Adhesives

Years Produced:
1900s - 1980s

Asbestos-containing adhesive was commonly used to help bond carpet, flooring and ceiling tiles in buildings built prior to the 1980s. It was also used to patch and seal joints on boilers and pipes in U.S. Navy ships. Asbestos was used in these products because it created a strong bond to a variety of surfaces that could withstand extreme heat and even fire.

History

At A Glance

- **Places Used:** Flooring, wallpaper, HVAC systems, stoves, boilers and construction materials in houses, schools, commercial buildings and ships

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Toxicity: Low

Asbestos Use Banned: No

Friable: No

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Asbestos has been used in adhesives since the early 1900s. One of the first products was a fibrous adhesive created by the Philip Carey Manufacturing Company in 1906. Since then, they have been used in a number of industries, often with vinyl flooring and wallpaper applications. One of the most famous brands is Gold Bond. This brand was released in the 1950s by National Gypsum Company and became one of the standard adhesives used in the construction industry.

The majority of liquid non-roofing asbestos adhesives are produced using bagged asbestos that is dumped into a fluffing machine to separate the fibers. Then, resins or solvents are added to the fibers in a batch-mixing tank along with any pigments or fillers. The mixtures are then packaged in metals pails, smaller containers or tubes.

By 1985, there were 51 companies running 66 plants nationwide. About 9.6 million gallons of

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asbestos non-roofing adhesives, sealants and coatings were produced. During the mid-'80s, the use of asbestos in these products declined because of rising insurance costs and lawsuits associated with asbestos diseases. By the end of 1986, 21 of the 51 companies stopped producing these products.

The various types of adhesives known to contain asbestos include:

- Asphaltic cutback adhesive: This is black in color and is usually found beneath vinyl tiles and flooring. Asbestos was mixed with this product to make it more durable.
- Cement adhesive: This is also called furnace cement or stove cement and is a type of joint compound and adhesive used in areas exposed to extreme heat. Furnace cement may be used in boilers, stoves, chimneys, kilns, refractories and manufacturing plants.
- Duct adhesive: Commonly available in the form of tape (similar to duct tape) and sprayable adhesive, this product was often used in HVAC systems to prevent cool or warm air from escaping and affecting the temperature of a climate-controlled home or building.

- Emulsion adhesive: This is a synthetic form that was used to bond synthetic laminates, like roofing or floor tiles, to wood and timber.

- Fibrous adhesive: This liquid form was typically applied with a brush or sprayer. Through the years, fibrous forms of asbestos-contaminated adhesive often broke down, which generated dust. The dust created by the crumbling fibrous adhesive often allowed toxic asbestos particles to enter the air, where they presented a serious health hazard to individuals nearby.

- Lagging adhesive: This water-based product was used in heating and cooling systems to seal ducts and ventilation corridors against the leakage of temperature-treated air.

- Mastic adhesive: Made from sticky resin of the mastic tree, this type is available in a variety of forms, including liquid and glue. It was commonly used in the construction and heating and air industries.

-

Seals: Seals are used to prevent leaking in roofing materials by joining roofing shingles together. Seals, or packing, protect the roofs of homes and other structures against high temperatures and caustic substances. Roof seals prevent leaking and weather damage and have been used to protect against bleaching, cracking, UV exposure and rain damage.

Several companies manufactured asbestos adhesives, including

- 3M (Minnesota Mining and Manufacturing Company)
- American Biltrite
- Amtico Floors
- A.P. Green Industries
- Armstrong World Industries
- Asbestos Corporation, Ltd.
- Celotex Corporation
- Crown Cork and Seal
- Cogoleum Corporation

- GAF Corporation
- Garlock Packing Company
- Johns Manville
- Mobile Oil Corporation
- National Gypsum Company

Some of the individual adhesive products made by these manufacturers include:

Product	Years Produced	Percent Asbestos
Armstrong S-89 Adhesive	1965-1983	N/A
Armstrong S-90 Adhesive	1934-1983	N/A
Atlas Stove & Furnace Cement	N/A	N/A
Carey Fibrous Adhesive	1906-1984	85%
Empire Ace Fibrous Adhesives	1959-1984	18% chrysotile

Product	Years Produced	Percent Asbestos
J-M Fibrous Adhesive Cement	1887-1981	20% chrysotile
Crown Coat Cement	1935-1976	45% chrysotile
Gold Bond Laminating Adhesive A	1970-1974	15% chrysotile

Dangers

The adhesive materials used in numerous homes, schools and commercial buildings may have contained between 1 and 25 percent asbestos, depending on the type and the purpose for which it was used. These products can become hazardous when the asbestos fibers are released into the air. This usually only occurs when the adhesives break down over time. Additionally, during renovation, demolition or regular construction, these materials can also be damaged. Asbestos-containing seals may wear down and can flake or peel away.

