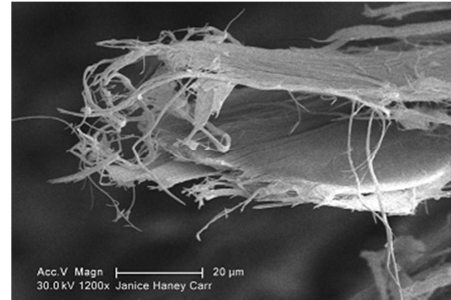


Serpentine White Asbestos

Chrysotile is obtained from serpentinite rocks which are common throughout the world. Its idealized chemical formula is $Mg_3(Si_2O_5)(OH)_4$. Chrysotile fibers are curly as opposed to fibers from amosite, crocidolite, tremolite, actinolite, and anthophyllite which are needlelike.



Chrysotile, along with other types of asbestos, has been banned in dozens of countries and is only allowed in the United States and Europe in very limited circumstances. Chrysotile has been used more than any other type and accounts for about 95% of the asbestos found in buildings in America. Applications where chrysotile might be used include the use of joint compound. It is more flexible than amphibole types of asbestos; it can be spun and woven into fabric. The most common use is within corrugated asbestos cement roof sheets typically used for outbuildings, warehouses and garages. It is also found as flat sheets used for ceilings and sometimes for walls and floors. Numerous other items have been made containing chrysotile including brake linings, cloth behind fuses (for fire protection), pipe insulation, floor tiles, and rope seals for boilers.[citation needed]

Amphibole Brown Asbestos

Amosite, is a trade name for the amphiboles belonging to the Cummingtonite - Grunerite solid solution series, commonly from Africa, named as an acronym from Asbestos Mines of South Africa. One formula given for amosite is $Fe_7Si_8O_{22}(OH)_2$. It is found most frequently as a fire retardant in thermal insulation products and ceiling tiles.



Crocidolite Blue Asbestos

Crocidolite, is an amphibole found primarily in southern Africa, but also in Australia. It is the fibrous form of the amphibole riebeckite. One formula given for crocidolite is $Na_2Fe_2+3Fe_3+2Si_8O_{22}(OH)_2$. Notes: chrysotile commonly occurs as soft friable fibers. Asbestiform amphibole may also occur as soft friable fibers but some varieties such as amosite are commonly straighter.



All forms of asbestos are fibrillar in that they are composed of fibers with widths less than 1 micrometer that occur in bundles and have very long lengths. Asbestos with particularly fine fibers is also referred to as "amianthus". Amphiboles such as tremolite have a crystal structure containing strongly bonded ribbon like silicate anion polymers that extend the length of the crystal. Serpentine (chrysotile) has a sheet like silicate anion which is curved and which rolls up like a carpet to form the fiber.



Other materials

Other regulated asbestos minerals, such as tremolite asbestos, $\text{Ca}_2\text{Mg}_5\text{Si}_8\text{O}_{22}(\text{OH})_2$; actinolite asbestos, $\text{Ca}_2(\text{Mg, Fe})_5(\text{Si}_8\text{O}_{22})(\text{OH})_2$; and anthophyllite asbestos, $(\text{Mg, Fe})_7\text{Si}_8\text{O}_{22}(\text{OH})_2$; are less commonly used industrially but can still be found in a variety of construction materials and insulation materials and have been reported in the past to occur in a few consumer products.

Other natural and not currently regulated asbestiform minerals, such as richterite, $\text{Na}(\text{CaNa})(\text{Mg, Fe}^{++})_5(\text{Si}_8\text{O}_{22})(\text{OH})_2$, and winchite, $(\text{CaNa})\text{Mg}_4(\text{Al, Fe}^{3+})(\text{Si}_8\text{O}_{22})(\text{OH})_2$, may be found as a contaminant in products such as the vermiculite containing zonolite insulation manufactured by W.R. Grace and Company. These minerals are thought to be no less harmful than tremolite, amosite, or crocidolite, but since they are not regulated, they are referred to as "asbestiform" rather than asbestos although may still be related to diseases and hazardous. [

Specific products

Serpentine group

Serpentine minerals have a sheet or layered structure. Chrysotile is the only asbestos mineral in the serpentine group. In the United States, chrysotile has been the most commonly used type of asbestos. According to the U.S. EPA Asbestos Building Inspectors Manual, chrysotile accounts for approximately 95% of asbestos found in buildings in the United States. Chrysotile is often present in a wide variety of products and materials, including:

- drywall and joint compound
- plaster
- mud and texture coats
- vinyl floor tiles, sheeting, adhesives
- roofing tars, felts, siding, and shingles
- "transite" panels, siding, countertops, and pipes
- popcorn ceilings, also known as acoustic ceilings
- fireproofing

- caulk
- gaskets
- packing, a system for sealing a rotating shaft
- brake pads and shoes
- clutch plates
- stage curtains
- fire blankets
- interior fire doors
- fireproof clothing for firefighters
- thermal pipe insulation
- filters for removing fine particulates from chemicals, liquids, and wine
- dental cast linings
- HVAC flexible duct connectors
- drilling fluid additives

A household heat spreader for cooking on gas stoves, made of asbestos (probably 1950s; "Amiante pur" is French for "Pure Asbestos")

In the European Union and Australia it has recently been banned as a potential health hazard[21] and is not used at all. Japan is moving in the same direction, but more slowly. Revelations that hundreds of workers had died in Japan over the previous few decades from diseases related to asbestos sparked a scandal in mid-2005. Tokyo had, in 1971, ordered companies handling asbestos to install ventilators and check health on a regular basis; however, the Japanese government did not ban crocidolite and amosite until 1995, and a full-fledged ban on asbestos was implemented in October 2004.