

**CONSOLIDATED RECOVERED
MATERIALS ADVISORY NOTICE
(RMAN) FOR THE COMPREHENSIVE
PROCUREMENT GUIDELINE (CPG)**

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**U.S. Environmental Protection Agency
Office of Resource Conservation and Recovery
(Formerly Office of Solid Waste)
Office of Solid Waste and Emergency Response**

CONSOLIDATED RECOVERED MATERIALS ADVISORY NOTICE (RMAN)

EPA's Comprehensive Procurement Guideline (CPG) designates recycled content products that government agencies should buy. EPA publishes purchasing guidance and recommendations for recycled content levels in Recovered Material Advisory Notices (RMANs) that accompany each CPG, and updates its guidance annually. For the convenience of procurement officials, this document represents a compilation of the five RMANs published by EPA to date. The *Federal Register* citations are as follows:

| | |
|-------------------------|---------------------------------|
| RMAN I: | 60 FR 21386, May 1, 1995 |
| Paper Products RMAN: | 61 FR 26986, May 29, 1996 |
| RMAN II: | 62 FR 60995, November 13, 1997 |
| Paper Products RMAN II: | 63 FR 31214, June 8, 1998 |
| RMAN III: | 65 FR 3082, January 19, 2000 |
| RMAN IV: | 69 FR 24039, April 30, 2004 |
| RMAN V: | 72 FR 52475, September 14, 2007 |

EPA has designated the following items in eight categories:

Paper and Paper Products

Printing and Writing Papers
Newsprint
Sanitary Tissue Products
Paperboard and Packaging
Miscellaneous Paper Products

Park and Recreation Products

Playground Surfaces and Running
Tracks
Plastic Fencing
Park Benches and Picnic Tables
Playground Equipment

Vehicular Products

Re-refined Lubricating Oil
Retread Tires
Engine Coolants
Rebuilt Vehicular Parts

Landscaping Products

Hydraulic Mulch
Garden and Soaker Hoses
Lawn and Garden Edging
Plastic Lumber Landscaping Timbers
and Posts
Compost Made from Recovered Organic
Materials
Fertilizer Made from Recovered
Organic Materials

Construction Products

Building Insulation
Structural Fiberboard
Laminated Paperboard
Cement and Concrete with Coal Fly Ash
Cement and Concrete with Ground
Granulated Blast Furnace Slag
Cement and Concrete with Cenospheres
Cement and Concrete with Silica Fume
Polyester Carpet
Floor Tiles and Patio Blocks
Shower and Restroom
Dividers/Partitions
Consolidated and Reprocessed Latex
Paint
Carpet Cushion
Flowable Fill
Railroad Grade Crossing Surfaces
Modular Threshold Ramps
Nonpressure Pipe

Non-Paper Office Products

Office Recycling Containers
Office Waste Receptacles
Plastic Desktop Accessories
Toner Cartridges
Binders
Plastic Trash Bags
Printer Ribbons
Plastic Envelopes
Solid Plastic Binders
Plastic Clipboards
Plastic File Folders
Plastic Clip Portfolios
Plastic Presentation Folders
Office Furniture

Transportation Products

Temporary Traffic Control Devices
Parking Stops
Channelizers
Delineators
Flexible Delineators

Miscellaneous Products

Pallets
Sorbents
Industrial Drums
Awards and Plaques
Mats
Manual-grade Strapping
Signage
Bike Racks
Blasting Grit

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I. General Recommendations

Part A -- Definitions

As used in this Recovered Materials Advisory Notice:

Act or RCRA means the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as amended, 42 U.S.C 6901 *et seq*;

Federal agency means any department, agency, or other instrumentality of the federal government; any independent agency or establishment of the federal government including any government corporation; and the Government Printing Office;

Person means an individual, trust, firm, joint stock company, corporation (including a government corporation), partnership, association, federal agency, State, municipality, commission, political subdivision of a State, or any interstate body;

Postconsumer material means a material or finished product that has served its intended use and has been diverted or recovered from waste destined for disposal, having completed its life as a consumer item.

Postconsumer material is a part of the broader category of recovered materials;

Postconsumer recovered materials, for purposes of purchasing paper and paper products, is a subset of the broader term recovered materials, as defined in RCRA section 6002(h), and means:

- (1) Paper, paperboard, and fibrous wastes from retail stores, office buildings, homes, and so forth, after they have passed through their end-usage as a consumer item including: used corrugated boxes; old newspapers; old magazines; mixed waste paper; tabulating cards and used cordage; and
- (2) All paper, paperboard, and fibrous wastes that enter and are collected from municipal solid waste;

Procuring agency means any federal agency, or any State agency or agency of a political subdivision of a State, which is using appropriated federal funds for such procurement, or any person contracting with any such agency with respect to work performed under such contract;

Recovered materials means waste materials and byproducts which have been recovered or diverted from solid waste, but such term does not include those materials and byproducts generated from, and commonly reused within, an original manufacturing process.

Part B -- Specifications

EPA recommends that federal agencies review and revise their product specifications with a view to eliminating unnecessary stringency as well as requirements which bear no relation to function in order to allow for the use of recovered materials. Specifications that bear no relation to function should be revised according to the agency's established specifications review procedures. EPA further recommends that, in reviewing an existing specification's provisions pertaining to function, federal agencies refer to existing voluntary standards and research by organizations such as the American

Society for Testing and Materials (ASTM), the American Association of State Highway and Transportation Officials (AASHTO), the Technical Association of the Pulp and Paper Industry (TAPPI), and the American Institute of Paper Chemistry.

Federal agencies that reference Commercial Item Descriptions (CIDs) or appropriate industry standards should continue to reference them when purchasing designated items. However, agencies should review or modify CIDs and industry standards, as appropriate, to be certain that the use of recovered materials is allowed.

Under RCRA section 6002, federal agencies need not revise specifications to allow or require the use of recovered materials if it can be determined that for technical reasons, for a particular end use, a product containing such materials will not meet reasonable performance standards. EPA recommends that federal agencies document such determinations and that the determination be based on technical performance information (including any product testing) pertaining to a specific item or application. EPA further recommends that federal agencies reference such documentation in the contract files for subsequent procurement of the specific item.

In most cases, for the items designated in the CPG, EPA has recovered materials content levels for specific types or grades of items or for certain applications. EPA notes, however, that the intent is not to preclude federal agencies from procuring other types or grades of items, or from using recovered materials content items for other applications. On the contrary, if a new type or grade of a designated item becomes available containing recovered materials or if a federal agency discovers a new application for which recovered materials content is appropriate, EPA encourages the agency to revise its specifications or develop new specifications to allow the use of recovered materials in that type or grade of item or that specific application.

Part C -- Affirmative Procurement Programs

EPA recommends that the Environmental Executive within each major procuring agency take the lead in developing the agency's affirmative procurement program and in implementing the recommendations set forth in this RMAN. Executive Order 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*, was revoked and replaced by Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (72 FR 3919) on January 24, 2007. The basic responsibilities of an Agency Environmental Executive are described in Executive Order 13423. In the absence of such an individual, EPA recommends that the head of the implementing agency appoint an individual who will be responsible for ensuring the agency's compliance with RCRA section 6002 and Executive Order 13423.

RCRA section 6002 requires procuring agencies to establish affirmative procurement programs for each EPA-designated item. EPA recommends that each agency develop a single, comprehensive affirmative procurement program with a structure that allows for the integration of new items as they are designated. Consistent with Executive Order 13423, EPA encourages agencies to implement preference programs for nonguideline items as well, in order to maximize their purchases of recycled-content products and foster markets for recovered materials.

Preference Program: In Section II of this RMAN, EPA provides specific recommendations for procuring agencies to use when purchasing the EPA-designated items. For most of these items, EPA recommends that procuring agencies establish minimum-content standards based on EPA's recommended recovered materials content levels and the procuring agencies' own research. For other items, the use of minimum content standards is inappropriate, and procuring agencies should establish an alternative program, as recommended by EPA.

In addition, EPA recommends that procuring agencies review their procurement practices and eliminate those that would inhibit or preclude the use of an item containing recovered materials. Specific examples of such procurement practices are provided in the item-specific recommendations, where appropriate.

Promotion Program: EPA recommends that procuring agencies include both internal and external promotion in their affirmative procurement programs.

There are several methods that procuring agencies can use to educate their employees about their affirmative procurement programs. These methods include preparing and distributing agency affirmative procurement policies, publishing articles in agency newsletters and publications, including affirmative procurement program requirements in agency staff manuals, and conducting workshops and training sessions to educate employees about their responsibilities under agency affirmative procurement programs.

Methods for educating existing contractors and potential bidders regarding an agency's preference for purchasing products containing recovered materials include publishing articles in appropriate trade publications, participating in vendor shows and trade fairs, placing statements in solicitations, and discussing an agency's affirmative procurement program at bidders' conferences.

Monitoring: EPA recommends that procuring agencies monitor their affirmative procurement programs, in accordance with RCRA section 6002(I)(2)(D), and implement monitoring strategies for the acquisition of goods and services, in accordance with Executive Order 13423, to ensure that they are fulfilling their requirements to purchase items composed of recovered materials to the maximum extent practicable. EPA anticipates that the Federal Environmental Executive and the Office of Federal Procurement Policy will request information from Federal agencies on their affirmative procurement practices. Therefore, EPA recommends that Federal procuring agencies maintain adequate records of procurement that may be affected by the Executive Order and RCRA requirements.

EPA recommends that procuring agencies track their purchases of products containing recovered materials to establish benchmarks from which progress can be assessed. To maintain adequate records on procurement of products containing recovered materials, EPA recommends that procuring agencies choose to collect data on the following:

- The minimum percentages of recovered materials content in the items procured or offered;
- Comparative price information on competitive procurement;
- The quantity of each item procured over a fiscal year;
- The availability of each item with recovered materials content; and
- Performance information related to recovered materials content of an item.

EPA recognizes that a procuring agency may be unable to obtain accurate data for all designated items. However, the Agency believes that in many cases, estimated data will suffice in determining the effectiveness of the agency's affirmative procurement program.

Certification: Certification of the recovered materials content in products is an important mechanism for encouraging the use of recovered materials in finished products. Because each product will be different, EPA recommends that procuring agencies discuss certification with product vendors to ascertain the appropriate period for certifying recovered materials content. EPA recommends that, whenever feasible, the recovered materials content of a product be certified on a batch-by-batch basis or as an average over a calendar quarter or some other appropriate averaging period as determined by the procuring agencies.

II. Specific Recommendations for Procurement of Designated Items

Part A -- Paper and Paper Products

Section A-1 -- Printing and Writing Papers

Preference Program: EPA recommends that procuring agencies establish minimum content standards expressed as a percentage of recovered fiber, including a percentage of postconsumer fiber. EPA recommends that procuring agencies base their minimum content standards for uncoated and coated printing and writing papers on the content levels shown in Tables A-1a, A-1b, and A-1c, respectively. EPA further recommends that if a paper product containing 30% postconsumer fiber is not reasonably available, then procuring agencies establish the highest postconsumer fiber content levels available.

Percentages are based on the fiber weight of the product. The content levels in the tables should be read as X% recovered fiber, including Y% postconsumer fiber and not as X% recovered fiber plus Y% postconsumer fiber. Where the content level is the same in both columns (e.g., 30% in both the recovered fiber and postconsumer fiber columns), this means that EPA is recommending that agencies establish identical content levels for both postconsumer and recovered fiber.

Table A-1a. -- Recommended Recovered Fiber Content Levels for Uncoated Printing and Writing Papers

| Item | Recovered Fiber (%) | Postconsumer Fiber (%) |
|--|---------------------|------------------------|
| Reprographic Paper (e.g., mimeo and duplicator paper, high-speed copier paper, and bond paper*) | 30 | 30 |
| Offset Paper (e.g., offset printing paper*, book paper*, bond paper*) | 30 | 30 |
| Tablet Paper (e.g., office paper such as note pads, stationery* and other writing* papers) | 30 | 30 |
| Forms Bond (e.g., forms, computer printout paper, ledger*) | 30 | 30 |
| Envelope Paper | | |
| Wove | 30 | 30 |
| Kraft | | |
| White and colored (including manila) | 10 - 20 | 10 - 20 |
| Unbleached | 10 | 10 |
| Cotton Fiber Paper (e.g., cotton fiber papers, ledger*, stationery* and matching envelopes, and other writing* papers) | 30 | 30 |
| Text & Cover Paper (e.g., cover stock, book paper*, stationery* and matching envelopes, | 30 | 30 |

| Item | Recovered Fiber (%) | Postconsumer Fiber (%) |
|---------------------------|---------------------|------------------------|
| and other writing* paper) | | |
| Supercalendered | 10 | 10 |
| Machine finish groundwood | 10 | 10 |
| Papeteries | 30 | 30 |
| Check Safety Paper | 10 | 10 |

* These items can be made from a variety of printing and writing papers, depending on the performance characteristics of the item. Some of the papers are a commodity-type and some are specialty papers. EPA recommends that procuring agencies determine the performance characteristics required of the paper prior to establishing minimum content standards. For example, bond, ledger, or stationery made from cotton fiber paper or a text & cover paper have different characteristics than similar items made from commodity papers.

Table A-1b. -- Recommended Recovered Fiber Content Levels for Coated Printing and Writing Papers

| Item | Recovered Fiber (%) | Postconsumer Fiber (%) |
|-----------------------|---------------------|------------------------|
| Coated Printing Paper | 10 | 10 |
| Carbonless | 30 | 30 |

Table A-1c. -- Recommended Recovered Fiber Content Levels for Bristols

| Item | Recovered Fiber (%) | Postconsumer Fiber (%) |
|--|---------------------|------------------------|
| File Folders (manila and colored) | 30 | 30 |
| Dyed Filing Products | 20 - 50 | 20 |
| Cards (index, postal, and other, including index sheets) | 50 | 20 |
| Pressboard Report Covers and Binders | 50 | 20 |
| Tags and Tickets | 20 - 50 | 20 |

Section A-2 -- Newsprint

Preference Program: EPA recommends that procuring agencies establish minimum content standards expressed as a percentage of recovered fiber, including a percentage of postconsumer fiber. EPA

recommends that procuring agencies base their minimum content standards for newsprint on the content levels shown in Table A-2. Percentages are based on the fiber weight of the product. The content levels in the table should be read as X% recovered fiber, including Y% postconsumer fiber and not as X% recovered fiber plus Y% postconsumer fiber.