Though the use of several asbestos products declined in the 1980s because of serious health and safety concerns, the mineral can still be found in some adhesive agents used in homes and commercial buildings today. In Navy ships,

cement adhesive was often used to repair boilers, putting Navy veterans at risk. The production process for adhesives created a large amount of dust because of the mixing of raw, loose fiber. Also, while many adhesives are in liquid or paste form, cement adhesives may come in powdered form and are mixed by hand before use. The mixing process also creates dusty conditions.

Construction workers and those who worked in the factories that produced this product are at the highest risk, but other occupations at risk for asbestos exposure from adhesives include:

Occupations at risk for asbestos exposure from adhesives:

- Adhesive factory workers
- Construction workers
- Demolitions workers
- Flooring installers
- HVAC workers
- Maintenance workers
- Office workers
- Professional and do-it-yourself renovators

- Property managers
- Shipyard workers
- U.S. Navy veterans

While many companies have begun using alternatives to asbestos adhesives, their use is not banned in the United States. The only types of adhesive banned by the U.S. Environmental Protection Agency (EPA) are sprayed-on asbestos adhesives containing more than 1 percent asbestos and flooring felt adhesive.

Lawsuits

In one lawsuit involving asbestos adhesive cement, a jury in San Francisco awarded Joseph Garza - a U.S. Navy veteran diagnosed with asbestosis - $1,578,994 in damages. Mr. Garza's wife, Mary, received $400,000 out of that amount for loss of consortium. In addition, the jury awarded Mr. Garza with $10 million in punitive damages because the jury determined that the defendant, Asbestos Corporation, Ltd. acted with malice or oppression.

Mr. Garza served aboard the USS Randall where he was put in charge of the boilers. While lagging the pipes, he used adhesive cement to seal areas

where lagging could not be used. Adhesive cement can either be premixed in a bucket or in unmixed powder form in a bag. Mr. Garza mixed the asbestos-contaminated adhesive cement material with water in a bucket.

After he left the Randall, he was assigned to destroyer USS Agerholm where he did the same work with adhesive cement. During the nearly 10 years he served in the Navy he never wore a protective mask and the cement dust frequently covered his clothes and hair.

Many of the manufacturers of asbestos products have filed bankruptcy and set up millions of dollars in asbestos trusts as part of their reorganization to settle asbestos injury claims. Some of these companies include Johns Manville, National Gypsum, Congoleum Corporation and National Gypsum Company.

Abating the Product

In some cases, the asbestos adhesives holding floor tiles or linoleum may need to be abated. For most products, chemical solvents or amended water (water mixed with chemicals) can be used to abate asbestos adhesives. Check with the manufacturer about using chemical solvents.

Some chemical solvents are not compatible with new adhesives. In the case of asphaltic or black asbestos tile adhesive, solvents can damage the

concrete or wood beneath and leave a residue. Black adhesive should always be tested for asbestos. If it contains asbestos, it should be wetted down and scraped by hand by an asbestos abatement professional wearing protective gear and a HEPA mask.

Never sand or grind adhesives because this can create asbestos dust. Any adhesive that is friable (easily crumbled by hand) or damaged should also be removed by a licensed professional.

