

Friable vs. Non-Friable Asbestos

<http://www.asbestos.com/abatement/friable.php>

The legal definitions of "friable" and "non-friable" asbestos clearly depicts the differences between dangerous and safe asbestos-containing materials (ACMs).

- Friable ACM is any material that contains more than one percent asbestos by weight or area, depending on whether it is a bulk or sheet material and can be crumbled, pulverized, or reduced to powder by the pressure of an ordinary human hand.
- Non-friable ACM is any material that contains more than one percent asbestos, but cannot be pulverized under hand pressure.

Materials are slightly more confusing within the classification of non-friable ACM:

- Category I non-friable includes asbestos packings, gaskets, resilient floor covering, and asphalt roofing products.
- Category II is any non-friable ACM not included in Category I.

The difference is which non-friable asbestos materials are "Regulated Asbestos Containing Materials" (RACMs). The legal definition covers:

- All friable ACMs,
- Including category I non-friable asbestos materials that have become friable as the other materials in them have broken down with age and weather.
- Category I non-friable asbestos materials that will be, or have been, subjected to sanding, grinding, cutting, or abrading.
- Category II non-friable asbestos materials that have a high probability of becoming or have become crumbled, pulverized, or powdered by the forces expected to act on the material in the course of demolition or renovation operations.

Any asbestos-containing material can become friable and fall under federal regulation. A material falls under federal regulation when the level of danger becomes too high for someone to be around it. Friable asbestos is dangerous because it releases toxic fibers into the air. Breathing in these microscopic mineral fibers is what makes people sick, even though symptoms may not show for decades. The longer a person is around asbestos fibers, and the more fibers there are in the air, the more likely one will become debilitated or die from them. No one has been able to identify a safe level or period of asbestos exposure, so federal regulations are aimed at protecting everyone in the United States from as many airborne fibers as possible.

The fibrous or fluffy spray-applied asbestos materials found in many buildings for fireproofing, insulating, sound-proofing, or decorative purposes are considered friable. Pipe and boiler insulation found in numerous buildings is also considered friable, though it may be fairly well contained by other fabrics, tape, paint, or plastic.

When non-friable asbestos becomes friable, it is not the asbestos itself that crumbles, but the building materials in which it was used. As clay or other minerals age and wear, they break down and release the more-durable asbestos fibers. Burning any ACM, such as wallboard, asbestos papers, or ceiling tiles also releases asbestos fibers and changes the classification to friable and regulated. Cutting or drilling them, especially with power tools, will also release fibers. Anything done to building materials that may raise dust will cause dangers if the materials contain asbestos. Once released, the asbestos fibers are light enough to hang suspended in the air for hours and days, long after other dust from the project has settled.

It is not only intentional disturbances to asbestos-containing materials that make fibers become friable. One example would be trying to seal down acoustic ceiling foam while your children are bouncing balls or banging at the ceiling. The vibrations of a wall-mounted air-conditioner might also make the siding crumble enough for asbestos fibers to be sucked into the house by the unit.

There are two main ways to deal with friable asbestos-containing material without removing it:

- **Enclose it in some airtight material or a solid box**

This could be as simple as a plastic wrapping securely taped over pipe coverings. You can lay a new floor over the old one, or put up new exterior sheathing right over asbestos-cement siding. Use new insulating materials to flatten and contain the old siding. Even loose attic insulation can be contained under plastic, but you should also lay plywood over the rafters to keep from accidentally stepping on the plastic. Pulling it loose re-exposes the asbestos material.

- **Encapsulate it in a material that will solidify and make the asbestos less friable.**

This strategy works only when the surrounding of the ACM is fairly porous. For the first coat, one should use a penetrating material such as shellac, or better yet, a product designed to encapsulate asbestos-containing materials. The chosen material to finish it should be sprayed on rather than rolled or brushed to reduce all possibility of disturbing the asbestos. Neither enclosure nor encapsulation is a workable substitute for removal if the ACM is already breaking down. Use these methods only when the old material is in good repair, or else you may wind up with a more difficult removal job. Removal should be your first option if you plan to make renovations later on that will disturb the asbestos-containing materials.