Table A-2. -- Recommended Recovered Fiber Content Levels for Newsprint

| Item | Recovered Fiber (%) | Postconsumer Fiber (%) |
|-----------|---------------------|------------------------|
| Newsprint | 20 - 100 | 20 - 85 |

Section A-3 -- Commercial/Industrial Sanitary Tissue Products

Preference Program: EPA recommends that procuring agencies establish minimum content standards expressed as a percentage of recovered fiber, including a percentage of postconsumer fiber. EPA recommends that procuring agencies base their minimum content standards for commercial/industrial tissue products on the content levels shown in Table A-3. Percentages are based on the fiber weight of the product. The content levels in the table should be read as X% recovered fiber, including Y% postconsumer fiber and not as X% recovered fiber plus Y% postconsumer fiber.

Table A-3. -- Recommended Recovered Fiber Content Levels for Commercial/Industrial Sanitary Tissue Products

| Item | Recovered Fiber (%) | Postconsumer Fiber (%) |
|-----------------------------------|---------------------|------------------------|
| Bathroom tissue | 20 - 100 | 20 - 60 |
| Paper towels | 40 - 100 | 40 - 60 |
| Paper napkins | 30 - 100 | 30 - 60 |
| Facial tissue | 10 - 100 | 10 - 15 |
| General purpose industrial wipers | 40 - 100 | 40 |

Section A-4 -- Paperboard and Packaging Products

Preference Program: EPA recommends that procuring agencies establish minimum content standards expressed as a percentage of recovered fiber, including a percentage of postconsumer fiber. EPA recommends that procuring agencies base their minimum content standards for paperboard and packaging products on the content levels shown in Table A-4. Percentages are based on the fiber weight of the product. The content levels in the table should be read as X% recovered fiber, including Y% postconsumer fiber and not as X% recovered fiber plus Y% postconsumer fiber. Where the content level is the same in both columns (e.g., 40% in both the recovered fiber and postconsumer fiber columns), this means that EPA is recommending that agencies establish identical content levels for postconsumer and recovered fiber.

Table A-4. -- Recommended Recovered Fiber Content Levels for Paperboard and Packaging Products

| Item | Recovered Fiber (%) | Postconsumer Fiber (%) |
|--|---------------------|------------------------|
| Corrugated containers* (<300 psi) (300 psi) | 25 - 50 25 - 30 | 25 - 50 25 - 30 |
| Solid Fiber Boxes | 40 | 40 |
| Folding cartons** | 100 | 40 - 80 |
| Industrial paperboard (e.g., tubes, cores, drums, and cans) | 100 | 45 - 100 |
| Miscellaneous (e.g., pad backs, covered binders, book covers, mailing tubes, protective packaging) | 90 - 100 | 75 - 100 |
| Padded mailers | 5 - 15 | 5 - 15 |
| Carrierboard*** | 10 - 100 | 10 - 15 |
| Brown papers (e.g., wrap- ping paper and bags) | 5 - 40 | 5 - 20 |

* The recovered fiber and postconsumer fiber content is calculated from the content of each component relative to the weight each contributes to the total weight of the box. See Appendix I for an example.

** The recommended content ranges are not applicable to all types of paperboard used in folding cartons. Cartons made from solid bleached sulfate or solid unbleached sulfate contain no or small percentages of postconsumer fiber, depending on the paperboard source.

***Carrierboard made from unbleached kraft contains up to 25% recovered fiber, while carrierboard made from recycled paperboard contains up to 100% recovered fiber.

Section A-5 -- Miscellaneous Paper Products

Preference Program: EPA recommends that procuring agencies establish minimum content standards expressed as a percentage of recovered fiber, including a percentage of postconsumer fiber. EPA recommends that procuring agencies base their minimum content standards for the listed paper products on the content levels shown in Table A-5. Percentages are based on the fiber weight of the product. The content levels in the table should be read as 100% recovered fiber, including X% postconsumer fiber and not as 100% recovered fiber plus Y% postconsumer fiber.

Table A-5. -- Recommended Recovered Fiber Content Levels for
Miscellaneous Paper Products

| Item | Recovered Fiber (%) | Postconsumer Fiber (%) |
|-------------|---------------------|------------------------|
| Tray liners | 100 | 50 - 75 |

Section A-6 -- Other Recommendations for Paper and Paper Products

Measurement: EPA recommends that procuring agencies express their minimum content standards as a percentage of the fiber weight of the paper or paper product. EPA further recommends that procuring agencies specify that mill broke cannot be counted toward postconsumer or recovered fiber content, except that procuring agencies should permit mills to count mill broke generated in a papermaking process using postconsumer and/or recovered fiber as feedstock toward “postconsumer fiber” or “recovered fiber” content, to the extent that the feedstock contained these materials. In other words, if a mill uses less than 100% postconsumer or recovered fiber, only a proportional amount of broke can be counted towards postconsumer or recovered fiber content.

Specifications: EPA recommends that procuring agencies review specifications provisions pertaining to performance and aesthetics and revise provisions that can impede use of postconsumer and recovered fiber, unless such provisions are related to reasonable performance standards. Agencies should determine whether performance provisions are unnecessarily stringent for a particular end use. Agencies also should revise aesthetics provisions -- such as brightness, dirt count, or shade matching -- if appropriate, consistent with the agencies’ performance requirements, in order to allow for a higher use of postconsumer and recovered fiber.

EPA recommends that procuring agencies document determinations that paper products containing postconsumer and recovered fiber will not meet the agencies’ reasonable performance standards. Any determination should be based on technical performance information related to a specific item, not a grade of paper or type of product.

EPA recommends that procuring agencies watch for changes in the use of postconsumer and recovered fiber in paper and paper products. When a paper or a paper product containing postconsumer and recovered fiber is produced in types and grades not previously available, at a competitive price, procuring agencies should either revise specifications to allow the use of such type or grade, or develop new specifications for such type or grade, consistent with the agencies’ performance requirements.

Recyclability: EPA recommends that procuring agencies consider the effect of a procurement of a paper product containing recovered and postconsumer fiber on their paper collection programs by assessing the impact of their decision on their overall contribution to the solid waste stream.

Section A-7 -- Definitions

For purposes of the recommendations contained in this Part, terms shall have the following meanings:

“Postconsumer fiber” means:

- (1) Paper, paperboard, and fibrous wastes from retail stores, office buildings, homes, and so forth, after they have passed through their end-usage as a consumer item, including: used corrugated boxes; old newspapers; old magazines; mixed waste paper; tabulating cards; and used cordage; and
- (2) All paper, paperboard, and fibrous wastes that enter and are collected from municipal solid waste.

Postconsumer fiber does not include fiber derived from printers’ over-runs, converters’ scrap, and over-issue publications.

“Recovered fiber” means the following materials:

(1) Postconsumer fiber such as:

- (A) Paper, paperboard, and fibrous materials from retail stores, office buildings, homes, and so forth, after they have passed through their end-usage as a consumer item, including: used corrugated boxes; old newspapers; old magazines; mixed waste paper; tabulating cards; and used cordage; and
- (B) All paper, paperboard, and fibrous materials that enter and are collected from municipal solid waste, and

(2) Manufacturing wastes such as:

- (A) Dry paper and paperboard waste generated after completion of the papermaking process (that is, those manufacturing operations up to and including the cutting and trimming of the paper machine reel into smaller rolls or rough sheets) including: envelope cuttings, bindery trimmings, and other paper and paperboard waste resulting from printing, cutting, forming, and other converting operations; bag, box, and carton manufacturing wastes; and butt rolls, mill wrappers, and rejected unused stock; and
- (B) Repulped finished paper and paperboard from obsolete inventories of paper and paperboard manufacturers, merchants, wholesalers, dealers, printers, converters, or others.

“Mill broke” means any paper waste generated in a paper mill prior to completion of the papermaking process. It is usually returned directly to the pulping process. Mill broke is excluded from the definition of “recovered fiber.”

Appendix A-1. -- Example Calculation of Postconsumer Fiber Content of a Corrugated Container

C-flute has a take-up factor of approximately 1.44, which means that for each one foot of combined corrugated board there is 1.44 feet of fluted medium. This factor is used to calculate the weight of paperboard in a given area of combined corrugated board, from which the basis weight of the board is derived. Each linerboard contributes 35% of the basis weight (42/121.4). The medium contributes 30% of the total basis weight (37.4/121.4).

| | | <u>Board Basis Weight</u> | |
|-----------------------|-----------|---------------------------|---------------|
| | | (lbs/MSF) | |
| Linerboard #1 | 42 x 1.00 | = | 42.0 |
| Medium | 26 x 1.44 | = | 37.4 |
| Linerboard #2 | 42 x 1.00 | = | <u>42.0</u> |
| Combined Board Weight | | | 121.4 lbs/MSF |

If the linerboard used has 20% postconsumer fiber and the medium has 80% postconsumer fiber, the resulting total postconsumer fiber content of the containerboard is as follows:

Linerboard: $.35 \times .20 = .07 \times 2 = .14$ (or 14%)
 Medium: $.30 \times .80 = .24$ (or 24%)
 Total postconsumer fiber: $.14 + .24 = .38$ (or 38%)

Part B -- Vehicular Products

Section B-1 -- Lubricating Oil

Preference Program: EPA recommends that procuring agencies set their minimum re-refined oil content standard at the highest level of re-refined oil that they determine meets the statutory requirements of RCRA section 6002(c)(1), but no lower than 25 percent re-refined oil.

EPA recommends that procuring agencies review their procurement practices and eliminate those which would inhibit or preclude procurement of lubricating oils containing re-refined oil. For example, procuring agencies should review the practices of inviting bids and issuing contracts to do the following:

- (1) Supply a broad range of lubricating oil products on an “all or none” basis.
- (2) Supply lubricating oils for an excessively long period of time.
- (3) Deliver lubricating oils to geographic locations throughout the United States or to an excessively broad geographic area.
- (4) Supply excessively large contract quantities.

Specifications: EPA recommends that procuring agencies use the following specifications when procuring lubricating oils containing re-refined oil:

(1) Engine lubricating oils.

(I) A-A-52039 -- Commercial Item Description, Lubricating Oil, Automotive Engine, API Service SG (replaced MIL-L-46152, Lubricating Oil, Internal Combustion Engine, Administrative Service).

(ii) API Engine Service Category SF -- 1980 Gasoline Engine Warranty Maintenance Service (or current category)

(iii) A-A-52306 -- Commercial Item Description, Lubricating Oil, Heavy-Duty Diesel Engine (for wheeled vehicles only)

(iv) API Engine Service Category CC -- Diesel Engine Service (or current category)

(v) MIL-L-2104, Lubricating Oil, Internal Combustion Engine, Combat/Tactical Service

(vi) API Engine Service Category CD -- Diesel Engine Service (or current category)

(vii) MIL-L-21260D (or current version) -- Lubricating Oil, Internal Combustion Engine, Preservative and Break-in

(viii) MIL-L-46167B (or current version) -- Lubricating Oil, Internal Combustion Engine, Arctic

(2) Hydraulic fluids.

(I) MIL-H-5606E (or current version) -- Hydraulic Fluid, Petroleum Base, Aircraft, Missile, and Ordnance

(ii) MIL-H-6083E (or current version) -- Hydraulic Fluid, Petroleum Base, For Preservation and Operation

(3) Gear oils.

(I) MIL-L-2105D (or current version) Lubricating Oil, Gear, Multipurpose

(b) Copies of the military specifications can be obtained from: Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120.

Section B-2 -- Retread Tires

Preference Program: The following are EPA's recommendations for procuring retreading services and retread tires.

Procurement of tire retreading services for the agencies' used tire casings:

EPA recommends that procuring agencies specify that tire repair and retread services must conform to Federal Specification ZZ-T-441H (or current version).

Procurement of tires through competition between vendors of new tires and vendors of retread tires:

EPA recommends that procuring agencies specify that retread tires must meet the requirements of Federal Specification ZZ-T-381, "Tires, Pneumatic, Vehicular (Highway) (New and Retreaded).

Section B-3 -- Engine Coolants

Preference Program: EPA recommends that procuring agencies whose vehicles are serviced by a motor pool or vehicle maintenance facility establish a program for engine coolant reclamation and reuse, consisting of either reclaiming the spent engine coolants on-site for use in the agencies' vehicles, or establishing a service contract for reclamation of the agencies' spent engine coolant for use in the agencies' vehicles.

EPA also recommends that procuring agencies request reclaimed engine coolant when having their vehicles serviced at commercial service centers. Additionally, EPA recommends that agencies purchase reclaimed engine coolant when making direct purchases of this item such as when necessary to make up for losses due to leakage or spillage.

EPA does not recommend one type of engine coolant over another. However, EPA recommends that procuring agencies purchase engine coolant containing only one base chemical, typically ethylene glycol or propylene glycol, to prevent the commingling of incompatible types of engine coolant.

Section B-4 -- Rebuilt Vehicular Parts

Note: Based on EPA's research, rebuilt vehicular parts generally contain between 60 and 95% postconsumer material. However, this level of detail might not be readily available from distributors to procurement officials. Therefore, EPA is not recommending a range of recovered content.

Preference Program: EPA recommends that procuring agencies whose vehicles (passenger vehicles as well as medium- and heavy-duty equipment, including trucks, cranes, off-road vehicles, and military vehicles) are serviced by a motor pool or vehicle maintenance facility establish a service contract to require the use of rebuilt vehicular parts in the agencies' vehicles or establish a program for vehicular parts rebuilding and reuse consisting of either recovering a used vehicular part and rebuilding it, replacing it with a rebuilt part, or contracting to have the part replaced with a rebuilt part. This designation applies to vehicles served by both on-site and commercial facilities.

Specifications: To be labeled "rebuilt" or "remanufactured," a part must be processed in accordance with the FTC's "Guides for the Rebuilt, Reconditioned and Other Used Automotive Parts Industry," 16 CFR

Part 20. Rebuilders must test each part for compliance with FTC specifications and correct defects as necessary.