Brands

Several brands of adhesive contained asbestos; some of these include:

- 3M Sealers and Wet Adhesives
- A.P. Green Insulation Adhesive
- Armstrong
- Asbestogard Adhesive
- Atlas
- Carey Fibrous Adhesive
- Careytemp Adhesive
- Chesterton Seal
-

Combustion Engineering Fibrous Adhesive

- Diesel-Seal
- Empire Ace
- Foster
- Georgia-Pacific Drywall Adhesive
- Gold Bond
- H.B. Fuller Adhesives
- Johns Manville Asbestogard Adhesive
- Mobil Oil Dum-Dum Masonic Adhesive
- National Gypsum's Gold Bond
- Nico-seal
- Pecora Asbestos Furnace Cement
- Sur-seal
- Uniroyal B.F. Goodrich Adhesives

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Construction Mastics & Gunning Mix

Years Produced: 1920s - Present

Mastics and gunning mix are building materials used to repair or fill industrial materials such as furnaces, tile or flooring. Manufacturers added asbestos to these materials to improve their binding strength and heat and chemical resistance. Mastic is paste-like cement that is used as an adhesive, sealant and joint-filler. Gunning mix is a type of paste applied to metals, plastics, wood or masonry as a repair compound. It may also be used to smooth pitting, rough surfaces or irregularities that may occur in equipment lining. This mix is

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usually applied using a caulk gun or similar pump gun.

History

At A Glance

- **Places Used:** Ships, homes, offices, boilers, furnaces, steel mills, factories
- **Toxicity:** Medium
- **Friable:** No

Adhesives like mastic and gunning mix have been used for hundreds of years, but the use of modern construction mastics and gunning mix began in the early 1900s. Many new plastics and rubbers were synthetically produced and several new adhesive products were developed for use in the construction industry.

Many of these mixes were produced for use during World War II. Adding synthetic rubber and other fibers to these mixes allowed them to be more flexible and strong. Asbestos was added to these adhesives to make them resistant to extreme temperatures and chemicals.

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Construction mastic may be used in residential homes or commercial buildings in areas such as:

- ✔ Under floor tiles
- ✔ Ceiling tiles
- ✔ Acoustical tiles
- ✔ Roofing
- ✔ Walls
- ✔ Windows

Gunning mix is commonly used to fill in gaps or spaces in the surfaces of the following equipment:

- ✔ Steel furnace lining
- ✔ Hulls
- ✔ Storage tanks
- ✔ Sonar domes
- ✔ Pump casings

After the use of asbestos declined because of health concerns in the 1980s, companies began using alternatives to asbestos in their construction mastic and gunning mix products.

Companies that manufactured construction mastics and gunning mix include:

- 3M (Minnesota Mining and Manufacturing Company)
- Amchem, Inc. (Benjamin Foster Company)
- Harbison-Walker Refractories Company
- Insul-Mastic Corporation of America
- North American Refractory Company
- Owens-Corning Fiberglass Corporation
- Johns Manville

Dangers

The National Emission Standards for Hazardous Air Pollutants considers construction mastic as a Category I non-friable asbestos-containing material. This classification indicates that mastic contains 1 percent or more asbestos and may emit asbestos fibers if disturbed.

When working with asbestos-containing mastic and gunning mix, the following activities may cause it to release fibers:

- Grinding
- Sawing
- Drilling

- Cutting
- Abrading
- Renovating
- Demolition

Gunning mix was often made with vermiculite and aluminum. The vermiculite used in gunning mix may be contaminated with asbestos. Before the mix is made into a paste, it comes in powder form and is packaged in bags. When bags are opened, asbestos fibers easily become airborne while gunning mix is measured and mixed.

Construction workers who install, remove, repair or perform other maintenance work may have been exposed to asbestos in mastics and gunning mixes. Workers in the factories that produced these products were also exposed asbestos on a daily basis.

Occupations that are at risk of exposure from mastics and gunning mixes include:

- Steel mill workers
- Power plant employees
- Engineers
- U.S. Navy veterans

- Shipbuilders
- Maintenance workers
- Carpenters
- Flooring installers

As a result of asbestos exposure from mastics and gunning mixes, a number of lawsuits have been filed against several manufacturers of these products.

Lawsuits

In the 1990s, two engineers filed lawsuits against the maker of NARCO Lite Gunning Mix, North American Refractory Company (NARCO). Frederick Moss and Martin Easter were exposed to high levels of asbestos dust when products were mixed. Witnesses testified that a number of NARCO products, including the gunning mix, released a high level of asbestos dust. No workers were wearing respiratory protection.

