# Guidelines for Writing Compost or Mulch Procurement Specifications

Organic materials such as lawn clippings, landscape trimmings and food scraps make up over 35 percent of disposed materials in California. However, these organic materials can be made into compost and mulch and used in many environmentally beneficial ways. Therefore, State and local agencies can play a vital role in increasing demand for these products.

The purpose of this fact sheet is to assist State and local agency representatives to develop specifications for purchasing compost or mulch for use in landscaping applications, erosion control, weed suppression and other end uses. The target audience includes public works employees; park and recreation employees; building and grounds maintenance managers; and procurement officers. This information also may be useful to business service officers and recycling coordinators.

## Definitions

**Mulch.** While there is currently no statutory nor regulatory definition for mulch, it is commonly defined as a soil covering used to control weeds or erosion; retain moisture in soil; and insulate soil from cold weather. It is also used for aesthetic purposes. Organic materials commonly used for mulch include wood chips, ground up landscape trimmings, shredded bark, coarse compost material, straw, and shredded paper. Nonorganic materials include crushed concrete and brick, stones and gravel, lava rock, and plastic film.

**Compost.** California statute (Public Resources Code, Section 42231) defines compost as the product resulting from the controlled biological decomposition of organic wastes that are source separated from the municipal solid waste stream. Compost feedstock materials include yard and landscape trimmings, agricultural crop residues, paper pulp, food scraps, wood chips, manure, and "biosolids." Compost is often used for enhancing soil structure and building organic matter content; adding nutrients to soil; controlling weeds and dust; and retaining moisture in soil.

## Mulch Specifications

Mulch is often used in the following applications:

- Weed suppression.
- Erosion control.
- Topsoil production.
- Dust abatement.
- Moisture retention in soil.
- Landscape area top-dressing/decoration.
- Playground area cover.
- Hiking and equestrian trail maintenance.

End-use specifications center around application rates. For example, the City of San Diego's *Mulch Guide* includes the following instructions for use of mulch to suppress weeds:

"Spread 1-inch minus or 4-inch minus length (pieces less than 1 inch or less than 4 inches) mulch evenly over bare soil to a depth of 3-4 inches. Replenish annually."

However, the main considerations for a mulch procurement specification concern physical properties. You should write your mulch specification to define the properties you want as follows:

- **Color** (e.g., brown; red; black; green; natural wood).
- **Particle size and consistency** (e.g., less than one, two, or three inches).
- **Contamination** with plastic; glass; metal; rock; paper (e.g. none visible for glass, metal, rock and plastic; and, for paper, less than 0.5 percent by weight or volume).

For a brief description of values and impacts associated particle size and allowable contamination, please see the specification element table at the end of this fact sheet.

In addition, to help keep valuable materials out of local landfills, be sure that the material type you specify is an organic mulch product or demolition material. For example, the recovered materials listed below are often specified:

- Wood chips
- Compost
- Ground up yard trimmings
- Crushed brick or cement

The following example includes elements of both procurement and end use specifications. It specifies the particle size and material type (essentially coarse compost material), and also specifies application rates.

**Example: Mulch specification for use in public works application**

"Greenbook" Standard Specifications for Public Works Construction

American Public Works Association, Southern Calif. Chapter (www.apwasoca.com)

Contact: Edgar Abrenica, 1-888-413-2792

When mulch without further specification is specified, the contractor shall supply Type (A) or Type (B) mulch. Type 12(A) mulch (1" minus in size) and 12(B) mulch (4" minus in size) shall be clean green material that is processed in accordance with California Code of Regulations, Title 14, Chapter 3, Article 7, Section 17868.3, to promote pathogen reduction and weed seed kill. A 3-inch minimum layer of type 12(A) or 12(B) is required for all applications. Type (B) mulch should be used on slopes that are a maximum of 50 degrees (2:1).