Part C -- Construction Products

Note: Refer to Part F - Landscaping Products for additional items that can be used in construction.

Section C-1 - Building Insulation

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table C-1, procuring agencies establish minimum content standards for use in purchasing building insulation products.

Table C-1. -- Recommended Recovered Materials Content Levels for Building Insulation

| Insulation Material | Recovered Materials (Materials and %) |
|--|---|
| Rock Wool | Slag 75 |
| Fiberglass | Glass cullet 20 - 25 |
| Cellulose loose-fill and spray-on | Postconsumer paper 75 |
| Perlite composite board | Postconsumer paper 23 |
| Plastic, non-woven batt | Recovered and/or postconsumer plastics 100 |
| Plastic Rigid Foam, Polyisocyanurate/polyurethane: | |
| Rigid foam | Recovered material 9 |
| Foam-in-place | Recovered material 5 |
| Glass fiber reinforced | Recovered material 6 |
| Phenolic rigid foam | Recovered material 5 |

Note: The recommended recovered materials content levels are based on the weight (not volume) of materials in the insulating core only.

Specifications: EPA recommends that procuring agencies reference ASTM standard specification D 5359, “Glass Cullet Recovered from Waste for Use in Manufacture of Glass Fiber,” in Invitations for Bid and Requests for Proposal.

Section C-2 -- Structural Fiberboard and Laminated Paperboard

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table C-2, procuring agencies establish minimum content standards for use in purchasing structural fiberboard or laminated paperboard products for use in either insulating or structural applications.

Table C-2.--Recommended Recovered Materials Content Levels for Structural Fiberboard and Laminated Paperboard

| Product | Postconsumer Recovered Paper (%) | Total Recovered Materials Content (%) |
|------------------------|----------------------------------|---------------------------------------|
| Structural fiberboards | -- | 80 - 100 |
| Laminated paperboards | 100 | 100 |

Note: The recovered materials content levels are based on the weight (not volume) of materials in the insulating core only.

Specifications: EPA recommends that procuring agencies use ASTM Standard Specification C 208 and ANSI/AHA specification A194.1. EPA further recommends that, when purchasing structural fiberboard products containing recovered paper, procuring agencies (1) reference the technical requirements of ASTM C 208, “Insulating Board (Cellulosic Fiber), Structural and Decorative,” (2) permit structural fiberboard products made from recovered paper where appropriate, and (3) permit products such as floor underlayment and roof overlay containing recovered paper.

EPA further recommends that procuring agencies review their specifications for insulating products and revise them as necessary to obtain the appropriate “R”-value without unnecessarily precluding the purchase of products containing recovered materials.

Section C-3-- Cement and Concrete

Preference Program: EPA recommends that procuring agencies prepare or revise their procurement programs for cement and concrete or for construction projects involving cement and concrete to allow the use of coal fly ash, ground granulated blast furnace slag (GGBF slag), cenospheres, or silica fume, as appropriate. EPA does not recommend that procuring agencies favor one recovered material over the other. Rather, EPA recommends that procuring agencies consider the use of all of these recovered materials and choose the one (or the mixture of them) that meets their performance requirements, consistent with availability and price considerations. EPA also recommends that procuring agencies specifically include provisions in all construction contracts to allow for the use, as optional or alternate materials, of cement or concrete which contains coal fly ash, GGBF slag, cenospheres, or silica fume, where appropriate. Due to variations in cement, strength requirements, costs, and construction practices, EPA is not recommending recovered materials content levels for cement or concrete containing coal fly

ash, GGBF slag, cenospheres, or silica fume. However, EPA is providing the following information about recovered materials content.

- Replacement rates of coal fly ash for cement in the production of blended cement generally do not exceed 20-30 percent, although coal fly ash blended cements may range from 0-40 percent coal fly ash by weight, according to ASTM C 595, for cement Types IP and I(PM). Fifteen percent is a more accepted rate when coal fly ash is used as a partial cement replacement as an admixture in concrete.
- According to ASTM C 595, GGBF slag may replace up to 70 percent of the Portland cement in some concrete mixtures. Most GGBF slag concrete mixtures contain between 25 and 50 percent GGBF slag by weight. EPA recommends that procuring agencies refer, at a minimum, to ASTM C 595 for the GGBF slag content appropriate for the intended use of the cement and concrete.
- According to industry sources, cement and concrete containing cenospheres typically contains a minimum of 10 percent cenospheres (by volume).
- According to industry sources, cement and concrete containing silica fume typically contains silica fume that constitutes 5 to 10 percent of cementitious material on a dry weight basis.

Specifications for Cement and Concrete containing Fly Ash and Ground Granulated Blast Furnace Slag:

For cement and concrete containing coal fly ash and ground granulated blast furnace slag, the following recommendations address guide specifications, materials specifications, contract specifications, performance standards, mix design, and quality control.

- Guide specifications. EPA recommends that procuring agencies ensure that their guide specifications do not inappropriately or unfairly discriminate against the use of coal fly ash or GGBF slag in cement and concrete. EPA further recommends that procuring agencies revise their guide specifications to require that contract specifications for individual construction projects or products allow for the use of coal fly ash or GGBF slag, unless the use of these materials is technically inappropriate for a particular construction application.
- Materials specifications. EPA recommends that procuring agencies use the existing voluntary consensus specifications referenced in Table C-3 for cement and concrete containing fly ash and/or GGBF slag.

Table C-3. -- Recommended Specifications for Cement and Concrete
Containing Recovered Coal Fly Ash and/or Ground Granulated Blast Furnace Slag

| Cement specifications | Concrete specifications |
|---|---|
| ASTM C 595, "Standard Specification for Blended Hydraulic Cements." | ASTM C 618, "Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete." |
| ASTM C 150, "Standard Specification for Portland Cement." | ASTM C 311, "Standard Methods of Sampling and Testing Fly Ash and Natural Pozzolans for Use as a Mineral Admixture in Portland Cement Concrete." |
| AASHTO M 240, "Blended Hydraulic Cements." | ASTM C 989, "Ground Granulated Blast-Furnace Slag for Use in Concrete Mortars." AASHTO M 302, "Ground Granulated Blast Furnace Slag for Use in Concrete and Mortars." American Concrete Institute Standard Practice ACI 226.R1, "Ground Granulated Blast-Furnace Slag as a Cementitious Constituent in Concrete." |

- State specifications. EPA recommends that procuring agencies consult other agencies with established specifications for coal fly ash or GGBF slag to benefit from their experience. Procuring agencies can consult the Federal Highway Administration, which maintains a data base of state highway agency material specifications. The States of Alabama, Connecticut, District of Columbia, Florida, Georgia, Illinois, Indiana, Maryland, Michigan, North Carolina, North Dakota, Ohio, Pennsylvania, South Carolina, Virginia, and West Virginia have adopted specifications which allow the use of GGBF slag in one or more applications. If needed, procuring agencies can obtain these specifications from the respective state transportation departments and adapt them for use in their programs for cement and concrete, as appropriate.
- Contract specifications. EPA recommends that procuring agencies which prepare or review "contract" specifications for individual construction projects revise those specifications to allow the use of cement and concrete containing coal fly ash or GGBF slag as optional or alternate materials for the project, where appropriate, consistent with the agencies' performance and price objectives.
- Performance standards. EPA recommends that procuring agencies review and, if necessary, revise performance standards relating to cement or concrete construction projects to insure that they do not arbitrarily restrict the use of coal fly ash or GGBF slag, either intentionally or inadvertently, unless the restriction is justified on a job-by-job basis: (1) to meet reasonable performance requirements for the cement or concrete or (2) because the use of coal fly ash or GGBF slag would be inappropriate for technical reasons. EPA recommends that this justification be documented based on specific technical performance information. Legitimate documentation of technical infeasibility for coal fly ash or GGBF slag can be for certain classes of applications,

rather than on a job-by-job basis. Procuring agencies should reference such documentation in individual contract specifications to avoid extensive repetition of previously documented points. However, procuring agencies should be prepared to submit such documentation to analysis by interested persons, and should have a review process available in the event of disagreements.

- **Mix design.** In concrete mix design specifications which specify minimum cement content or maximum water, the cement ratios could potentially unfairly discriminate against the use of coal fly ash or GGBF slag. Such specifications should be changed in order to allow the partial substitution of coal fly ash or GGBF slag for cement in the concrete mixture, unless technically inappropriate. Cement ratios may be retained, as long as they reflect the cementitious characteristics which coal fly ash or GGBF slag can impart to a concrete mixture, e.g., by considering Portland cement plus coal fly ash or Portland cement plus GGBF slag as the total cementitious component.
- **Quality control.** Nothing in this RMAN should be construed to relieve the contractor of responsibility for providing a satisfactory product. Cement and concrete suppliers are already responsible both for the quality of the ingredients of their product and for meeting appropriate performance requirements, and will continue to be under this RMAN. Nothing in EPA's recommendations should be construed as a shift in normal industry procedures for assigning responsibility and liability for product quality.

Additional Considerations:

- Procuring agencies should expect suppliers of blended cement, coal fly ash or GGBF slag, and concrete to demonstrate (through reasonable testing programs or previous experience) the performance and reliability of their product and the adequacy of their quality control programs. However, procuring agencies should not subject cement and concrete containing coal fly ash or GGBF slag to any unreasonable testing requirements.
- In accordance with standard industry practice, coal fly ash and GGBF slag suppliers should be required to provide to users a statement of the key characteristics of the product supplied. These characteristics may be stated in appropriate ranges. Other characteristics should be requested as needed by the procuring agency.
- Agencies desiring a testing or quality assurance program for cements, blended cements, or coal fly ash should contact the U.S. Army Engineer Waterways Experiment Station, P.O. Box 631, Vicksburg, Mississippi 39180.

Specifications for Cement and Concrete containing Cenospheres and Silica Fume: For cement and concrete containing cenospheres, EPA recommends that procuring agencies contact cenosphere suppliers to obtain specifications, such as material safety data sheets for assisting with use of cenospheres in cement and concrete.

For cement and concrete containing silica fume, EPA recommends that procuring agencies refer to the following national specifications and guidelines, which enable procuring agencies to buy high-performance concrete containing silica fume of a standard quality, when purchasing cement and concrete with silica fume: ASTM C1240, AASHTO M840, and ACI 234R-96. ACI 234R-96 describes the properties of silica fume; how silica fume interacts with cement; the effects of silica fume on the properties of fresh and cured concrete; typical applications of silica fume concrete; recommendations on proportions, specifications, and handling of silica fume in the field.

Section C-4 -- Carpet

Preference Program: EPA recommends that, based on the recovered materials content levels recommended below, procuring agencies establish minimum content standards for use in purchasing polyester carpet for moderate-wear applications such as those found in single-family housing units and other similar applications as identified by the Carpet and Rug Institute (CRI). This recommendation does not include polyester carpet for heavy- or severe-wear or commercial-type applications.

Table C-4.-- Recommended Recovered Materials Content Levels for Carpet

| Product | Resin | Postconsumer Materials (%) |
|-----------------------------|-------|----------------------------|
| Polyester Carpet Face Fiber | PET | 25 - 100 |

Specifications: Procuring agencies should refer to CRI’s table entitled “Use Classification by End-Use Application” for a complete listing of CRI’s recommended carpet applications. A copy of this table has been placed in the public docket for this RMAN.

Procuring agencies should also refer to GSA’s minimum density recommendations, as follows:

- Cut pile constructions: 5,000 ounces/yard³ minimum density
- Loop pile constructions: 4,500 ounces/yard³ minimum density

While numerous carpet specifications exist, the members of the carpet industry do not utilize any universal standards. Specifications vary and are determined based on the particular factors of the installation. The project’s designer, architect, general contractor, and/or facility manager typically decide the specifications. Some procuring agencies, such as the Department of the Army and the Department of Housing and Urban Development, have developed their own specifications for end-use carpet applications. These specifications should be readily available to procurement officials in those agencies.

Section C-5 -- Floor Tiles¹ and Patio Blocks

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table C-5, procuring agencies establish minimum content standards for use in purchasing heavy-duty/commercial type floor tiles and patio blocks made with rubber or plastic.

Table C-5.-- Recommended Recovered Materials Levels for Floor Tiles and Patio Blocks

| | | |
|--|--|--|
| | | |
|--|--|--|

¹EPA clarified in 62 FR 60995, November 13, 1997 (RMAN II), that the use of floor tiles with recovered materials content may be appropriate only for specialty purpose uses (e.g., raised, open-web tiles for drainage on school kitchen flooring). Such specialty purpose uses involve limited flooring areas where grease, tar, snow, ice, wetness or similar substances or conditions are likely to be present. Thus, EPA has no recovered materials content level recommendations for floor tiles made with recovered materials for standard office or more general purpose uses.

| Product | Material | Postconsumer Materials (%) | Total Recovered Materials (%) |
|--|---------------------------|----------------------------|-------------------------------|
| Patio Blocks | Rubber or Rubber Blends | 90 - 100 | -- |
| | Plastic or Plastic Blends | -- | 90 - 100 |
| Floor Tiles (heavy duty/commercial use) | Rubber | 90 - 100 | -- |
| | Plastic | -- | 90-100 |

Notes: EPA's recommendation does not preclude procuring agencies from purchasing floor tiles or patio blocks manufactured from another material. It simply recommends that procuring agencies, when purchasing floor tiles or patio blocks made from rubber or plastic, purchase these items made from recovered materials. Recommendations for floor tiles are limited to heavy-duty/commercial-type applications only.

The recommended recovered materials content levels are based on the dry weight of the raw materials, exclusive of any additives such as adhesives, binders, or coloring agents.

Recommendations for floor tiles are limited to heavy-duty/commercial-type applications only.

Section C-6 -- Shower and Restroom Dividers/Partitions Containing Recovered Plastic or Steel

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table C-6, procuring agencies establish minimum content standards for use in purchasing shower and restroom dividers/partitions.