As a result of the asbestos exposure, both Moss and Easter developed mesothelioma. Moss worked as an engineer from 1946 to 1988 at Alabama Power Company. Easter was an engineer with U.S. Steel from 1941 to 1970. The jury found North American Refractory Company liable and awarded $7 million dollars to Moss,

Easter and a third plaintiff who suffered from asbestosis.

The amount of lawsuits forced NARCO into bankruptcy and when it emerged from bankruptcy in 2008, the North American Refractories Company Asbestos Personal Injury Settlement Trust was created to pay future asbestos claims. The trust was funded with $6.32 billion.

Abating the Product

Asbestos-containing construction mastic and gunning mix may be applied to a variety of household products such as floor tiles or roofing materials. Some states allow homeowners to abate mastic and gunning mix that is whole and intact, but this is not advised unless the homeowner is fully prepared to take all the legal and safety precautions. Mastic and gunning mix that has been applied to insulation board or lagging should be removed by a certified asbestos abatement contractor.

Keep in mind that many states require homeowners to use professional, trained contractors when removing asbestos products. The EPA also recommends that only licensed, trained professionals abate asbestos materials. Asbestos abatement professionals also prevent homeowners from paying hefty fines if they break federal or state asbestos abatement regulations.

Homeowners can use the following guidelines to ensure professionals are adhering to laws and regulations when removing asbestos-containing mastics and gunning mixes.

Hired asbestos abatement professionals should:

- ✔ Remove all furniture or personal items from the room
- ✔ Cover nearby objects with sheeting and seal off the space to avoid contamination
- ✔ Wear proper safety equipment (HEPA respirator, coveralls, gloves, shoe protectors and eye protection)
- ✔ Scrape off mastic that has been softened through heating or applying a solvent material
- ✔ Avoid creating dust or scattering pieces of mastic (wetting the material reduces dust)
- ✔ Wipe down surfaces and clean the area with a HEPA vacuum
- ✔ Seal debris in polythene bag and dispose of the materials in an asbestos-approved waste location

Brands

Some brands of these products include:

- ✔ Castable Mix 204
- ✔ H-W Lightweight Castable #10
- ✔ NARCO Aerogun
- ✔ NARCO Lite Castable
- ✔ NARCO Lite Gunning Mix
- ✔ Owens-Corning Type II Mastic
- ✔ Steelplant Castable B

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Ductwork

Connectors & Flexible Duct Connectors

Years Produced: 1838-1950s

Home and buildings come equipped with ducts that circulate air through pipes and channels. The circulated air provides heating, ventilation and air conditioning. Air system ductwork and machinery utilizes special connectors to reduce sound and movement within the duct system, known as ductwork connectors, flexible duct connectors and gaiters.

History

At A Glance

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- **Places Used:** Everywhere
- **Toxicity:** Company Names
- **Asbestos Use Banned:** No
- **Friable:** Not if intact

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Asbestos ductwork systems were tested as early as 1938 with Johns Manville writing about their abilities in the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) Journal. In 1951 the National Fire Protection Agency's codes recommended flexible connections using asbestos just as air conditioning systems were starting to be popular and affordable for homes.

Flexible ductwork connectors look like thin strips of bendable material with a variety of sizes contingent upon the specific air system. Manufacturers often make this bendable material from canvas or woven cloth, which works to reduce the sounds of rattling and vibration. Flexible ductwork connectors withstand varying pressure conditions and connect duct joints through riveting to metal or clips.

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During the mid-1940s and 1950s, manufactures used asbestos fiber in the material for ductwork connectors. Once damaged, these asbestos fibers can be emitted into air, impairing the health of those who have been in proximity or direct contact with connectors.

Ductwork material possibly contaminated by asbestos includes:

- ✔ Vinyl
- ✔ Fiberglass
- ✔ Corrugated paper
- ✔ Flexible ducting
- ✔ Metal
- ✔ Plastic

Asbestos-containing ductwork in houses and buildings may exist in the following spaces:

- ✔ Floor cavity
- ✔ Vertical chases
- ✔ Crawl space
- ✔ Attached garage
- ✔ Drop-down ceilings
- ✔ Mechanical Rooms

✔ Attic

Manufacturers of ductwork products contaminated with asbestos include Duro-dyne Corporation, Celotex Corporation, Nicolet, Inc., Grant Wilson, Inc., Fuller H. B. Company, Manville Corporation and Turner & Newall.

