3 , as determined by Test Methods D 1067 and H = calcium hardness, ppm as CaCO_3 , as determined by Test Method D 1126.

DISCUSSION—The aggressiveness of water toward asbestos-cement is classified as follows:

highly aggressive	aggressivity index < 10
moderately aggressive	aggressivity index = 10 to 11.9
nonaggressive	aggressivity index ≥ 12

American Method—a method of application for roofing shingles, generally rectangular in shape, to provide double coverage with head lap and no side lap.

amosite—the acronym assigned to grunerite asbestos, and derived from the name of the first developers of a major deposit of this mineral.

amphibole asbestos, *n*—asbestiform amphibole silicate minerals including the orthorhombic anthophyllite series and the monoclinic cummingtonite [grunerite asbestos (amosite)] series, the tremolite-actinolite series, and the alkali amphibole [riebeckite asbestos (crocidolite)] series among others. The amphiboles contain essential (OH) groups in the structure, and the Si:O ratio is 4:11. A considerable amount of elemental substitution can take place in these varieties of asbestos. The crystal structures are composed of strips or ribbons of linked polyhedra that join to form fibrils. The individual strips are made up from three components; these are two double chains of linked (Si, Al) O_4 tetrahedra and a strip of linked MgO_6 , FeO_6 , or AlO_6 octahedra.

asbestos—the naturally occurring inorganic hydrated silicates, occurring in layered structures composed of chains of silicon and oxygen tetrahedra, that can subdivide into flexible fibers⁶.

asphalt felt, breather type—an underlayment sheet material saturated with asphalt for use with asbestos-cement products, which allows the transmission of water vapor.

autoclaved products, *n*—in asbestos-cement, those that have been treated in a saturated steam atmosphere at between 689 and 1517 MPa (100 and 220 psi) for at least 8 h, and that contain portland cement as defined in Specifications C 150 and C 618, together with silica in the ratio of 3:2, that can react to form calcium silicate reaction products.

backer strips—water-repellent strips of asphalt-coated felt applied behind each joint where the vertical edges of two shingles meet.

batten—a long narrow strip of asbestos-cement, either flat or corrugated, used to conceal the joints in butt joint application of flat or corrugated sheets.

bloom—see **efflorescence**.

caulking—a material ranging in physical characteristics from plastic, to solid, to preformed, used to seal and waterproof

¹ This terminology is under the jurisdiction of ASTM Committee C-17 on Fiber-Cement Products and are the direct responsibility of Subcommittee C17.91 on Editorial and Terminology.

Current edition approved March 15, 1993. Published May 1993. Originally published as C460 – 60. Last previous edition C460 – 92.

² Annual Book of ASTM Standards, Vol 04.01.

³ Annual Book of ASTM Standards, Vol 04.05.

⁴ Annual Book of ASTM Standards, Vol 04.02.

⁵ Annual Book of ASTM Standards, Vol 11.01.

⁶ Annual Book of ASTM Standards, Vol 11.03.

joints and overlaps in structures, other assemblies or portions thereof where movement may occur.

chrysotile—an asbestos mineral belonging to the serpentine group, having a chemical composition close to $\text{Mg}_3\text{Si}_2\text{O}_5(\text{OH})_4$. Moderate amounts of aluminum may substitute for silicon and moderate amounts of iron may substitute for magnesium. Small amounts of MnO , CaO , K_2O , and Na_2O are also reported in the chemical analyses. The crystal structure of chrysotile asbestos consists of double layers, each consisting of a layer of SiO_4 tetrahedra that is coordinated to a second layer of $\text{MgO}_2(\text{OH})_4$ octahedra linked through the sharing of oxygen atoms; the composite double layer rolls up, like a scroll, to form long hollow tubes. The outer diameters of the individual tubes are in the order of 25 nm; the length-to-diameter ratio can vary from 20 to well over 10 000. Chrysotile is characterized by a combination of a distinctive morphology, a chemical composition close to $\text{Mg}_3\text{Si}_2\text{O}_5(\text{OH})_4$, and the characteristic X-ray and electron diffraction patterns.⁷ Its Chemical Abstracts number is 12001-29-5 (see Practice E 849).

clip, *n*—*in shingles*, see **storm anchor**.