Table C-6.-- Recommended Recovered Materials Content Levels for Shower and Restroom Dividers/Partitions Containing Recovered Plastic or Steel

| Material | Postconsumer materials (%) | Total recovered materials content (%) |
|----------|----------------------------|---------------------------------------|
| Steel | 16 | 25-30 |
| | 67 | 100 |
| Plastic | 20-100 | 20-100 |

Notes: EPA's recommendation does not preclude agencies from purchasing shower and restroom dividers/partitions manufactured from another material, such as wood. It simply recommends that procuring agencies, when purchasing shower and restroom dividers/partitions made from plastic or steel, purchase these items made from recovered materials when these items meet applicable specifications and performance requirements.

The recommended recovered materials content levels for steel in this table reflect the fact that the designated items can be made from steel manufactured in either a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF). Steel from the BOF process contains 25% - 30% total recovered materials, of which 16% is postconsumer steel. Steel from the EAF process contains a total of 100% recovered steel, of which 67% is postconsumer.

Specifications: EPA recommends that procuring agencies use the following specifications when procuring shower and restroom dividers/partitions:

- (1) The American Institute of Architects (AIA) has issued guidance for specifying construction materials, including plastic and steel dividers/partitions. The AIA guidance is known throughout the construction industry as the “Masterspec” and is available through the U.S. General Services Administration (GSA).
- (2) U.S. Army Corps of Engineers’ Guide Specification CEGS-10160, Toilet Partitions.

Section C-7 -- Reprocessed and Consolidated Latex Paints for Specified Uses

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table C-7, procuring agencies establish minimum content standards for use in purchasing reprocessed and consolidated latex paints.

Table C-7. -- Recommended Recovered Materials Content Levels for
Reprocessed and Consolidated Latex Paints

| Product | Postconsumer latex paint (%) |
|--|------------------------------|
| Reprocessed latex paint | |
| White, off-white, and pastel colors | 20 |
| Grey, brown, earthtones, and other dark colors | 50-99 |
| Consolidated latex paint | 100 |

Notes: EPA’s recommendations apply to reprocessed latex paints used for interior and exterior architectural applications such as wallboard, ceilings, and trim; gutter boards; and concrete, stucco, masonry, wood, and metal surfaces, and to consolidated latex paints used for covering graffiti, where color and consistency of performance are not primary concerns.

EPA’s recommendation does not preclude agencies from purchasing paints manufactured from other, non-latex materials, such as oil-based paints. It simply recommends that procuring agencies, when purchasing latex paints, purchase these items made from postconsumer recovered materials when these items meet applicable specifications and performance requirements.

Reprocessed and consolidated latex paints are available to Federal agencies through the GSA Federal Supply Service by ordering the following stock numbers:

| National Stock Numbers | Colors |
|------------------------|------------------------------|
| <u>Semi-gloss</u> | <u>FEDSTD 595B Color No.</u> |
| 8010-01-380-2400 | Beige #27769 |
| 8010-01-380-2447 | Red brown #20100 |
| 8010-01-433-4808 | Blue, #35526 |
| 8010-01-433-4809 | Sand #33690 |
| 8010-01-433-4810 | Green #24491 |
| 8010-01-433-4812 | Gray #26134 |
| 8010-01-433-4816 | Drk Gray #26081 |
| 8010-01-433-4818 | Beige #37769 |
| 8010-01-433-4826 | Tan #20372 |
| 8010-01-433-4828 | Dark Brown #20140 |

| <u>Flat</u> | <u>FEDSTD 595B Color No.</u> |
|------------------|------------------------------|
| 8010-01-380-3293 | White #37886 |
| 8010-01-380-2421 | Sand #33690 |
| 8010-01-433-4813 | Dark Gray #36081 |
| 8010-01-433-4819 | Beige #37769 |
| 8010-01-433-4820 | White #37886 |
| 8010-01-433-4823 | Sand #23690 |

The GSA Federal Supply Service has a free paint brochure available by calling 1-800-241-RAIN or FAX requests to (206) 931-7544.

Specifications: EPA has deleted reference to federal specification TT-P-2846, which was cancelled by GSA, and recommends that procuring agencies refer to commercial item description (CID) A-A-3185 instead when purchasing recycled paint.

Section C-8. – Carpet Cushion Made from Bonded Polyurethane, Jute, Synthetic Fiber, or Rubber Containing Recovered Materials

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table C-8, procuring agencies establish minimum content standards for use in purchasing bonded polyurethane, jute, synthetic fiber, or rubber carpet cushion containing recovered materials.

Table C-8. -- Recommended Recovered Materials Content Levels for Bonded Polyurethane, Jute, Synthetic Fiber, and Rubber Carpet Cushion

| Product | Material | Postconsumer content (%) | Total recovered materials content (%) |
|---------------------|--------------------------|--------------------------|---------------------------------------|
| Bonded polyurethane | Old carpet cushion | 15-50 | 15-50 |
| Jute | Burlap | 40 | 40 |
| Synthetic fibers | Carpet fabrication scrap | -- | 100 |
| Rubber | Tire rubber | 60-90 | 60-90 |

Note: EPA's recommendations do not preclude a procuring agency from purchasing another type of carpet cushion. They simply require that procuring agencies, when purchasing bonded polyurethane, jute, synthetic fiber, or rubber carpet cushions, purchase these items made with recovered materials when these items meet applicable specifications and performance requirements. Refer to Section C-4 in RMAN I for EPA's recommendations for purchasing polyester carpet containing recovered materials.

Specifications: EPA is not aware of carpet cushion specifications unique to carpet cushions containing recovered materials. Therefore, EPA recommends that procuring agencies use any appropriate standards set by the Carpet and Rug Institute and the Carpet Cushion Council when purchasing bonded polyurethane, jute, synthetic fiber, or rubber carpet cushion containing recovered materials.

Section C-9. Flowable Fill Containing Coal Fly Ash and/or Ferrous Foundry Sands

Preference Program: EPA recommends that procuring agencies use flowable fill containing coal fly ash and/or ferrous foundry sands for backfill and other fill applications. EPA further recommends that procuring agencies include provisions in all construction contracts involving backfill or other fill applications to allow for the use of flowable fill containing coal fly ash and/or ferrous foundry sands, where appropriate.

The specific percentage of coal fly ash or ferrous foundry sands used in flowable fill depends on the specifics of the job, including the type of coal fly ash used (Class C or Class F); the strength, set time, and flowability needed; and bleeding and shrinkage. Therefore, EPA is not recommending specific coal fly ash or ferrous foundry sands content levels for procuring agencies to use in establishing minimum content standards for flowable fill. EPA recommends that procuring agencies refer to the mix proportions in Tables C-9a and C-9b for typical proportions for high and low coal fly ash content mixes. EPA further recommends that procuring agencies refer to American Concrete Institute (ACI) report ACI 229R-94 for guidance on the percentages of coal fly ash that can be used in flowable fill mixtures.

Table C-9a. --Typical Proportions for High Fly Ash Content Flowable Fills

| Component | Range kg/m ³ (lb/yd ³) | Mix Design kg/m ³ (lb/yd ³) |
|---------------|--|---|
| Fly ash (95%) | 949 to 1542 (1600 to 2600) | 1234 (2080) |
| Cement (5%) | 47 to 74 (80 to 125) | 62 (104) |
| Added water | 222 to 371 (375 to 625) | 247 (416)* |
| Total: | | 1543 (2600) |

* Equal to 189 liters (50 gallons)

Source: "Fly Ash Facts for Highway Engineers," FHWA-SA-94-081, U.S. Department of Transportation, Federal Highway Administration, August 1995.

Table C-9b. --Typical Proportions for Low Fly Ash Content Flowable Fills

| Component | Range kg/m ³ (lb/yd ³) | Mix Design kg/m ³ (lb/yd ³) |
|----------------------------------|--|---|
| Fly ash (6% to 14%) [†] | 119 to 297 (200 to 500) | 178 (300) |
| Cement | 30 to 119 (50 to 200) | 59 (100) |
| Sand | 1483 to 1780 (2500 to 3000) | 1542 (2600) |
| Added water | 198 to 494 (333 to 833) | 297 (500)* |
| Total: | | 2076 (3500) |

[†]High calcium fly ash is used in lower amounts than low calcium fly ash.

* Equal to 227 liters (60 gallons)

Source: "Fly Ash Facts for Highway Engineers," FHWA-SA-94-081, U.S. Department of Transportation, Federal Highway Administration, August 1995.

Specifications: The following recommendations address mix designs, test methods, and performance standards.

- Mix designs. EPA recommends that procuring agencies use ACI report ACI229R-94, "Controlled Low Strength Materials (CLSM)" and "Fly Ash Facts for Highway Engineers," (FHWA-SA-94-081, U.S. Department of Transportation, Federal Highway Administration, August 1995) in developing mix designs. Among other things, ACI229R-94 addresses materials, including coal fly ash and foundry sands, mix design, and mixing, transporting, and placing. It also provides examples of mixture designs containing coal fly used by the states of Iowa, Florida, Illinois, Indiana, Oklahoma, Michigan, Ohio, and South Carolina. "Fly Ash Facts for Highway Engineers" addresses materials, strength, flowability, time of set, bleeding and shrinkage.

A mix design for the use of foundry sand and coal fly ash in flowable fill was developed for Ford Motor Company. Procuring agencies can obtain a copy of this design by contacting the RCRA

Hotline at 1-800-424-9346. Table C-9c provides the recommended trial mixture from this specification.

Table C-9c. -- Materials Quantities for Flowable Fill Mixture
Containing Foundry Sands and Coal Fly Ash

| Component | Quantity per Cubic Yard |
|--------------|-------------------------|
| Cement | 50 lbs. |
| Coal fly ash | 250 lbs. |
| Foundry sand | 2850 lbs. |
| Water | 500 lbs. |

Materials specifications and test methods. EPA recommends that procuring agencies use ACI229R-94 and the ASTM standards listed in Table C-9d when purchasing flowable fill or contracting for construction that involves backfilling or other fill applications.

EPA recommends that procuring agencies refer to ASTM C 33-93, "Standard Specification for Concrete Aggregates," to assure the quality and uniformity of the ferrous foundry sands used as aggregates in flowable fills.

Table C-9d. -- Recommended Test Methods for Flowable Fills (Controlled Low Strength Materials)

| ASTM Specification Number | Title |
|---------------------------|--|
| D 4832-95e1 | Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders |
| D 5239-92 | Standard Practice for Characterizing Fly Ash for Use in Soil Stabilization |
| D 5971-96 | Standard Practice for Sampling Freshly Mixed Controlled Low Strength Material |
| D 6103-07 | Standard Test Method for Flow Consistency of Controlled Low Strength Material |
| D 6023-96 | Standard Test Method for Unit Weight, Yield, Cement Content and Air Content (Gravimetric) of Controlled Low Strength Material (CLSM) |
| D 5971-96 | Standard Practice for Sampling Freshly Mixed Controlled Low Strength Material |
| D 6024-96 | Standard Test Method for Ball Drop on Controlled Low Strength Material (CLSM) to Determine Suitability for Load Application |

State specifications. The following states have specifications for flowable fill containing coal fly ash: California, Colorado, Delaware, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New Mexico, North Carolina, Ohio, Texas, Washington, West Virginia, and Wisconsin.

The state of Ohio has a specification entitled “Flowable Fill Made with Spent Foundry Sand,” and the states of Pennsylvania, Wisconsin, and Indiana are developing specifications for using foundry sands in flowable fill.

If needed, procuring agencies can obtain state specifications from the respective state transportation departments and adapt them for use in their programs. ACI229R-94 includes mix designs from several of these states.

Contract specifications. EPA recommends that procuring agencies which prepare or review “contract” specifications for individual construction projects revise those specifications to allow the use of flowable fills containing coal fly ash and/or ferrous foundry sands.

Performance standards. EPA recommends that procuring agencies review and, if necessary, revise performance standards relating to fill materials to insure that they do not arbitrarily restrict or preclude the use of flowable fills containing coal fly ash and/or ferrous foundry sands, either intentionally or inadvertently, unless the restriction is justified on a job-by-job basis: (1) to meet reasonable performance requirements for fill materials or (2) because the use of coal fly ash or ferrous foundry sands would be inappropriate for technical reasons. EPA recommends that this justification be documented based on specific performance information. Legitimate documentation of technical infeasibility can be for certain classes of applications, rather than on a job-by-job basis. Agencies should reference such documentation in individual contract specifications to avoid extensive repetition of previously documented points. However, procuring agencies should be prepared to submit such documentation to scrutiny by interested parties and should have a review process available in the event of disagreements.

Promotion program: EPA recommends that, as part of the promotion programs required by section 6002(I) of the Resource Conservation and Recovery Act, procuring agencies conduct demonstration programs for using flowable fills containing coal fly ash and/or ferrous foundry sands. EPA further recommends that procuring agencies educate construction contractors about the design, use, and performance of flowable fills containing coal fly ash and/or ferrous foundry sands.

Section C-10. Railroad Grade Crossing Surfaces Made From Recovered Content Concrete, Rubber, Steel, Wood, and Plastic

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table C-10a, procuring agencies revise their procurement programs for railroad grade crossing surfaces to allow the use of recovered content concrete, rubber, steel, wood, and plastic railroad grade crossing surfaces.

Table C-10a. -- Recommended Recovered Materials Content Levels for Railroad Grade Crossing Surfaces Made From Recovered Content Concrete, Rubber, Steel, Wood, and Plastic

| Surface Material | Recovered Material | Postconsumer content (%) | Total recovered materials content (%) |
|------------------|------------------------------|--------------------------|---------------------------------------|
| Concrete | Coal Fly Ash | – | 15-20 |
| Rubber | Tire Rubber | – | 85-95 |
| Steel | Steel | 16 67 | 25-30 100 |
| Wood | Wood or wood composite | 90 - 97 | 90 - 97 |
| Plastic | Plastic or plastic composite | 85 - 95 | 100 |

Notes: The recommended recovered materials content levels for rubber railroad grade crossing surfaces are based on the weight of the raw materials, exclusive of any additives such as binders or other additives.

Coal fly ash can be used as an ingredient of concrete slabs, pavements, or controlled density fill product, depending on the type of concrete crossing system installed. Higher percentages of coal fly ash can be used in the concrete mixture; the higher percentages help to produce a more workable and durable product but can prolong the curing process.