Dangers

Workers may encounter asbestos fibers released into the air through actions such as repairing, cutting, tearing, installing, removing or disturbing ductwork connectors. Wear from time and temperature changes can deteriorate ductwork, causing fibers to become friable, or easily crumbled into dust or small particles.

Ductwork systems may contaminate the air by circulating disturbed asbestos fibers from connectors, endangering all occupants. Duct installers, sheet metal mechanics, construction workers, air ventilation repairmen, remodelers and homeowners may be exposed to duct connectors containing up to 50 percent chrysotile asbestos.

Lawsuits

A number of people who worked with asbestos-contaminated ductwork developed diseases decades later and held the manufacturers liable in court. For example, Genaro Garcia was employed in the sheet metal industry, using Duro-

Dyne's flex HVAC duct connectors and duct sealers, which contained asbestos. Garcia developed peritoneal mesothelioma, which required two years of chemotherapy before the cancer went into remission. In 2005, a San Francisco jury awarded Garcia nearly $2 million dollars in medical expenses and damages.

Timothy Hedgecorth encountered asbestos in duct insulation of a building that was remodeled by Missouri Pacific Railroad Company, owned by Union Pacific. Hedgecorth worked for a year in the building, around pipes and insulation in worn condition and while the ceiling was removed, dust covered the area. In 2000 Dr. Jill Ohar diagnosed Hedgecorth with asbestosis. In 2002 a court found Union Pacific responsible of for 80 percent of the damages, requiring them to pay $240,000,000.

Brands

Popular brands of asbestos-containing ductwork connectors include:

- Duro-metal-fab
- Econ-o-fab
- Junior
- Flexi duct

- Carey duct
- Conduit

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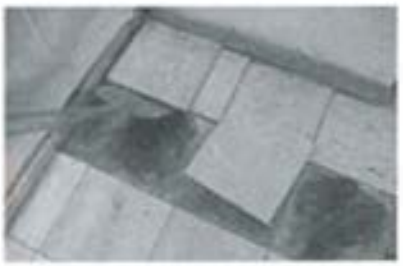
Floor Backing

Years Produced:

Early 1900s - 1980s



Construction workers use floor backing, also referred to as felt, for buildings and houses. Floor backing, is a type of insulation and floor cushioning material. Products manufactured prior to the late 1900s often contained asbestos fibers, as the material resists the effects of humidity, wind and water as well as the effects of extreme heat and cold and abrasive or caustic substances. Manufacturers sold felt-base flooring for a lower price than popular linoleum floor in 1910. Following World War II, workers returning from service occupied the construction industry, building cheaper homes with new flooring materials. These

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low cost housing projects used asbestos as reinforcing agents.

History

At A Glance

- **Places Used:** Building and housing construction
- **Toxicity:** High
- **Asbestos Use Banned:** Yes
- **Friable:** Yes

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By 1980, flooring felt accounted for 45 percent of the asbestos annually used for paper products, replacing previous felt products such as organic felt and jute. Companies added latex or plastisol binding and vinyl sheeting to asbestos to make flooring felt under sheets with patterns like terrazzo.

Companies that manufacture asbestos floor backing include Armstrong World Industries, Inc., Nicolet, Inc., Koppers Co., American Biltrite, Inc.; Amtico Flooring Division, Johns-Manville, Brown Company, Tarkett, Inc., Congoleum Industries,

Celotex Corporation, Raymark Industries, Inc., United States Gypsum Company and Georgia-Pacific Corporation.

Floor backing, which prevents moisture absorption, may be applied to homes, commercial buildings, schools, hospitals and stores in the following materials:

- Tiles
- Vinyl flooring
- Linoleum
- Sheet flooring
- Asphalt floor tiles
- Floor adhesives

Dangers

Intact floor backing may not release asbestos fibers as long as the tile is whole and undamaged, but worn or broken tiles may emit asbestos fibers into the air. Floor backing that has become friable, or able to crumble with the use of hand pressure, endangers health. As long as felt is not disturbed underneath the vinyl tile sheets, the asbestos remains encapsulated, preventing exposure to friable material.