## Compost Specifications

It is usually a good idea to talk with one or more potential local suppliers before you write up your final specification for purchase order. Based on the information they provide, you may be able to adjust your specification in a way that satisfies your basic needs.

The physical or chemical properties to include in your specification will depend on the end use you have in mind. Compost is typically used in the following ways:

- Slow-release fertilizer.
- Turf grass top dressing.
- Landscape mulch.
- Soil amendment (to build organic matter).
- Mulch for erosion control.
- Mulch for dust control.

To help you make the right choice for your end use, some suppliers will provide you with recommended end-use application rates and information on key characteristics that you may want to include in your specification. For example, "top dress lawns with a 1/8- to 1/4-inch layer of compost four times a year." Recommended supplier specifications for this end use might include feedstock, organic matter content, carbon-to-nitrogen ratio, and pH.

The example on page 3 is a detailed procurement specification developed by Caltrans for use of compost material in an erosion control application. This specification was developed to minimize potential adverse impacts associated with weed seed germination (i.e., nitrogen depletion from soils), leaching of pollutants into ground and surface waters, odor problems, and unaesthetic appearance due to litter contamination.

When writing a procurement specification, keep things simple and specify a characteristic only if it makes a difference for your purpose. A typical specification usually mentions no more than six characteristics. The summary table at the end of this fact sheet itemizes 15 elements that could be included in a compost specification. The first seven elements are considered most often. The remaining eight elements can be used to further define the compost characteristics for your end use if necessary.

## Need More Information on Testing?

To obtain a Solvita test kit, please contact:

Woods End Research Laboratory, Inc.
P.O. Box 297, Mt. Vernon, ME 04352
Tel: (207) 293-2457
Fax: (207) 293-2488
E-mail: info@woodsend.org
www.woodsend.org

### Standard Special Provision for Compost

Compost shall be derived from green material consisting of chipped, shredded, or ground vegetation or clean, processed, recycled wood products or a Class A, exceptional quality biosolids composts, as required by the United States Environmental Protection Agency (EPA), 40 CFR, Part 503c regulations or a combination of green material and biosolids compost. The compost shall be processed or completed to reduce weed seeds, pathogens, and deleterious material, and shall not contain paint, petroleum products, herbicides, fungicides, or other chemical residues that would be harmful to plant or animal life. Other deleterious material, plastic, glass, metal, or rocks shall not exceed 0.1 percent by weight or volume. A minimum internal temperature of 57°C shall be maintained for at least 15 continuous days during the composting process. The compost shall be thoroughly turned a minimum of 5 times during the composting process and shall go through a minimum 90-day curing period after the 15-day thermophilic compost process has been completed. Compost shall be screened through a maximum 9.5-mm screen. The moisture content of the compost shall not exceed 35 percent. Compost products with a higher moisture content may be used provided the weight of the compost is increased to equal the compost with a moisture content of 35–40 percent. Moist samples of compost on an as-received basis shall be dried in an oven at a temperature between 105°C and 115°C until a constant dry weight of the sample is achieved. The percentage of moisture will be determined by dividing the dry weight of the sample by the moist weight of the sample and then multiplying by 100. Compost will be tested for maturity and stability with a Solvita test kit. The compost shall measure a minimum of 6 on the maturity and stability scale.

## Where Can I Get Additional Information Regarding Compost and Mulch Use Guidelines?

The IWMB maintains an Organics Outlook Web site at www.ciwmb.ca.gov/Organics/ that includes information about where to purchase compost and mulch, and resource-efficient, landscape management practices.

A guidance fact sheet, *Compost: Matching Performance Needs with Product Characteristics* (pub. #443-00-005), for assessing compost quality is now available. Download a copy at our online Publications Catalog at www.ciwmb.ca.gov/Publications/default.asp?pubid=807, or call 1-800-CA-WASTE (Calif. only) or (916) 341-6306 for a hard copy.