The recommended recovered materials content levels for steel in this table reflect the fact that the designated items can be made from steel manufactured in either a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF). Steel from the BOF process contains 25% - 30% total recovered materials, of which 16% is postconsumer steel. Steel from the EAF process contains a total of 100% recovered steel, of which 67% is postconsumer.

Railroad grade crossing surfaces made from recovered wood may also contain other recovered materials such as plastics. The percentages of these materials contained in the product would also count toward the recovered materials content level of the item.

Railroad grade crossing surfaces made from recovered plastics may also contain other recovered materials such as auto shredder residue, which contains a mix of materials. The percentages of these materials contained in the product would also count toward the recovered materials content level of the item.

Specifications: EPA recommends that procuring agencies use the ASTM standards listed in Table C-10b when purchasing rubber railroad grade crossing surfaces. EPA recommends that procuring agencies use the ASTM and AASHTO standards listed in Table C-10c when purchasing concrete railroad grade crossing surfaces.

Table C-10b. -- Recommended Specifications for Rubber Railroad Grade Crossings

| ASTM Specification Number | Title |
|---------------------------|---|
| D 2000-96 | Rubber Products in Automotive Applications |
| D 2240-97 | Rubber Property -- Durometer Hardness |
| D 412-97 | Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers -- Tension |
| D 297-93 | Rubber Products -- Chemical Analysis |
| E 303-93 | Measuring Surface Frictional Properties Using the British Pendulum Tester |
| D 1171-94 | Rubber Deterioration -- Surface Ozone Cracking Outdoors or Chamber (Triangular Specimens) |
| D 573-88 | Deterioration in an Air Oven |
| D 395-89 | Rubber Property -- Compression Set |
| D 257-93 | DC Resistance or Conductance of Insulating Materials |
| D 2137-94 | Rubber Property -- Brittleness Point of Flexible Polymers and Coated Fabrics |

Table C-10c. -- Recommended Specifications for Cement and Concrete Containing Recovered Materials

| Specification number | Title |
|----------------------|--|
| ASTM C 595 | Standard Specification for Blended Hydraulic Cements |
| ASTM C 150 | Standard Specification for Portland Cement |
| AASHTO M 240 | Blended Hydraulic Cements |
| ASTM C 618 | Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete |
| ASTM C 311 | Standard Methods of Sampling and Testing Fly Ash and Natural Pozzolans for Use as a Mineral Admixture in Portland Cement Concrete |

EPA has not identified any industry specifications or standards for wood or plastic railroad grade crossing surfaces.

Section C-11 --Modular Threshold Ramps Containing Recovered Steel, Aluminum, or Rubber

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table C-11, procuring agencies establish minimum content standards for use in purchasing modular threshold ramps containing recovered materials.

Table C-11. -- Recommended Recovered Materials Content Levels for Modular Threshold Ramps Containing Recovered Steel, Aluminum, or Rubber

| Material | Postconsumer Content (%) | Total Recovered Material Content (%) |
|----------|--------------------------|--------------------------------------|
| Steel | 16 - 67 | 25 - 100 |
| Aluminum | - | 10 |
| Rubber | 100 | 100 |

Notes: The recommended recovered materials content levels for steel in this table reflect the fact that the designated item may contain steel manufactured in either a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF), or a combination of both. Steel from the BOF process contains 25% - 30% total recovered steel, of which 16% is postconsumer. Steel from the EAF process contains 100% total recovered steel, of which 67% is postconsumer. According to industry sources, modular threshold ramps containing a combination of BOF and EAF steel would contain 25% - 85% total recovered steel, of which 16% - 67% would be postconsumer. Since there is no way of knowing which type of steel was used in the manufacture of the item, the postconsumer and total recovered material content ranges in this table encompass the whole range of possibilities, i.e., the use of EAF steel only, BOF steel only, or a combination of the two.

These recommendations are for modular threshold ramps. EPA understands that ramps may also be constructed of cement and concrete. For these ramps, procuring agencies should follow the procurement guidelines for cement and concrete containing recovered materials.

Specifications: Although the federal government is not governed by ADA, the Access Board’s ADA standards are more current than the UFAS and are therefore generally used by federal facilities. According to the “Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities” (28 CFR Part 36), published in the Federal Register, July 26, 1991, ground and floor surfaces along accessible routes and in accessible rooms and spaces including floors, walks, ramps, stairs, and curbramps, must be stable, firm, and slip-resistant. The guidelines do not define what is meant by “stable, firm, and slip-resistant,” but the Access Board recommends static coefficient of friction values of 0.8 for ramps and 0.6 for accessible routes.

Section C-12 --Nonpressure Pipe Containing Recovered Steel, Plastic, or Cement

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table C-12a, procuring agencies establish minimum content standards for use in purchasing nonpressure pipe containing recovered materials.

Table C-12a. -- Recommended Recovered Materials Content Levels for Nonpressure Pipe Containing Recovered Steel, Plastic, or Cement

| Material | Postconsumer content (%) | Total recovered materials content (%) |
|----------|---|---------------------------------------|
| Steel | 16 67 | 25 - 30 100 |
| HDPE | 100 | 100 |
| PVC | 5 - 15 | 25 - 100 |
| Cement | Refer to cement and concrete recommendations in C-3 of the RMAN | |

Note: The recommended recovered materials content levels for steel in this table reflect the fact that the designated item can be made from steel manufactured in either a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF). Steel from the BOF process contains 25% - 30% total recovered steel, of which, 16% is postconsumer steel. Steel from the EAF process contains a total of 100% recovered steel, of which, 67% is postconsumer steel.

Specifications: EPA recommends that procuring agencies refer to the following tables C-12b, C-12c, C-12d, and C-12e when purchasing nonpressure pipe containing recovered materials.

Table C-12b. -- ASTM Plastic Pipe Specifications

| |
|---|
| F1960, Standard Specification for Co-extruded Poly(Vinyl Chloride) (PVC) Non-Pressure Plastic Pipe Having Reprocessed Recycled Content |
| F1732, Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer and Drain Pipe Containing Recycled PVC Material |
| D1248, Standard Specification for Polyethylene Plastics Molding and Extrusion Materials |
| F810, Smooth wall Polyethylene (PE) Pipe for Use in Drainage and Waste Absorption Fields |
| F405, Standard Specification for Corrugated Polyethylene (PE) Tubing and Fittings |
| F512, Standard Specification for Poly(vinyl Chloride) (PVC) Conduit and Fittings for Underground Installation |
| F667, Standard Specification for Large Diameter Corrugated Polyethylene Tubing and Fittings |
| F949, Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe With a Smooth Interior and Fittings |
| D2665, Standard Specification for Poly(vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings |
| D3034, Standard Specification for Type PSM (Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings |
| D2239, Standard Specifications for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter |
| D2447, Standard Specification for Polyethylene (PE) Plastic Pipe Schedules 40 and 80, Based on Controlled Outside Diameters |
| D2729-96a, Standard Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings |
| D3035, Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter |
| D4976, Standard Specification for Polyethylene Plastic Molding and Extrusion Materials |
| D3350, Standard Specification for Polyethylene Plastic Pipe and Fitting Materials |
| D4396, Standard Specification for Rigid Poly(Vinyl) (PVC) and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds for Plastic Pipe and Fittings Used in Nonpressure Applications |
| F810, Standard Specification for Smooth wall Polyethylene (PE) Pipe for Use in Drainage and Waste Disposal Absorption Fields |
| F405, Standard Specification for Corrugated Polyethylene (PE) Tubing and Fittings |
| F1970, Standard Specification for Special Engineered Fittings or Appurtenances for Use in Poly Vinyl (Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Systems |

Note: ASTM Committee C13 on Concrete Pipe is responsible for the formulation and review of specifications, test methods and definitions for concrete pipe and develops and reviews practices and guides covering design, installation, testing, economic evaluation, and performance of concrete pipe systems. While the previous ceiling on fly ash content had been set at 25 percent, in 1999, ASTM Committee C13 removed all limitations on fly ash content in pipe.

Table C-12c. -- ASTM Concrete Pipe Specifications

| |
|---|
| C14-99, Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe |
| C118-99, Standard Specification for Concrete Pipe for Irrigation or Drainage |
| C412-99, Standard Specification for Concrete Drain Tile |
| C444-95, Standard Specification for Perforated Concrete Pipe |
| C505-99a, Standard Specification for Nonreinforced Concrete Irrigation Pipe With Rubber Gasket Joints |
| C654-99, Standard Specification for Porous Concrete Pipe |
| C76-99, Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe |
| C506-99, Standard Specification for Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe |
| C507-99, Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe |
| C478-97, Standard Specification for Precast Reinforced Concrete Manhole Sections |

Table C-12d. -- ASTM and AASHTO Specifications for Steel Pipe

| Material | Description | AASHTO Specifications | ASTM Specifications |
|---------------------------------|--|-----------------------|---------------------|
| Zinc Coated Sheets and Coils | Steel base metal* with 610 g/m ² (2 oz/ft ²) zinc coating | M-218 | A929M |
| Polymer Coated Sheets and Coils | Polymer coatings applied to sheets* and coils* 9.25 mm (0.010 in.) thickness each side | M-246 | A742M |
| Fiber Bonded Coated Coils | Steel base metal with zinc coating and fibers pressed into the zinc while molten to form fiber bonded coating | -- | A885 |
| Aluminum Coated | Steel base metal* coated with 305 g/m ² (1 oz/ft ²) of pure aluminum | M-274 | A929M |
| Sewer and Drainage Pipe | Corrugated pipe fabricated from any of the above sheets or coils. Pipe is fabricated by corrugating continuous | | |

| Material | Description | AASHTO Specifications | ASTM Specifications |
|----------------------------------|---|-----------------------|---------------------|
| | coils into helical “from with lockseam or welded seam, or by” rolling annular corrugated mill sheets and riveting seams: | | |
| | Galvanized corrugated steel pipe | M-36 | A760M |
| | Polymeric pre-coated sewer and drainage pipe | M-245 | A762M |
| | Fiber bonded impregnated corrugated steel pipe | -- | A760M |
| | Aluminized corrugated steel pipe | M-36 | A760M |
| | Structural plate pipe | M-167 | A761M |
| Asphalt Coated Steel Sewer Pipe | Corrugated steel pipe of any of the types shown above with a 1.3 mm (0.0050 in.) high purity asphalt cover | M-190 | A849 A862 |
| Invert Paved Steel Sewer Pipe | Corrugated steel pipe of any one for the types shown above with an asphalt pavement poured in the invert to cover the corrugation by 3.2 mm (1/8 in.) | M-190 | A849 A862 |
| Fully Lined Steel | With an internal asphalt lining centrifugally spun in place | M-190 | A849 A862 |
| | Corrugated steel pipe with a single thickness of smooth sheet fabricated with helical ribs projected outward | M-36 | A760M |
| | With an internal concrete lining in place | M-36 | A760M |
| | Corrugated steel pipe with a smooth steel liner integrally formed with the corrugated shell. | M-36 | A760M |
| Cold Applied Bituminous Coatings | Fibrated mastic or coat tar base coatings of various viscosities for field or shop coating of corrugated pipe or structural plate | M-243 | A849 |
| Gaskets and Sealants | Standard O-ring gasket | -- | D1056 |

| Material | Description | AASHTO Specifications | ASTM Specifications |
|----------|----------------------------------|-----------------------|---------------------|
| | Gasket strips, butyl or neoprene | -- | C361 |

Notes: * Yield point 0230Mpa (33ksi) min.; tensile strength -310Mpa (45 ksi) min.; Elongation (50 mm/2 in.) - 20% min.

AASHTO pipe specifications restrict the use of recycled plastic through the reference to “rework” material. Specifications referenced by those who commented in 1994 are listed in Table C-12e. AASHTO’s specifications are updated annually.

Table C-12e. -- American Association of State Highway and Transportation Officials Pipe Specifications (1994)

| |
|---|
| M 252-93, Corrugated Polyethylene Drainage Tubing |
| M 294-93, Corrugated Polyethylene Pipe |
| M278, Class PS 46 Polyvinyl Chloride (PVC) Pipe |
| Section 18, Standard Specifications for Highway Bridges |

Section C-14. Roofing Materials Containing Recovered Steel, Aluminum, Fiber, Rubber, Plastic or Plastic Composites, or Cement

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table C-14, procuring agencies establish minimum content standards for use in purchasing or procuring roofing materials or services. EPA’s research indicates that wood shakes and shingles as well as asphalt/plastic composite roofing materials can be made from recovered materials, but we were unable to identify recycled-content percentages in these products. In the case of asphalt/plastic composite roofing materials, EPA found that the plastic was the recovered material in the items, not the asphalt.

Table C-14. -- Recommended Recovered Materials Content Levels for Roofing Materials Containing Recovered Steel, Aluminum, Fiber, Rubber, Plastic or Plastic Composites, or Cement

| Material | Postconsumer content (%) | Total recovered materials content (%) |
|-------------------------------------|--------------------------|---------------------------------------|
| Steel | 16 67 | 25 - 30 100 |
| Aluminum | 20 - 95 | 20 - 95 |
| Fiber (Felt) or Fiber Composite | 50 - 100 | 50-100 |
| Rubber | 12 - 100 | 100 |
| Plastic or Plastic/Rubber Composite | 100 | 100 |
| Wood/Plastic Composite | – | 100 |

| Material | Postconsumer content (%) | Total recovered materials content (%) |
|----------|---|---------------------------------------|
| Cement | Refer to cement and concrete recommendations in C-3 of the RMAN | |

Note: The recommended recovered materials content levels for steel in this table reflect the fact that the designated item can be made from steel manufactured in either a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF). Steel from the BOF process contains 25% - 30% total recovered steel, of which, 16% is postconsumer steel. Steel from the EAF process contains a total of 100% recovered steel, of which, 67% is postconsumer steel.

Specifications: EPA recommends that procuring agencies refer to the 186 standards for roofing products maintained by ASTM's Committee D08 on Roofing, Waterproofing, and Bituminous Materials. The specifications, however, do not discuss use of recovered materials, nor do they preclude the use of recovered materials.