Actions such as cutting, sanding, breaking, sawing and scraping floor backing can disturb asbestos that would normally remain sealed beneath the floor. The backing contains 80 to 100 percent chrysotile asbestos. Removing floor tiles or renovating or demolishing homes may also allow asbestos fibers to become airborne.

Lawsuits

Construction workers, floor installers and homeowners involved in remodeling and flooring projects have filed lawsuits against manufactures of asbestos products after being diagnosed with illnesses like mesothelioma and lung cancer, sending some companies into bankruptcy.

James Butler owned a flooring business and used American Biltrite's asbestos containing flooring materials. Butler developed mesothelioma and passed away before his case went to trial. His widow, Kathleen Rafter, took his case to court where the case was dismissed. However, after Rafter filed an appeal, presenting one of Butler's former employees who witnessed the use of American Biltrite asbestos products, the case was remanded for trial. The results remain unpublished.

Robert Ehret used asbestos flooring felt, putting in floor tiles and sheets for two decades. Ehret worked as a floor covering contractor, cutting the

flooring felt material, which released fibers that eventually caused him to develop mesothelioma. Mesothelioma took Erhet's life before he could go to court, but his wife received an award of $3,322,551 in part from Congoleum, maker of these flooring products.

Brands

Popular asbestos backing products include:

- Hydrocord flooring felt
- Asbestos flooring felt 2897, 2898
- Standard neoprene flooring felt
- Koppers No. 15 felt
- Carey asbestos felt
- Pyrotex felt

Banning Asbestos

Protection agencies restrict manufacturers from selling mainstream asbestos construction items. In 1989 and 1993 the Environmental Protection agency specified that the ban restrict six products made with asbestos, including flooring felt.

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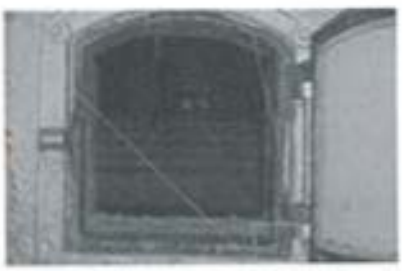
Years Produced:

1866 - 1978



Asbestos insulation was the biggest source of asbestos exposure for workers throughout the 1900s. It was used in homes, buildings, ships, cars and manufacturing facilities, just to name a few. If insulation was needed, asbestos was used. For much of the 20th century, insulators were referred to as "asbestos workers" because they handled the material so frequently.

History

At A Glance

- **Places Used:** Attics, ceilings, walls, and basements in residential and commercial construction,

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as well as around pipes, boilers, furnaces and electrical boxes

- **Toxicity:** High
- **Asbestos Use Banned:** Yes
- **Friable:** Yes

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Insulation helps conserve energy, lower sound volume, reduce electrical conductivity, and retain hot and cold temperatures. Asbestos, a fire-resistant mineral that was cheap, durable and a poor conductor of electricity, naturally became a key ingredient of these products.

Some of the first uses of asbestos insulation occurred in the latter half of the 1800s where hot-temperature pipes were a concern. Heat insulation containing asbestos was used for the first time in 1866. A few years later in 1870, the mineral was mixed with cement for boiler coverings. By 1874, asbestos insulation products reached commercial production and were sold on a mass scale.

Bans on this type of insulation didn't occur until the 1970s. In 1991, the U.S. Environmental Protection Agency (EPA) lifted the ban and made

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it possible for companies to produce these products as long as they contained less than 1 percent asbestos.

One of the biggest manufacturers of these insulation products was Johns Manville. It was also one of the first companies to publicly advertise that asbestos was a beneficial addition to their products during the early 1900s. From the early 1900s to the 1970s, Johns Manville made significant use of the mineral in a variety of its products.

Other asbestos insulation manufacturers in the U.S. were:

- A. P. Green Industries
- A C & S
- Armstrong World Industries
- Celotex
- C. E. Thurston & Sons
- Certainteed Corporation

- Combustion Engineering
- Crown Cork and Seal
- EaglePicher
- GAF Corporation
- Kaiser Aluminum
- Ehret Magnesia
- National Gypsum Company
- Nicolet/Keasbey & Mattison
- Owens Corning
- Owens-Illinois
- Pacor Incorporated
-

Rock Wool Manufacturing

- ✔ Shook & Fletcher
- ✔ The Flintkote Company
- ✔ Unarco
- ✔ Western MacArthur
- ✔ W.R. Grace & Company

Types of Insulation

Insulation can be grouped into five main categories: attic, pipe, block, wall and spray-applied. Asbestos was incorporated into all of these types before regulations limited its use in products during the late 1970s.

