

This is a guidance document with sample specification language intended to be inserted into project specifications on this subject as appropriate to the agency's environmental goals. Certain provisions, where indicated, are required for U.S. federal agency projects. Sample specification language is numbered to clearly distinguish it from advisory or discussion material. Each sample is preceded by identification of the typical location in a specification section where it would appear using the SectionFormat™ of the Construction Specifications Institute; the six digit section number cited is per CSI Masterformat™ 2004 and the five digit section number cited parenthetically is per CSI Masterformat™ 1995.

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SECTION 01 78 23 (SECTION 01830) – OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes:
1. Requirements and procedures for operating the facility after commissioning.

1.2 QUALITY ASSURANCE

- A. Coordinate with Section 01 91 00 (01810) – Commissioning. The Commissioning Agent shall review the Operation and Maintenance Manuals for systems that were commissioned.
- B. Coordinate with Section 10 81 50 (10295) – Integrated Pest Management (IPM).

PART 2 - PRODUCTS

2.1 OPERATING AND MAINTENANCE MANUALS

- A. Inspection Requirements: Describe inspection schedule and procedures necessary to promote durability of materials, components, and systems. Include the following:
1. Exterior: Inspection of exterior for assessment of possible water ingress. Indicate points of potential concern.
 2. Equipment: Seasonal inspection of equipment. Coordinate with Section 01 91 00 (01810) – Commissioning.
- B. Environmental Requirements:
1. Identify environmentally preferable materials and systems incorporated into the Project. Include: product model; manufacturer's name, address, phone, and website; and local technical representative, if any.

SPECIFIER NOTE:

The marking system indicated below is intended to provide assistance in identification of products for making subsequent decisions as to handling, recycling, or disposal.

Society of Plastic Inc. resin codes are easily recognized by the consumer. These are the numerical designations within chasing arrows. At the present time there is not a separate resin code for PLA (bio-resins). PLA (bio-resins) are classified as #7 (Other). Nor are there specific indications for additives or blends. The Society of Plastics resin code symbols are common for plastic packaging materials; for example:



ASTM D1972 standard specifies a resin code that provides substantially more information regarding the plastic resin, including blends and additives. ASTM D1972 labeling protocols are not common for packaging materials; however, they are recognized and utilized in the construction industry and other industry sectors. Many construction products are labeled according to ASTM D1972. Such detailed information is anticipated to be necessary data for future deconstruction (and recycling) efforts. Therefore, plastic construction products and plastic components of assemblies should be labeled in accordance with ASTM D1972. Example for a polypropylene containing 30 mass percentage of mineral powder use:

>PP-MD30<

- a. Verify that plastic products, including plastic components in assemblies, to be incorporated into the Project are labeled in accordance with ASTM D1972. Where products are not labeled, provide product data indicating polymeric information in Operation and Maintenance Manual.
 - 1) Products made from compositions containing a single filler, reinforcing, or other modifying material in a concentration of more than one percent by mass shall be marked with the abbreviated term for the polymer, followed by a dash, then the abbreviated term or symbol for the additive, with its percentage by mass, arranged as shown in the example and set off with brackets. For example, a polypropylene containing 30 mass percentage of mineral powder use would be labeled: >PP-MD30<
- b. Describe maintenance procedures associated with environmentally preferable materials and systems. Provide cleaning recommendations in accordance with ASTM E1971 and the approved Integrated Pest Management (IPM) plan.
 - 1) Include potential environmental impacts of recommended maintenance procedures and materials.
 - 2) Include potential indoor air quality impacts of the recommended maintenance procedures and materials.

SPECIFIER NOTE:

Changes to the material properties of a plastic within a compost unit can affect the degradation of other materials and the resulting composition and appearance of the composed material. Edit below to suit location and project.

- 3) Where the proposed maintenance procedures incorporate composting of plastics, assess the potential effect of each type of plastic to be included on the composting process in accordance with ASTM D6002.

SPECIFIER NOTE:

Identify special maintenance agreements. Maintenance agreements are standard practice in the building industry. Take-back programs refer to programs in which the product manufacturer “takes-back” scrap material and/or packaging associated with its product. Green leasing is a new, but dramatic shift in the traditional perspective of leased equipment. Under a green lease, the product manufacturer is responsible for the disposition of the product at all times. Thus, when the customer no longer requires the

use of the particular product or requires an updated model, the manufacturer is obligated to reclaim it and refurbish it or disassemble it for recycling as appropriate. This approach necessitates a revision of administrative services. It also requires a basic redesign of products in order to allow for future disassembly and upgrade. This has the potential to be cost effective for manufacturers and customers alike. It is also extremely resource efficient. The following are examples.

- c. Identify **[maintenance agreements] [take-back programs] [green leases]** and appropriate contact information for the following:
 - 1) Carpet.
 - 2) Ceiling Tile.
 - 3) Office Equipment.
 - d. Material Safety Data Sheets: Include MSDSs as specified in Section 01 57 19.11 (01352), Section 01 67 00 (01611) and in Divisions 02 – 49 (2-16).
2. Develop environmental management programs for the facility as follows:
- a. Waste management program: Develop in accordance with ASTM E1609. Maximize use of source reduction and recycling procedures.
 - b. IAQ management program: Provide for evaluation of indoor Carbon Dioxide concentrations in accordance with ASTM D6245. Provide for evaluation of VOCs (volatile organic compounds) in indoor air in accordance with ASTM D6345.
 - c. Water management program: Develop a water monitoring program for surface and ground water on the project site in accordance with ASTM D5851 and consistent with the water management program utilized during construction operations.

2.2 OPERATING AND MAINTENANCE TRAINING

- X. As part of operation and maintenance training, provide environmental demonstration and training as specified in Section 01 79 11 (01821) – Environmental Demonstration and Training.

PART 3 - EXECUTION

END OF SECTION