Part D --Transportation Products

Section D-1 -- Temporary Traffic Control Devices

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table D-1, procuring agencies establish minimum content standards for use in purchasing traffic cones and traffic barricades.

Table D-1.-- Recommended Recovered Materials Content Levels for Traffic Cones and Traffic Barricades

| Product | Material | Postconsumer Materials (%) | Total Recovered Materials (%) |
|--------------------|-------------------------|----------------------------|-------------------------------|
| Traffic Cones | PVC, LDPE, Crumb Rubber | -- | 50 - 100 |
| Traffic Barricades | HDPE, LDPE, PET | 80 - 100 | 100 |
| | Steel | 16 | 25-30 |
| | | 67 | 100 |
| | Fiberglass | -- | 100 |

Notes: The recommended recovered materials content levels are based on the dry weight of the raw materials, exclusive of any additives such as adhesives, binders, or coloring agents.

The recommended recovered materials content levels for steel in this table reflect the fact that the designated items can be made from steel manufactured in either a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF). Steel from the BOF process contains 25% - 30% total recovered materials, of which 16% is postconsumer steel. Steel from the EAF process contains a total of 100% recovered steel, of which 67% is postconsumer.

Section D-2 -- Parking Stops Made from Concrete or Containing Recovered Plastic or Rubber

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table D-2, procuring agencies establish minimum content standards for use in purchasing parking stops.

Table D-2. -- Recommended Recovered Materials Content Levels for Parking Stops Made from Concrete or Containing Recovered Plastic or Rubber

| Material | Postconsumer content (%) | Recovered materials content (%) |
|----------------------------------|--------------------------|---------------------------------|
| Plastic and/or rubber | 100 | ----- |
| Concrete containing coal fly ash | ----- | 20-40 |
| Concrete containing GGBF slag | ----- | 25-70 |

Notes: EPA’s recommendation does not preclude a procuring agency from purchasing parking stops manufactured from another material. It simply requires that a procuring agency, when purchasing concrete parking stops or parking stops made with plastic or rubber, purchase these items made with recovered materials when these items meet applicable specifications and performance requirements.

Parking stops made with recovered plastics may also include other recovered materials such as sawdust, wood, or fiberglass. The percentage of these materials contained in the product would also count toward the recovered materials content level of the parking stops.

ASTM specification C595M-95 Standard Specification for Blended Hydraulic Cements specifies the appropriate mix design, including recovered materials content, for concrete containing coal fly ash and GGBF slag.

Section D-3 -- Channelizers, Delineators, and Flexible Delineators Containing Recovered Plastic, Rubber, or Steel

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table D-3, procuring agencies establish minimum content standards for use in purchasing channelizers, delineators, and flexible delineators.

Table D-3. -- Recommended Recovered Materials Content Levels for Channelizers, Delineators, and Flexible Delineators Containing Recovered Plastic, Rubber, or Steel

| Product | Material | Postconsumer content (%) |
|--------------|--------------------|---|
| Channelizers | Plastic | 25-95 |
| | Rubber (base only) | 100 |
| Delineators | Plastics | 25-90 |
| | Rubber (base only) | 100 |
| | Steel (base only) | 16% postconsumer and 25-30% total recovered materials or |

| Product | Material | Postconsumer content (%) |
|----------------------|----------|---|
| | | 67% postconsumer and 100% total recovered materials |
| Flexible delineators | Plastic | 25-85 |

Notes: EPA's recommendation does not preclude a procuring agency from purchasing channelizers, delineators, or flexible delineators manufactured from another material. It simply requires that a procuring agency, when purchasing these items made from rubber, plastic, or steel, purchase them made with recovered materials when these items meet applicable specifications and performance requirements.

The recommended recovered materials content levels for steel in this table reflect the fact that the designated items can be made from steel manufactured in either a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF). Steel from the BOF process contains 25% - 30% total recovered materials, of which 16% is postconsumer steel. Steel from the EAF process contains a total of 100% recovered steel, of which 67% is postconsumer.

Specifications: EPA recommends that procuring agencies use the following specifications when procuring channelizers, delineators, and flexible delineators:

- (1) The Federal Highway Administration's Manual on Uniform Traffic Control Devices contains specifications for the size, shape, mounting, and placement of temporary traffic control devices.
- (2) The States of Florida and North Carolina have specifications that require the use of recovered materials in their flexible delineators. The California Department of Transportation (CALTRANS) has specifications for "Drivable Flexible Plastic Guide Marker and Clearance Marker Posts." A copy of these specifications are available from the RCRA Hotline at 1-800-424-9346.

Part E -- Park and Recreation Products

Section E-1 -- Playground Surfaces and Running Tracks

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table E-1, procuring agencies establish minimum content standards for use in purchasing playground surfaces and running tracks made of rubber or plastic.

Table E-1.-- Recommended Recovered Materials Content Levels for Playground Surfaces and Running Tracks

| Product | Material | Postconsumer Recovered Materials (%) |
|---------------------|-------------------|--------------------------------------|
| Playground Surfaces | Rubber or Plastic | 90 - 100 |
| Running Tracks | Rubber or Plastic | 90 - 100 |

Notes: EPA's recommendation does not preclude procuring agencies from purchasing playground surfaces or running tracks manufactured from another material. It simply recommends that procuring agencies, when purchasing playground surfaces or running tracks made from rubber or plastic, purchase these items made from recovered materials.

The recommended recovered materials content levels are based on the dry weight of the raw materials, exclusive of any additives such as adhesives, binders, or coloring agents.

Section E-2 --Plastic Fencing Containing Recovered Plastic for Specified Uses

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table E-2, procuring agencies establish minimum content standards for use in purchasing plastic fencing for use in controlling snow or sand drifting and as a warning/safety barrier in construction or other applications.

Table E-2. -- Recommended Recovered Materials Content Levels for Fencing Containing Recovered Plastic

| Material | Postconsumer content (%) | Total recovered materials content (%) |
|----------|--------------------------|---------------------------------------|
| Plastic | 60-100 | 90-100 |

Note: EPA's recommendation does not preclude a procuring agency from purchasing fencing manufactured from another material, such as wood. It simply requires that a procuring agency, when purchasing plastic fencing, purchase this item made with recovered materials when this item meets applicable specifications and performance requirements.

Specifications: The State of New York developed a specification for orange-colored plastic fencing used for snow barriers, warning barriers, and safety barriers, but discontinued its use because the state did not purchase enough fencing to warrant maintaining the specification. Height varied, depending on application, from four to six feet. Weight varied from 17 pounds per 100 foot section for warning barriers to 48 pounds per 100 foot section for snow fencing to 66 pounds per 100 foot section for six-foot safety barrier fencing. The New York specification also addressed mesh size, porosity, service temperature range, and strength for each application. A copy of this specification is available from the RCRA Hotline by calling 1-800-424-9346.

Section E-3. Picnic Tables and Park Benches Containing Recovered Steel, Aluminum, or Plastic

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table E-3a, procuring agencies establish minimum content standards for use in purchasing aluminum, steel, or plastic park benches and picnic tables containing recovered materials.

Table E-3a. -- Recommended Recovered Materials Content Levels for Park Benches and Picnic Tables Containing Recovered Aluminum, Steel, Concrete or Plastic

| Material | Postconsumer content (%) | Total recovered materials content (%) |
|--------------------|--------------------------|---------------------------------------|
| Plastics | 90-100 | 100 |
| Plastic composites | 50 - 100 | 100 |
| Aluminum | 25 | 25 |
| Concrete | -- | 15-40 |
| Steel | 16 67 | 25-30 100 |

Notes: "Plastics" includes both single and mixed plastic resins. Picnic tables and park benches made with recovered plastics may also contain other recovered materials such as sawdust, wood, or fiberglass. The percentage of these materials contained in the product would also count toward the recovered materials content level of the item.

The recommended recovered materials content levels for steel in this table reflect the fact that the designated items can be made from steel manufactured in either a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF). Steel from the BOF process contains 25% - 30% total recovered materials, of which 16% is postconsumer steel. Steel from the EAF process contains a total of 100% recovered steel, of which 67% is postconsumer.

EPA's recommendations do not preclude a procuring agency from purchasing park benches or picnic tables made from other materials. They simply require that procuring agencies, when purchasing park benches or picnic tables made from plastic, aluminum, concrete, or steel purchase these items made with recovered materials when these items meet applicable specifications and performance requirements.

Specifications: EPA did not identify any specifications for park benches or picnic tables made from steel, concrete, or aluminum. EPA recommends that procuring agencies ensure that there is no language in their specifications for park benches or picnic tables that would preclude or discourage the use of products containing recovered materials.

EPA recommends that procuring agencies use the ASTM specifications referenced in Table E-3b for park benches and picnic tables made from plastic lumber.

Table E-3b. -- Recommended Specifications for Plastic Lumber Used In Park Benches and Picnic Tables

| ASTM Specification Number | Title |
|---------------------------|---|
| D 6108-97 | Standard Test Method for Compressive Properties of Plastic Lumber |
| D 6109-97 | Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastic Lumber |
| D 6111-97 | Standard Test Method for Bulk Density and Specific Gravity of Plastic Lumber and Shapes by Displacement |
| D 6112-97 | Standard Test Method for Compressive and Flexural Creep and Creep Rupture of Plastic Lumber and Shapes |
| D 6117-97 | Standard Test Method for Mechanical Fasteners in Plastic Lumber and Shapes |

Section E-4. Playground Equipment

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table E-4a, procuring agencies establish minimum content standards for use in purchasing playground equipment made from plastic lumber, steel, or aluminum containing recovered materials.

Table E-4a. -- Recommended Recovered Materials Content Levels for Playground Equipment Containing Recovered Plastic, Steel, or Aluminum

| Material | Postconsumer content (%) | Total recovered materials content (%) |
|--------------------|--------------------------|---------------------------------------|
| Plastics | 90 - 100 | 100 |
| Plastic Composites | 50 - 75 | 95 - 100 |
| Steel | 16 67 | 25-30 100 |
| Aluminum | 25 | 25 |

Notes: "Plastics" includes both single and mixed plastic resins. Playground equipment made with recovered plastics may also contain other recovered materials such as wood or fiberglass. The percentage of these materials contained in the product would also count toward the recovered materials content level of the item.

The recommended recovered materials content levels for steel in this table reflect the fact that the designated items can be made from steel manufactured in either a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF). Steel from the BOF process contains 25% - 30% total recovered materials, of which 16% is postconsumer steel. Steel from the EAF process contains a total of 100% recovered steel, of which 67% is postconsumer.

EPA's recommendations do not preclude a procuring agency from purchasing playground equipment made from other materials. They simply require that procuring agencies, when purchasing playground equipment made from plastic, aluminum, or steel purchase these items made with recovered materials when the item meets applicable specifications and performance requirements.

Specifications: EPA recommends that procuring agencies use the specifications in Table E-4b when procuring playground equipment. Playground equipment may also be subject to state and local codes and standards as well as Federal child safety laws. EPA also recommends that procuring agencies use the ASTM specifications referenced in Table E-4c for playground equipment made from plastic lumber.

Table E-4b. -- Recommended Safety Specifications for Playground Equipment

| Specification | Title |
|--|--|
| Consumer Product Safety Commission (CPSC) Publication No. 325 | Handbook for Public Playground Safety |
| ASTM F-1487-95 | Safety Performance Specification for Playground Equipment for Public Use |

Table E-4c. -- Recommended Specifications for Plastic Lumber Used In Playground Equipment

| ASTM Specification Number | Title |
|---------------------------|---|
| D 6108-97 | Standard Test Method for Compressive Properties of Plastic Lumber |
| D 6109-97 | Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastic Lumber |
| D 6111-97 | Standard Test Method for Bulk Density and Specific Gravity of Plastic Lumber and Shapes by Displacement |
| D 6112-97 | Standard Test Method for Compressive and Flexural Creep and Creep Rupture of Plastic Lumber and Shapes |
| D 6117-97 | Standard Test Method for Mechanical Fasteners in Plastic Lumber and Shapes |

Part F -- Landscaping Products

Section F-1 -- Hydraulic Mulch

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table F-1, procuring agencies establish minimum content standards for paper-based and wood-based hydraulic mulch products.

Table F-1.-- Recommended Recovered Materials Content Levels for Hydraulic Mulch Products

| Hydraulic Mulch Products | Recovered Materials (Materials and %) |
|-----------------------------|--|
| Paper-Based Hydraulic Mulch | Postconsumer recovered paper 100 |
| Wood-Based Hydraulic Mulch | Recovered wood and/or paper 100 |

Note: The recommended recovered materials content levels are based on the dry weight of the fiber, exclusive of any dyes, wetting agents, seeds, fertilizer, or other non-cellulose additives.

Section F-2 -- Compost Made from Recovered Organic Materials

Note: EPA previously designated yard trimmings compost in CPG I and food waste compost in CPG III. CPG V revises the designation by amending the definition of “compost” and changing the description of the designation to “compost made from recovered organic materials.” These materials can include yard trimmings, food waste, manure, biosolids, or other recovered organic materials that can be composted. The effect of those changes is to add compost made from manure or biosolids or both to the compost designation. Following are EPA’s revised recommendations for purchasing compost. EPA’s final recommendations for purchasing composts made from recovered organic materials should be substituted for the recommendations found in Section F-2 of RMAN III.

Preference Program: EPA recommends that procuring agencies purchase or use mature compost made from recovered organic materials in such applications as landscaping, seeding of grass or other plants on roadsides and embankments, as nutritious mulch under trees and shrubs, and in erosion control and soil reclamation. Mature compost is defined as a thermophilic converted product with high humus content, which can be used as a soil amendment and can also be used to prevent or remediate pollutants in soil, air, and storm water run-off.

EPA further recommends that those procuring agencies that have an adequate volume of organic materials, as well as sufficient space for composting, should implement a composting system to produce compost from these materials to meet their landscaping and other needs.