Attic

Attic insulation was one of the primary sources for exposure. Zonolite insulation is one of the most recognized asbestos insulation brands and it was primarily used in attics. Heating, ventilation and air conditioning systems located in attics were often insulated using the mineral. Loose-fill attic

insulation presented some of the greatest risks for exposure.

Pipe

Pipe insulation or pipe covering remains one of the most hazardous asbestos products found in homes and buildings. It was often used to control the temperature of hot pipes, especially in shipbuilding. Pipe covering that is found today is usually old, crumbly and therefore very hazardous. Air Cell pipe insulation was a very common type.

Block

Block insulation was applied to concrete blocks of homes, apartments and other buildings as a way to maintain hot and cold temperatures. It was an easy way to provide additional protection from the weather outside.

Wall

Wall insulation is the most important form for controlling the temperature inside a home or building. It was inserted directly behind drywall between the studs. This type usually came in a roll and sometimes required cutting so it could fit, increasing the risk for asbestos exposure.

Spray-Applied

Spray-applied insulation is a simple, inexpensive way to provide thermal protection in attics, walls, ceilings and other spaces. Unfortunately

asbestos was a common additive in these products before regulations limited its use. In 1990, NESHAP prohibited the spray-on application of materials containing more than 1 percent asbestos unless it was encapsulated with a bituminous or resinous binder during spraying.

Valve Insulation Jackets

This product was used for boilers, flanges, pipe work, expansion joints and other temperature-sensitive equipment. They were typically used in industrial or commercial settings, although the energy efficiency they provided made them a useful tool in residential and public facilities, too. In good condition the jackets posed little risk. But as the jackets wore down through everyday wear and tear, asbestos fibers became airborne. Valve insulation jackets with asbestos are no longer made, but the dangers still exist in older buildings where they remain.

Other less common types of asbestos insulation included:

- ✔ Cement
- ✔ Blankets
- ✔ Cloth
- ✔ Paper products
- ✔ Plasters

Dangers

Many of these products were made of about 15 percent asbestos. This hazardous amount placed thousands, if not millions of workers at risk for inhaling toxic amounts of the fibers throughout much of the 20th century. Many have since developed related diseases like lung cancer, asbestosis and mesothelioma.

Some occupations at risk for coming into contact with asbestos insulation include:

- Insulators
- Plumbers
- Electricians
- Pipefitters
- Drywall installers
- Construction workers

Manufacturers of this insulation were especially at risk for inhaling asbestos while on the job. These employees worked directly with the mineral, and their work environment often bore higher-than-normal airborne asbestos levels.

Lawsuits

Because product manufacturers knowingly incorporated asbestos into their products after

learning it was hazardous, thousands have filed suit against the manufacturers as a result of developing an related disease. In Rivera v. Owens Corning Fiberglass Corporation, a verdict of nearly $3.5 million was awarded to the estate of Jesse Rivera, who passed away from mesothelioma cancer. Rivera worked for Owens Corning and was exposed to their Kaylo insulation product from 1963 to 1966.

In another case, a Philadelphia Court of Common Pleas jury awarded $400,000 to the estate of Albert Batten Sr. in September 2008 because he was diagnosed with lung cancer after working 40 years at an Owens Corning plant. During his employment he worked with valve and pipe insulation. Batten smoked a pack of cigarettes a day for 50 years, but the expert pathologist linked his cancer to the asbestos in the products at Owens Corning.

A jury in the same court awarded $6 million in May 2009 to Dean Busatto and his wife after he was diagnosed with mesothelioma. Busatto was a machinist mate in the U.S. Navy from 1956 to 1959, where he worked with asbestos-containing thermal insulation used in jackets made by Melrath Gasket Inc.