closure strip—an asphalt or rubber preformed filler strip having the same shape and pitch as the asbestos-cement corrugated product and used to close openings in the corrugated sheets at window beads, eaves, lower edge of siding, and similar places.

conduit, *n*—*in asbestos-cement*, asbestos-cement pipe used to protect wires for electric-power or communication systems, for both underground and exposed situations.

constructor, *n*—*in pipe laying*, the party that furnishes the work and materials for placement and installation.

corner rolls—half-round units of asbestos-cement used to trim and flash corners in asbestos-cement corrugated application.

corrugated—a term denoting an asbestos-cement sheet product having a design of alternating ridges and valleys manufactured according to a specified pitch.

coupling, *n*—*in asbestos-cement conduit, sewer, underdrain and storm drain pipe*, component made from a larger diameter pipe of the same type or type II and of the same class, or of a higher class, or produced otherwise to yield at least equal performance, for joining asbestos-cement pipe that when properly installed, forms a silt-tight joint, allows alignment corrections and slight changes in direction, and provides an assembled joint equivalent in serviceability and strength to the pipe sections. Alternatively, for storm drain couplings, plastic sleeves that, when properly installed develop sufficient tightness to prevent the surrounding soil from entering the drain, may be used as couplings.

coupling, *n*—*in asbestos-cement nonpressure sewer pipe*, a section for joining asbestos-cement nonpressure sewer pipe, that when properly installed with the proper accessories, develops an assembled joint equivalent in serviceability and strength to the pipe sections when tested in accordance with 8.3 of Specification C 428.

coupling, *n*—*in asbestos-cement pressure pipe*, section for joining asbestos-cement pipe that, when properly installed

with the proper accessories, develops a joint equivalent in strength and serviceability to the pipe sections.

crocidolite—common name for riebeckite asbestos. Also known as blue asbestos.

crushing strength—a property of solid material that indicates its ability to withstand collapse from external, compressive loads.

cure—the reaction mechanism in which the physical, chemical, and mechanical properties of a hydraulic cement change through the phases of slurry-paste-solid with time, with or without external heat, in the presence of water.

cure, autoclave—a means for accelerating the cure reaction at elevated temperature and pressure in saturated steam, where reactive siliceous material has been incorporated into the cementitious matrix, such that a hydrothermal reaction takes place between the cement and silica yielding calcium silicate.

cure, normal cure—the method of setting or hardening asbestos-cement products wherein the portland cement is allowed to hydrate at atmospheric conditions of pressure, preferably under conditions to inhibit water loss.

curing agent—an additive incorporated in the furnish of asbestos-cement products resulting in modified chemical activity between the cementitious components with an increase or decrease in the rate of cure.

deflection—the linear distance that a test specimen bends at the center from no load to stated load when loaded as a beam.

density—mass per unit volume, usually expressed in g/cm^3 or lb/ft^3 .

drawings, *n*—*in pipe laying*, drawings prepared by the purchaser to show the location and details for the construction of the pipeline and appurtenances.

Dutch or Scotch Method—a method of application for asbestos-cement roofing shingles which are rectangular in shape and lap at the top and one side to form either a square or rectangular pattern.

efflorescence (bloom)—a white powdery substance occurring on the surface of asbestos-cement products and caused by the migration of soluble salts, followed by precipitation and carbonation of calcium hydroxide to the surface followed by an atmospheric carbonation.

engineer, *n*—*in pipe laying*, the person, firm, corporation or government agency acting for the owner as his duly authorized agent in the designing and engineering of the project.

filler—an inert inorganic material used as an extender or diluent in the furnish of asbestos-cement which does not add to the cementitious value of the cement.

fitting, *n*—*for pipes*, component such as wyes, tees, and adaptors for use in laying asbestos-cement pipe, such that, when properly installed yields as an assembly equivalent in serviceability and strength to the pipe sections.

fitting, *n*—*for conduit*, component such as adapters, reducers, increasers, bends and bell ends, for use in laying asbestos-cement conduit and made to such dimensions as will provide equivalent strength and silt-tight joints when assembled with the conduit.

flat sheets, Type F (flexible)—an asbestos-cement flat sheet

⁷ See ASTM STP 834, available from ASTM Headquarters.