



Mulch

Most mulches help suppress weeds, retain moisture and heat, and can often neaten up a landscape's appearance. Organic mulches such as shredded bark, bark chips and redwood chips are plant-based materials that offer a slow release of nutrients into the soil. It is important to note that because soil organisms use nitrogen as they decompose the mulch, it should be used only on the surface to avoid nutrient deficiencies. Nitrogen eventually returns to the soil as organisms die. For garden areas that are worked annually, it is best to use mulches that break down rapidly, such as rice straw, dried grass clippings or alfalfa.

Organic mulches

Bark/bark chips

- pro: decompose slowly; stays in place; attractive appearance; readily available.
- con: expensive for large areas; large size difficult to walk on. Cedar mulch may reduce ant nests somewhat near dwellings.
- uses: annuals, perennials, shrubs, and trees.
- comments: sold in various sizes; smaller chunks better with smaller plants, but need replacement more often; larger chunks can be applied up to 4–5" deep because of good air circulation and water passes through easily.

Arborist wood chips

- pro: usually free; good weed control; offers some nutrients.
- con: possibly unknown material; raw material.
- uses: excellent for use over cardboard in sheet mulching.

Redwood "gorilla hair"

- pro: holds together on slopes; long lasting; good for windy areas.
- con: hard to work with; potentially unsightly; can mat together and prevent water going through.

Softwood chips/ground pallets

- pro: inexpensive.
- con: possibly unknown contaminants; may support more fungus than bark under warm, wet conditions.
- uses: pathways.

Dyed mulch (usually softwood/recycled wood waste)

- pro: consistent color.
- con: color may not last long; leaches dye and other potential contaminants; black mulch may overheat the soil and harm plants.

Straw

- pro: breaks down quickly; available at feed stores; lacks weed seeds.
- con: informal appearance; can attract rodents that nest in the material
- uses: good for vegetable gardens.



Leaves

- pro: free.
- con: whole leaves can pack or mat and shed water; blow around in wind; possibly only seasonal availability.
- uses: good for naturalistic settings; good for weed control.
- comments: shredded leaves best (use lawn mower or chipper).

Pine needles

- pro: attractive; easily porous; decompose slowly.
- con: flammable.
- uses: perennials, trees and shrubs.
- comments: will not substantially change the pH of soil; apply 2" layer.

Grass clippings

- pro: easily available
- con: potential for herbicide residues from lawns treated with "weed & feed" products or other herbicides; can mat and become impervious to water if applied too thickly.
- uses: good for vegetable, herb and annual gardens.
- comments: allow to dry before using; apply 2" layer; reapply frequently.

Inorganic mulches

Gravel/rock

- pro: long lasting; permanent; good for succulents/rock garden plants.
- con: no nutrient value, absorbs/holds heat so not good for sensitive plants.
- uses: pathways; might place on landscape fabric to prevent downward migration into soil.

Landscape stones/river rock

- pro: many colors, sizes; good for succulents/rock garden plants.
- con: poor weed inhibitor.

Synthetic mulches

Rubber

- pro: shock absorbent.
- con: adds nothing beneficial to soil; can leach chemicals/heavy metals especially if source is recycled tires; flammable.
- Uses: playgrounds (not gardens).

Geo-textiles/fabric

- pro: porous; long-lasting weed control if covered with mulch.
- con: made from petroleum by-products; not biodegradable.

Black plastic

- pro: warms soil; blocks light; suppresses weed germination.
- con: not permeable; restricts air flow; tears and tatters; becomes litter with time.
- uses: good to warm soil before planting warm-weather crops.



Clear plastic

- pro: warms soil better than black plastic.
- con: allows weed growth.
- uses: use for solarization.

Reflective mulches

- pro: possibly repel some insects.
- con: expensive.

Mulch and fire prevention

- Mulch spread over hillsides can reduce fire propagation, prevent erosion, and the growth of weeds and brush in cleared areas for up to several years.
- Coarsely chipped woody materials and prunings from on-site brush removals and vegetation clearing reapplied around hillside homes saves cost of removal, hauling and disposal. Apply 2-4 inches thick in landscape around home sites and 4-6 inches deep on slopes.
- Finely shredded redwood bark (gorilla hair), bark chips smaller than ¼" and pine needles ignite easily. Use only in areas where people will not drop cigarette butts or matches.
- When exposed to fire, thick mulch layers (>2") tend to smolder and are difficult to extinguish.
- Use rock or less-flammable material within 5' of a house if fire danger is a consideration. The most-combustible materials should be used more than 30' from the house in fire-prone areas.
- Store mulch in piles less than 8 feet high and separate out the fines to help prevent spontaneous combustion. Have a water source available. Don't mistake steam from a pile that is composting as smoke.
- Check with your local fire officials for vegetation removal requirements.

How to calculate amount of mulch needed:

- 1 cubic yard will cover 100 square feet to a depth of 3 inches.
- 1 cubic yard = 27 cubic feet. (Mulch is often available in 2- or 3-cubic-foot bags.)
- Use an online calculator available at home improvement or nursery websites.
- (Area in square feet) times (# inches deep) divided by 324 = Cubic yards of mulch needed

References:

Good general mulch info: Bay-Friendly Guide to Mulch :

<http://www.ebmud.com/files/7214/3102/7841/bayfriendlymulchguide.pdf>

Arborist chips: Washington State Univ: <https://puyallup.wsu.edu/wp-content/uploads/sites/403/2015/03/wood-chips.pdf>, <https://research.libraries.wsu.edu/xmlui/bitstream/handle/2376/5262/FS160E.pdf?sequence=2>

Cedar mulch/Argentine ants: <https://www.ncbi.nlm.nih.gov/pubmed/12852626>

Artillery fungus in mulch: <http://www.personal.psu.edu/ddd2/papers/davis-2004-27mulches.pdf>

Fire safety and mulch: http://firecenter.berkeley.edu/docs/CE_homelandscaping.pdf (ANR pub. 8228: Home Landscaping for Fire 7/07), <http://www.ebmud.com/files/7214/3102/7841/bayfriendlymulchguide.pdf>, <http://ucanr.edu/news/?uid=1416&ds=191>