Brands

Some brands of asbestos-containing insulation include:

- Air Cell
- Zonolite
- Gold Bond
- HiTemp
- Kaylo
- Limpet
- Marinite
- Monokote
- Superex
- Super 66
- Unibestos
- Silicate
  Catsilite
- Careytemp
- Hy-Temp
- Thermobestos

Zonolite Insulation

One of the biggest manufacturers of asbestos insulation was W.R. Grace & Company, producer of Zonolite insulation. This particular product used naturally occurring vermiculite from a mine in Libby, Montana as a form of insulation. Unfortunately the mine also contained asbestos. It's documented that Zonolite was used in millions of homes as attic insulation and that the Libby mine was the source of more than 70 percent of all vermiculite sold in the United States between 1919 and 1990. An estimated 30 million homes may still have Zonolite in attics, according to the EPA.

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Zonolite Insulation

Years Produced: 1940 - 1980

Zonolite Insulation is the trademarked name of a product sold as attic insulation between the 1940s and 1990s. Consisting of the naturally occurring mineral vermiculite, Zonolite was used for decades to insulate millions of American homes. This attic insulation was typically gray-brown or silver-gold in color, consisting of a pebble-like texture. Part of its popularity within the construction industry stemmed from the fact it was lightweight and fire-resistant. Although all vermiculite does not consist of asbestos, Zonolite insulation was tainted with asbestos. Zonolite may prove harmful to residents because it remains in many attics and homes across the United States

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and the world. Removing Zonolite as a do-it-yourself project should not be attempted because the material contains high amounts of asbestos.

History

At A Glance

- **Places Used:** Attics
- **Toxicity:** High
- **Asbestos Use Banned:** No
- **Friable:** Yes

The history of Zonolite insulation can be traced back to the early years of vermiculite mining. E.N. Alley owned vermiculite mines in Libby, Montana, where much of the mineral was mined during the early to late-1900s.

In 1963, W.R. Grace purchased the vermiculite mine from the Zonolite Company. Some estimates predict that the company processed nearly 200,000 tons of vermiculite each year. The mine was closed in 1990.

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Meanwhile, the executives of W.R. Grace were fully aware of the risks associated with asbestos exposure and did nothing to protect them, which allowed their employees to fall ill. W.R. Grace no longer manufactures asbestos-containing products and focuses on developing chemicals, materials and technologies.

Dangers

Most of the vermiculite used for Zonolite was found to contain some of the most toxic forms of asbestos. According to reports, tremolite asbestos was found in portions of vermiculite, possibly being 10 times more carcinogenic than chrysotile asbestos (which is the more common form).

Some estimates project as many as 35 million U.S. homes, buildings and offices contain asbestos-containing Zonolite Insulation. There is no official account of the number of families and individuals that may be affected by exposure to Zonolite.

The Environmental Protection Agency (EPA) has known about the dangers of the contaminated insulation product for more than a decade, yet has not taken steps to warn and inform consumers who may have Zonolite insulation in their attics and buildings. A home with asbestos-laced insulation could yield mild to moderate

asbestos exposure over many years. This long-term exposure increases the likelihood that a resident of the home will develop mesothelioma, lung cancer or another asbestos-related disease such as asbestosis.

Lawsuits

Individual lawsuits and class action lawsuits were among the many legal claims filed as a result of asbestos exposure to this attic insulation product. With the insulation present in as many as 35 million American attics, legal repercussions for former Zonolite insulation-owner W.R. Grace was once tremendous. In fact, the company was named in over 112,000 asbestos-related lawsuits.

In 2008, W.R. Grace settled a class action lawsuit filed against the company to the tune of $140 million. The payment for this claim, which must be paid out over a 25-year period, will go towards the cost of abatement, property-related damage and general compensation.

Abating Zonolite Insulation

Handling asbestos-containing Zonolite is a dangerous task that must be performed with caution. The EPA and other experts have made certain recommends to any consumer who may own the product.

According to the environmental agency, it is advised that you don't disturb Zonolite insulation material and don't attempt to remove the insulation yourself if you are not a trained professional. Don't store any items in the area where the insulation may be and avoid allowing anyone to go in the attic unless completely necessary. Consult or hire a professional asbestos contractor to assist with any removal, renovations or remodeling of parts of the home that may affect the attic.

> ***Fast Fact:*** *Between 1919 and 1990, 70 percent of the world's supply of vermiculite came from the asbestos-contaminated Libby mine, according to the U.S. Environmental Protection Agency.*

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