Here is a general review of what common asbestos-containing materials are friable or not, what conditions can make the difference, and what treatments may let you put off removing material that's in good repair:

- asphalt roofing shingles or roll roofing -generally non-friable, and raise little dust even under renovation, but better to enclose with a new layer; flexible flashings are just as non-friable, but cannot be enclosed.
- roofing felts -generally friable, especially under renovation.
- cement roofing shingles and tiles - non-friable. The Chrysotile Institute, representing Canadian mining and labor interests and governments, asserts that the strong chemical and physical links between asbestos and the asphalt, tar, or cement that forms the matrix for roofing materials prevent the release of asbestos fibers into the air, even under heavy water and wind erosion.
- roof patching cement - as long as it is pliable, needs no attention. If it does dry and crack, you will probably be covering it with new cement anyway, unless you are ready to do the whole roof.
- cement sidings - basically non-friable and stable, especially with layers of paint in place. Be watchful by doors, shrubbery, or the garden hose, or where outdoor sports are liable to result in impact and check frequently and extensively for signs of powdering or brittleness. Enclose under new sheathing and siding, but make sure the nails for the new siding are long enough to go clear through the asbestos siding to the studs. Some fiber-cement boards (without asbestos) are available for small repairs.
- tremolite-containing sand -friable by definition; no alternatives for removal.
- loose or batt insulation -friable; in the attic, enclose with 6-mil plastic nailed to the rafters and covered with plywood. In walls, leave undisturbed unless the wall requires work. Contained asbestos around pipes and electrical equipment are best to remove.
- Insulation board on walls -friable; encapsulate or enclose unless use of the room or planned construction puts it at risk. Avoid cutting, sanding, or scraping without fully wetting.
- pipe coverings - officially friable, but as long as plastic-tape (on corrugated paper) or canvas (on preformed "blanket" wraps) covering is intact, only protection from damage is required; water leakage is the most damaging and the hardest to prevent; enclose paper with tape or plastic;

encapsulate blanket wraps with penetrating spray, but be aware this will make eventual removal more difficult and expensive.

- clay-based plumbing putty - friable; protect from water damage and cutting.
- flexible connections for ventilation ducts - friable, especially if accordion-pleated. It would be best to remove from your air supply.
- fuse-box linings and insulation on electrical wires, in the electrical boxes behind wall switches and plugs, in recessed lighting, and in ceiling fixtures and freestanding lamp sockets - friable paper or cardboard material, but probably needs attention only where it is subject to abrasion and other damage; it would probably be best to replace those sockets.
- vinyl or asphalt floor tiles, sheet flooring -non-friable unless it has paper "felt" fused to the back; enclose with new flooring or leave undisturbed.
- paper "felt" underlayment for flooring - friable; enclose with new flooring.
- mastic adhesives for vinyl floors, carpets, and ceiling tiles - friable; enclose with new flooring; never try to sand off.
- Rubber stair treads and risers - non-friable as long as they are pliable and unbroken, it would be better to remove if the stairs get regular use.
- acoustical and decorative plasters for walls and ceilings - friable; enclose with sprayed-on latex paint or encapsulate using shellac, but take care not to make the material so heavy it peels loose from the underlayment. Never scrape or sand dry.
- spackle or patching compound - friable; enclose in paint; never scrape or sand when dry.
- ceiling tiles and panels - examine closely for friability; encapsulate with sprayed product or enclose non-friable materials in a dropped ceiling, but not a suspended one: air tightness is required against the possibility of the old, asbestos-containing material becoming friable.
- caulking and putties - friable; replace as soon as possible. Avoid scraping when dry.
- millboard or rollboard - friable; spray paint to enclose or encapsulate; never sand, cut, or scrape when dry.
- cement pipes - non-friable; minimally susceptible even to impact, but a coat of sprayed paint would be helpful.
- block insulation - friable; most likely to be replaced within the furnace. Until then, protect from abrasion or impact .
- doors and gaskets on furnaces and wood stoves -easily becomes friable from the heat of the application; replace.
- insulation on heating ducts - mostly friable; encapsulate or enclose, as by building a box. If the insulation is inside the duct, replace the entire unit rather than risk blowing fibers through your home.
- tape and insulation sealing hot-air registers - even if still non-friable, it would be better to replace.
- laboratory and range hoods - probably made of millboard or paper and at least moderately friable; best to replace, especially if there is no exhaust from the unit to the outside.

- in-cabinet ovens and dishwashers (insulation) - mostly nonfriable and well protected from damage, but be aware of it when you remodel.
- small appliances – discard.
- freezers and water heaters - asbestos insulation is usually inside their metal skins, so requires no attention.
- artificial ashes and embers - friable; discard.
- papers (friable) or cement sheets (nonfriable) around fireplaces, wood stoves, and boilers – replace if subject to scraping and wear.
- vinyl wall coverings - non-friable, but do not cut, sand, or scrape off dry; enclose or encapsulate with paint, paneling, etc.