Specifications: EPA recommends that procuring agencies refer to the following specifications when purchasing compost made from recovered organic materials. The U.S. Composting Council’s (USCC’s) Test Methods for the Examination of Composting and Compost (TMECC) and Seal of Testing Assurance (STA) program, which are found at www.compostingcouncil.org. The TMECC are standardized methods

for the composting industry to test and evaluate compost and verify the physical, chemical, and biological characteristics of composting source materials and compost products. The TMECC also includes material testing guidelines to ensure product safety and market claims. The STA program is a compost testing and information disclosure program that uses the TMECC. Participating compost producers regularly sample and test their products using STA Program approved labs, all of which must use the same standardized testing methodologies. Participants must make test results available to customers and certify that they are in compliance with all applicable local, state, and federal regulations with respect to their compost products. The USCC then certifies the participants' compost as "STA certified compost" and allows the use of the STA logo on product packaging and literature. Procuring agencies can consider specifying STA certified compost, especially for applications that require consistent quality.

Section 713.05(f) of the U.S. Department of Transportation's 1996 "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects FP-96" specifies compost as one of the materials suitable for use in roadside revegetation projects associated with road construction. (See p.719 in <http://www.epl.fhwa.dot.gov/design/manual/Fp96.pdf>.)

EPA's "Standards for the Use or Disposal of Sewage Sludge," at 40 CFR part 503, limit the pollutants and pathogens in biosolids. If biosolids are included as part of the compost, the processing and product are subject to Part 503. (<http://www.epa.gov/owm/mtb/biosolids/>) Procuring agencies should also look at other applicable federal, state, and local government regulations on the use of compost made from recovered organic materials.

The U.S. Department of Agriculture (USDA) National Organic Program (NOP) regulations established national standards for organically produced agricultural products to assure consumers that agricultural products marketed as organic meet consistent, uniform standards. The NOP regulations require that agricultural products labeled as organic originate from farms or handling operations certified by a State or private entity that has been accredited by USDA. Among other things, the regulations prohibit the use of sewage sludge (biosolids) in organic production. (<http://www.ams.usda.gov/nop/NOP/NOPhome.html>)

Example language for solicitations and contracts can be found in the Federal Green Construction Guide for Specifiers, which is available on the Whole Building Design Guide web site, at http://www.wbdg.org/design/greenspec_msl.php?s=329000.

The Organic Materials Review Institute (OMRI), at www.omri.org, has developed guidelines and lists of materials allowed and prohibited for use in the production, processing, and handling of organically grown products.

Finally, EPA recommends that procuring agencies ensure that there is no language in their specifications relating to landscaping, soil amendments, erosion control, or soil reclamation that would preclude or discourage the use of compost made from recovered organic materials.

Section F-3 -- Garden and Soaker Hoses Containing Recovered Plastic or Rubber

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table F-3, procuring agencies establish minimum content standards for use in purchasing garden and soaker hoses.

Table F-3. -- Recommended Recovered Materials Content Levels for Garden and Soaker Hoses Containing Recovered Plastic or Rubber

| Product | Material | Postconsumer content (%) |
|-------------|-----------------------|--------------------------|
| Garden hose | Rubber and/or plastic | 60-65 |
| Soaker hose | Rubber and/or plastic | 60-70 |

Note: EPA's recommendation does not preclude a procuring agency from purchasing garden and soaker hoses manufactured from another material. It simply requires that a procuring agency, when purchasing garden and soaker hoses made from plastic or rubber, purchase these items made with recovered materials when these items meet applicable specifications and performance requirements.

The Green Seal specification for watering hoses includes a 50 percent postconsumer content level. However, all companies from which EPA obtained information manufacture garden and/or soaker hoses with at least 60 percent postconsumer content.

Specifications: EPA recommends that procuring agencies use the following specifications when procuring garden and soaker hoses:

- (1) ASTM D3901 Consumer Specification for Garden Hose. The specification addresses physical and performance characteristics (pressure, tensile, and ripping strength tests) and states that the material components are to be agreed upon by the purchaser and seller.
- (2) Green Seal GC-2: Watering Hoses. The standard calls for the use of 50 percent postconsumer rubber material in garden hoses and 65 percent postconsumer rubber material in soaker hoses. EPA recommends that, when purchasing garden hoses, procuring agencies reference the technical requirements of this specification but set a higher content standard.

Section F-4 -- Lawn and Garden Edging Containing Recovered Plastic or Rubber

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table F-4, procuring agencies establish minimum content standards for use in purchasing lawn and garden edging.

Table F-4. -- Recommended Recovered Materials Content Levels for Lawn and Garden Edging Containing Recovered Plastic or Rubber

| Material | Postconsumer content (%) | Total recovered materials content (%) |
|-----------------------|--------------------------|---------------------------------------|
| Plastic and/or rubber | 30-100 | 30-100 |

Note: EPA's recommendation does not preclude a procuring agency from purchasing lawn and garden edging manufactured from another material, such as wood. It simply requires that a procuring agency, when purchasing lawn and garden edging made from plastic and/or rubber, purchase these items made with recovered materials when these items meet applicable specifications and performance requirements.

Section F-5. Plastic Lumber Landscaping Timbers and Posts Containing Recovered Materials

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table F-5a, procuring agencies establish minimum content standards for use in purchasing plastic lumber landscaping timbers and posts containing recovered materials.

Table F-5a. -- Recommended Recovered Materials Content Levels for Plastic Lumber Landscaping Timbers and Posts

| Material | Postconsumer content (%) | Total recovered materials content (%) |
|------------------------|--------------------------|---------------------------------------|
| HDPE | 25-100 | 75-100 |
| Mixed Plastics/Sawdust | 50 | 100 |
| HDPE/Fiberglass | 75 | 95 |
| Other mixed resins | 50-100 | 95-100 |

Note: EPA’s recommendations do not preclude a procuring agency from purchasing wooden landscaping timbers and posts. They simply require that procuring agencies, when purchasing plastic landscaping timbers and posts purchase these items made with recovered materials when the items meet applicable specifications and performance requirements.

Specifications: EPA recommends that procuring agencies use the ASTM specifications referenced in Table F-5b for plastic lumber landscaping timbers and posts.

Table F-5b. -- Recommended Specifications for Plastic Lumber Landscaping Timbers and Posts

| ASTM Specification Number | Title |
|---------------------------|---|
| D 6108-97 | Standard Test Method for Compressive Properties of Plastic Lumber |
| D 6109-97 | Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastic Lumber |
| D 6111-97 | Standard Test Method for Bulk Density and Specific Gravity of Plastic Lumber and Shapes by Displacement |
| D 6112-97 | Standard Test Method for Compressive and Flexural Creep and Creep Rupture of Plastic Lumber and Shapes |
| D 6117-97 | Standard Test Method for Mechanical Fasteners in Plastic Lumber and Shapes |

Section F-6 – Fertilizer Made from Recovered Organic Materials

Note: Although fertilizer has some qualities similar to compost, for the purposes of the CPG, compost is a separate designation.

Preference Program: EPA recommends that procuring agencies purchase or use fertilizer made from recovered organic materials in such applications as agriculture and crop production, landscaping, horticulture, parks and other recreational facilities, on school campuses, and for golf course and turf maintenance.

Specifications: EPA recommends that procuring agencies refer to the following specifications when purchasing fertilizers made from recovered organic materials. Biosolids can be used in the production of fertilizers made from recovered organic materials and must meet the requirements specified in 40 CFR part 503 before they may be beneficially used. The Part 503 land application requirements ensure that any biosolids that are land applied contain pathogens and metals that are below specified levels and are protective of public health and the environment. (<http://www.epa.gov/owm/mtb/biosolids/>) Procuring agencies should also check for other applicable federal, state, and local government regulations on the use of fertilizers made from recovered organic materials.

The U.S. Department of Agriculture (USDA) National Organic Program (NOP) regulations established national standards for organically produced agricultural products to assure consumers that agricultural products marketed as organic meet consistent, uniform standards. The NOP regulations require that agricultural products labeled as organic originate from farms or handling operations certified by a State or private entity that has been accredited by USDA. Among other things, the regulations prohibit the use of sewage sludge (biosolids) in organic production (<http://www.ams.usda.gov/nop/NOP/NOPhome.html>).

The Organic Materials Review Institute (OMRI), at www.omri.org, has developed guidelines and lists of materials allowed and prohibited for use in the production, processing, and handling of organically grown products.

Finally, EPA recommends that procuring agencies ensure that there is no language in their specifications relating to landscaping or soil treatment that would preclude or discourage the use of fertilizers made from recovered organic materials.

Part G -- Non-Paper Office Products

Section G-1 -- Office Recycling Containers and Office Waste Receptacles

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table G-1, procuring agencies establish minimum content standards for use in purchasing office recycling containers and office waste receptacles.

Table G-1.-- Recommended Recovered Materials Content Levels for Office Recycling Containers and Office Waste Receptacles

| Product | Recovered Materials (materials and percent) |
|--|---|
| Office Recycling Containers and Office Waste Receptacles | Plastic: 20 - 100 Postconsumer Recovered Materials Paper: Refer to the Paper Products Recommendations in Part A of RMAN Steel: 16% postconsumer and 25% - 30% total recovered materials |

Note: EPA's recommendations for office recycling containers and office waste receptacles containing recovered plastic, paper, or steel do not preclude a procuring agency from purchasing containers or receptacles manufactured from another material, such as wood. They simply require that procuring agencies, when purchasing office recycling containers or office waste receptacles manufactured from plastic, paper, or steel, purchase these items made with recovered materials when the items meet applicable specifications and performance requirements.

The recommended recovered materials content levels for steel in this table reflect the fact that the designated items are made from steel manufactured in a Basic Oxygen Furnace (BOF). Steel from the BOF process contains 25% - 30% total recovered materials, of which 16% is postconsumer steel.

Section G-2 -- Plastic Desktop Accessories

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table G-2, procuring agencies establish minimum content standards for use in purchasing plastic desktop accessories. If items are not available within the recommended range, procuring agencies should seek the items with the highest percentage of recovered materials practicable.

Table G-2. -- Recommended Recovered Materials Content Levels for Plastic Desktop Accessories

| Product | Postconsumer Recovered Materials (Material and %) |
|-----------------------------|--|
| Plastic Desktop Accessories | Polystyrene 25 - 80 |

Note: EPA's recommendation does not preclude procuring agencies from purchasing a desktop accessory manufactured from another material, such as paper, wood, or steel. It simply recommends that, when purchasing plastic desktop accessories, procuring agencies purchase these items made from recovered materials.

Section G-3 -- Toner Cartridges

Preference Program: EPA recommends that procuring agencies establish procedures and policies that give priority to remanufacturing the agencies' expended toner cartridges. EPA recommends that, under such policies and procedures, procuring agencies procure remanufacturing services for expended cartridges and, when such services are unavailable or not practicable, obtain remanufactured toner cartridges or new toner cartridges made with recovered materials from product vendors.

Section G-4 -- Binders

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table G-3, procuring agencies establish minimum content standards for use in purchasing binders.

Table G-3. -- Recommended Recovered Materials Content Levels for Binders

| Product | Recovered Materials (Materials and %) |
|--|---|
| Plastic-Covered Binders (Plastic Covering) | Plastic 25 - 50 |
| Chipboard, Paperboard, or Pressboard Binders or Binder Components | Paper Refer to Paper Products Recommendations in Part A of RMAN |

Notes: The chipboard, paperboard, or pressboard binders or components of plastic-covered binders or binders covered with another material, such as cloth, are covered under the recommendation for paper and paper products (see Part A of the RMAN).

EPA's recommendations do not preclude procuring agencies from purchasing binders covered with or manufactured using another material, such as cloth. It simply recommends that procuring agencies, when purchasing binder types designated in the procurement guidelines, purchase these binders containing recovered materials.

Specifications: GSA's specification for binders, A-A-2549A, covers four types of binders, including cloth bound, flexible cover; cloth bound, stiff cover; plastic bound, flexible cover; and plastic bound, stiff cover. In the specification, GSA requires its binders to contain "a minimum of 100% waste paper, including a minimum of 30% postconsumer recovered materials."

Section G-5 -- Plastic Trash Bags

Preference Program: EPA recommends that, based on the content levels shown in Table G-4, procuring agencies establish minimum content standards for use in purchasing plastic trash bags.

Table G-4 .-- Recommended Recovered Materials Content Levels for Plastic Trash Bags

| Product | Postconsumer Recovered Materials (Material and %) |
|--------------------|--|
| Plastic Trash Bags | Plastic 10 - 100 |

Note: EPA's recommendation does not preclude procuring agencies from purchasing a trash bag manufactured using another material, such as paper. It merely recommends that procuring agencies, when purchasing plastic trash bags, purchase these items made from recovered materials.

Section G-6 -- Printer Ribbons

Preference Program: Minimum content standards are not appropriate for remanufactured items, such as printer ribbons, because a core part of the item is reused in the new product, even though certain components of a printer ribbon may contain recovered materials. In lieu of content standards, EPA recommends that procuring agencies adopt one or both of the following approaches: (1) procure printer ribbon reinking or reloading services or (2) procure reinked or reloaded printer ribbons. EPA further recommends that procuring agencies establish policies that give priority to reinking or reloading their expended printer ribbons. If reinking and reloading services are unavailable, procuring agencies should attempt to purchase reinked or reloaded printer ribbons. GSA offers remanufactured printer ribbons on the New Item Introductory Schedule (NIIS).

Specifications: The State of Alabama has a specification for reinked ribbons which requires the ribbons to be vacuum cleaned, reinked, and rewound to proper tension. A copy of this specification is available from the RCRA Hotline at 1-800-424-9346.

Section G-7 -- Plastic Envelopes

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table G-7, procuring agencies establish minimum content standards for use in purchasing plastic envelopes.

Table G-7. -- Recommended Recovered Materials Content Levels for Plastic Envelopes

| Material | Postconsumer content (%) | Total recovered materials content (%) |
|----------|--------------------------|---------------------------------------|
| Plastic | 25 | 25-35 |

Note: EPA's recommendation does not preclude a procuring agency from purchasing envelopes manufactured from another material, such as paper. It simply requires that a procuring agency, when purchasing envelopes made from plastic, purchase these items made with recovered materials when these items meet applicable specifications and performance requirements. Procuring agencies should note, however, that paper envelopes fall within the scope of EPA's previous designation of paper and paper products. EPA issued postconsumer and recovered materials content recommendations for paper products, including envelopes, in the Paper Products RMAN, which was issued in the FEDERAL REGISTER on May 29, 1996 at 61 FR 26985. A copy of the Paper Products RMAN is available from the RCRA Hotline at 1-800-424-9346 and electronically via EPA's Public Access Server at <http://www.epa.gov/fedrgstr/search.htm>.