In addition, the United States Composting Council (USCC) publishes a *Field Guide to Compost Use* that also provides instructions for compost and mulch uses. The CIWMB has a limited number available at no cost; for a copy please call (916) 341-6585. You can also contact USCC at:

200 Parkway Drive South, Suite 200
Hauppauge, NY 11788
(631) 864-2567
www.compostingcouncil.org/

## Where Can I Find Suppliers of Compost and Mulch?

The Board maintains a list of compost suppliers at www.ciwmb.ca.gov/Organics/Products/. Or call (916) 341-6587 to request a hard copy of the list.

The California Compost Quality Council (CCQC) maintains a list of registered compost facilities. Compost producers who meet the criteria established by CCQC can display the CCQC registration seal on their product. With CCQC registration, end users can have extra confidence in the consistency of the compost products they use. For more information about CCQC, please visit its Web site at www.ccqc.org

## Compost Specification Elements

| Characteristic | Associated Value | Comments |
|---|---|---|
| 1. Particle Size | < 1"; 2"; etc. | Porosity affects air and water infiltration. Smaller particles have more available nitrogen. |
| 2. Salt Concentration | Mmhos/cm | High salt concentrations, > 4.0 mmhos/cm, can be harmful to seeds and plants. |
| 3. Stability/Maturity | Stable or mature (i.e. when the organic material stops decomposing) | In mature compost, nitrogen is available to plants; and there is less potential for odor problems. The CIWMB is currently developing a maturity index through a contract with an industry association to help define what constitutes mature compost. This index should be available by summer 2000. |
| 4. Feedstock Materials | Specify ingredients | The type of feedstock used can help you decide what product best suits your needs. Typical feedstock's include landscape/yard trimmings; grass clippings; food scraps; bio-solids; and agricultural crop residues. |
| 5. Nutrient Content | N-P-K; Ca; Mg; S; Bo; & others | Compost provides slow-release nutrients, more efficient plant uptake; and much lower rates of fertilizer leaching |
| 6. Trace Contaminants | Metals (Lead,<br>Mercury, Etc.) | Product should meet US EPA, 40 CFR 503 regulations. Compost also binds up heavy metals. |
| 7. pH | Acid/base | Helps balance the pH of your soil. Compost helps buffer soil toward neutral (pH=7). |
| 8. Visible Contaminants | Specify inert:<br>Glass<br>Plastic<br>Paper | Amount of glass, paper, plastic, etc., visible in the final product; ideally should be none visible. Cal Trans specification requires < 0.1 % by weight or volume. |
| 9. Moisture Content | 35-55% (40-50% preferred) | If you purchase by weight, wet compost means you're paying to haul excess water. Very wet compost can cause odor problems, while dry compost can be dusty and irritating to work with. |
| 10. Organic Matter Content | 30-70% by dry wt. (50-60% preferred) | Compost improves soil structure and water holding capacity. |
| 11. Certifications | California Compost Quality Council (CCQC) | Requires that registered suppliers disclose feedstock and specified parameters. The supplier must also have a quality assurance/quality control program. Buyers *can* have greater confidence regarding the consistency and appropriateness of the compost product they buy for intended end uses. |
| 12. User Guidelines | Application rates<br>Vol/area | Ask suppliers to provide guidelines on how to apply their product. CIWMB is developing informational fact sheets for specific landscaping applications; these should be available by Spring 2000. Check the Board's web site at www.ciwmb.ca.gov/organics/. |
| 13. Bulk Density | 800 lbs./cubic yard | Depends on feedstock and moisture content, typically in range of 700 – 1200 lbs./cubic yard. Affects product handling, transportation and application. |
| 14. Carbon/Nitrogen Ratio | C:N less than 20 | C:N ratio is sometime used as a measure of stability. Ratio of less than 20:1 is likely to indicate that the compost is stable. |
| 15. Other | Color, smell | Should have an "earthy" odor that is not unpleasant. |

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