Specifications:

(1) GSA, the Government Printing Office (GPO), and the U.S. Postal Service (USPS) all currently purchase plastic envelopes made from Tyvek® containing recovered HDPE. GSA specifies “DuPont Tyvek® or equal.” USPS requires “DuPont Tyvek®.” GPO requires “white spunbonded polyethylene with the characteristics of DuPont’s product no. 1073;” the title of the solicitation, however, states “Tyvek® envelopes or similar.”

(2) The Navy requests that plastic envelopes not be sent to ships in order to minimize onboard disposal of plastic.

Section G-8. Solid Plastic Binders, Plastic Clipboards, Plastic File Folders, Plastic Clip Portfolios, and Plastic Presentation Folders Containing Recovered Plastic

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table G-8, procuring agencies establish minimum content standards for use in purchasing solid plastic binders, plastic clipboards, plastic file folders, plastic clip portfolios, and plastic presentation folders containing recovered materials.

Table G-8. -- Recommended Recovered Materials Content Levels for Solid Plastic Binders, Clipboards, File Folders, Clip Portfolios, and Presentation Folders

| Product | Material | Postconsumer content (%) | Total recovered materials content (%) |
|------------------------------|----------------|--------------------------|---------------------------------------|
| Solid plastic binders | HDPE | 90 | 90 |
| | PE | 30-50 | 30-50 |
| | PET | 100 | 100 |
| | Misc. Plastics | 80 | 80 |
| Plastic clipboards | HDPE | 90 | 90 |
| | PS | 50 | 50 |
| | Misc. Plastics | 15 | 15-80 |
| Plastic file folders | HDPE | 90 | 90 |
| Plastic clip portfolios | HDPE | 90 | 90 |
| Plastic presentation folders | HDPE | 90 | 90 |

Notes: EPA’s recommendations do not preclude a procuring agency from purchasing binders, clipboards, file folders, clip portfolios, or presentation folders made from another material, such as paper. They simply require that procuring agencies, when purchasing these items made from solid plastic, purchase them made with recovered plastics when these items meet applicable specifications and performance requirements.

For EPA’s recommendations for purchasing pressboard binders and paper file folders containing recovered materials, see table A-1c in the Paper Products RMAN (61 FR 26986, May 29, 1996). See Table G-3 in RMAN I for EPA’s recommendations for purchasing plastic-covered binders containing recovered materials.

Specifications: EPA did not identify any specifications for solid plastic binders, clipboards, file folders, clip portfolios, and presentation folders. EPA recommends that procuring agencies ensure that there is no language in their specifications for these items that would preclude or discourage the use of products containing recovered materials.

Section G-9. Office Furniture Containing Recovered Steel, Aluminum, Wood, Agricultural Fiber, and Plastic

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table G-9, procuring agencies establish minimum content standards for use in purchasing office furniture with recovered materials, including remanufactured or refurbished office furniture.

Table G-9. -- Recommended Recovered Materials Content Levels for Office Furniture

| Product | Material | Postconsumer content (%) | Total recovered materials content (%) |
|---|------------------------|--------------------------|---------------------------------------|
| Furniture structure | Steel | 16 | 25 - 30 |
| Furniture structure | Aluminum | – | 75 - 100 |
| Particleboard/ Fiberboard component | Wood or wood composite | Greater than 0 | 80 - 100 |
| | Agricultural fiber | – | 100 |
| Fabric | PET | 100 | 100 |
| Plastic furniture component | HDPE | 70 - 75 | 95 |
| Remanufactured or Refurbished Furniture | Various | 25 - 75 | 25 - 75 |

Notes: The recommended recovered materials content levels for steel in this table reflect the fact that the designated item is generally made from steel manufactured in a Basic Oxygen Furnace (BOF). Steel from the BOF process contains 25% - 30% total recovered steel, of which, 16% is postconsumer steel.

Particleboard and fiberboard used in the wood components of office furniture may also contain other recovered cellulosic materials, including, but not limited to, paper, wheat straw, and bagasse. The percentages of these materials contained in the product would also count toward the recovered materials content level of the item. In addition, while EPA has no evidence or indication that wood treated with chromated copper arsenate (CCA) is currently used in office furniture, EPA is not recommending the use of CCA-treated wood as a recovered material in office furniture. The arsenic in CCA is a known human carcinogen and EPA is currently conducting a thorough and comprehensive risk assessment of CCA as a part of the pesticide reregistration process for CCA. In addition, EPA is conducting a risk assessment for children who contact CCA-treated wood playsets and decks.

Specifications: EPA did not identify any standards or specifications that would preclude government agencies from purchasing office furniture with recovered materials content or remanufactured or refurbished office furniture. GSA requires that remanufactured furniture meet the same Underwriters Laboratories, ASTM, and

Business and Institutional Furniture Manufacturer’s Association standards and fire codes (Boston and California) as new furniture.

Part H - Miscellaneous Products

Part H-1 -- Pallets Containing Recovered Wood, Plastic, or Paperboard

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table H-1, procuring agencies establish minimum content standards for use in purchasing pallets.

Table H-1. -- Recommended Recovered Materials Content Levels for Pallets Containing Recovered Wood, Plastic, or Paperboard

| Product | Material | Postconsumer content (%) |
|--------------------|------------|--------------------------|
| Wooden pallets | Wood | 95-100 |
| Plastic pallets | | |
| Plastic lumber | Plastic | 100 |
| Thermoformed | Plastic | 25-50 |
| Paperboard pallets | Paperboard | 50 |

Note: EPA’s recommendation does not preclude a procuring agency from purchasing pallets manufactured from another material. It simply requires that a procuring agency, when purchasing pallets made from wood, plastic, or paperboard, purchase these items made with recovered materials when these items meet applicable specifications and performance requirements.

Specifications: EPA recommends that procuring agencies use the following specifications when procuring pallets:

(1) The Grocery Manufacturers of America issued a widely used standard for 48 by 40-inch stringer pallets known as the “GMA spec.” A copy of this specification is available from the RCRA Hotline at 1-800-424-9346.

(2) The National Wooden Pallet and Container Association is developing a standard through the American National Standards Institute (ANSI) for repairable 48 by 40-inch lumber-deck pallets. Contact NWPCA at (703) 527-7667 for current information about the availability of this standard.

(3) U.S. Postal Service specification USPS-P-1108, “Pallet, Nestable, Plastic, Thermoformed (Item No. 3919B)” is for thermoformed HDPE pallets. A copy of the current version, USPS-P-1108E, is available from the RCRA Hotline at 1-800-424-9346.

Section H-2. -- Sorbents

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table H-2a, procuring agencies establish minimum content standards for use in purchasing sorbent materials for use in oil and solvent clean-ups and for use as animal bedding.

Table H-2a. -- Recommended Recovered Materials Content Levels for Sorbents Used in Oil and Solvents Clean-ups and for Use as Animal Bedding

| Material | Postconsumer Content (%) | Total Recovered Materials Content (%) |
|--------------------------------|--------------------------|---------------------------------------|
| Paper | 90 - 100 | 100 |
| Textiles | 95 - 100 | 95 - 100 |
| Plastics | -- | 25 - 100 |
| Wood | -- | 100 |
| Other Organics/Multi-Materials | -- | 100 |

Notes: "Wood" includes materials such as sawdust and lumber mill trimmings. Examples of "other organics" include, but are not limited to, peanut hulls and corn stover. An example of "multi-material" sorbents would include, but not be limited to, a polymer and cellulose fiber combination.

EPA's recommendations do not preclude a procuring agency from purchasing sorbents made from other materials. They simply require that procuring agencies, when purchasing sorbents made from paper, wood, textiles, plastics, or other organic materials, purchase them made with recovered materials when these items meet applicable specifications and performance requirements.

Specifications: EPA recommends that procuring agencies ensure that there is no language in their specifications for sorbents that would preclude or discourage the use of products containing recovered materials.

EPA recommends that procuring agencies use the ASTM specifications in Table H-2b when procuring sorbents for use on oil and solvent clean-ups.

Table H-2b. -- ASTM Specifications for Absorbents and Adsorbents

| ASTM Specification Number | Title |
|---------------------------|--|
| F 716-81 | Standard Method of Testing Sorbent Performance of Adsorbents |
| F 716-82 | Standard Method of Testing Sorbent Performance of Absorbents |

Section H-3. Industrial Drums Containing Recovered Steel, Plastic, and Paper

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table H-3, procuring agencies establish minimum content standards for use in purchasing steel, plastic, or fiber industrial drums containing recovered materials. EPA further recommends that procuring agencies reuse drums, purchase or use reconditioned drums, or procure drum reconditioning services, whenever feasible.

Table H-3. -- Recommended Recovered Materials Content Levels for Steel, Plastic, and Fiber Industrial Drums

| Product | Material | Postconsumer content (%) | Total recovered materials content (%) |
|---------------|----------|--------------------------|---------------------------------------|
| Steel drums | Steel | 16 | 25-30 |
| Plastic drums | HDPE | 30-100 | 30-100 |
| Fiber drums | Paper | 100 | 100 |

Notes: EPA's recommendation does not preclude a procuring agency from purchasing another type of industrial drum. It simply requires that procuring agencies, when purchasing steel, plastic, or fiber industrial drums, purchase these items made with recovered materials when these items meet applicable specifications and performance requirements.

The recommended recovered materials content levels for steel in this table reflect the fact that the designated items are made from steel manufactured in a Basic Oxygen Furnace (BOF). Steel from the BOF process contains 25% - 30% total recovered materials, of which 16% is postconsumer steel.

Specifications: EPA is not aware of specifications unique to industrial drums containing recovered materials. EPA notes that industrial drums containing recovered materials can meet applicable U.S. Department of Transportation specifications for packaging hazardous materials. Additionally, the National Motor Freight Traffic Association specifications for containers used to transport goods via truck do not prohibit the use of industrial drums containing recovered materials.

Section H-4. Awards and Plaques

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table H-4, procuring agencies establish minimum content standards for use in purchasing awards and plaques containing recovered materials.

Table H-4. -- Recommended Recovered Materials Content Levels for Awards and Plaques Containing Recovered Materials

| Material | Postconsumer Content (%) | Total Recovered Materials Content (%) |
|------------------------------------|--------------------------|---------------------------------------|
| Glass | 75 - 100 | 100 |
| Wood | -- | 100 |
| Paper | 40 - 100 | 40 - 100 |
| Plastic and Plastic/Wood Composite | 50 - 100 | 95 - 100 |

Note: EPA's recommendations do not preclude a procuring agency from purchasing awards or plaques made from other materials. They simply require that procuring agencies, when purchasing awards or plaques made from paper, wood, glass, or plastics/plastic composites, purchase them made with recovered materials when these items meet applicable specifications and performance requirements.

Specifications: EPA is not aware of specifications or standards for awards or plaques containing recovered materials. EPA recommends that procuring agencies ensure that there is no language in their specifications for awards and plaques that would preclude or discourage the use of products containing recovered materials.

Section H-5. Mats

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table H-5, procuring agencies establish minimum content standards for use in purchasing mats containing recovered materials.

Table H-5. -- Recommended Recovered Materials Content Levels for Mats

| Material | Postconsumer Content (%) | Total Recovered Materials Content (%) |
|--------------------------|--------------------------|---------------------------------------|
| Rubber | 75 - 100 | 85 - 100 |
| Plastic | 10 - 100 | 100 |
| Rubber/Plastic Composite | 100 | 100 |

Note: EPA's recommendations do not preclude a procuring agency from purchasing mats made from other materials. They simply require that procuring agencies, when purchasing mats made from rubber and/or plastic, purchase them made with recovered materials when these items meet applicable specifications and performance requirements. When purchasing mats with steel or aluminum linkages, the Agency recommends that these linkages also contain recovered materials.

Specifications: EPA is not aware of specifications or standards for mats containing recovered materials. EPA recommends that procuring agencies ensure that there is no language in their specifications for mats that would preclude or discourage the use of products containing recovered materials. EPA is aware of one ASTM specification for wrestling mats, but does not believe that this type of mat is purchased in appreciable quantities by procuring agencies.

Section H-6. Manual-Grade Strapping Containing Recovered Steel and Plastic

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table H-6a, procuring agencies establish minimum content standards for use in purchasing manual-grade strapping containing recovered materials.

Table H-6a. -- Recommended Recovered Materials Content Levels for Manual-Grade Polyester, Polypropylene, and Steel Strapping

| Product | Material | Postconsumer content (%) | Total recovered materials content (%) |
|-------------------------|----------|--------------------------|---------------------------------------|
| Polyester strapping | PET | 50-85 | 50-85 |
| Polypropylene strapping | PP | -- | 10-40 |
| Steel strapping | Steel | 16 67 | 25-30 100 |

Notes: EPA’s recommendations do not preclude a procuring agency from purchasing another type of strapping, such as nylon. They simply require that procuring agencies, when purchasing polyester, polypropylene, or steel manual-grade strapping, purchase these items made with recovered materials when these items meet applicable specifications and performance requirements.

The recommended recovered materials content levels for steel in this table reflect the fact that the designated items can be made from steel manufactured in either a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF). Steel from the BOF process contains 25% - 30% total recovered materials, of which 16% is postconsumer steel. Steel from the EAF process contains a total of 100% recovered steel, of which 67% is postconsumer.

Specifications: EPA is not aware of specifications unique to strapping containing recovered materials. EPA notes that strapping containing recovered materials can meet the ASTM strapping specifications and selection guide listed in Table H-6b.

Table H-6b. -- Recommended ASTM Specifications and Guide for Strapping

| ASTM Specification/Guide Number | Title |
|---------------------------------|---|
| ASTM D 3953 | Standard Specification for Strapping, Flat Steel and Seals |
| ASTM D 3950 | Standard Specification for Strapping, Nonmetallic (and Joining Methods) |
| ASTM D 4675 | Standard Guide for Selection and Use of Flat Strapping Materials |

Section H-7. Signage

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table H-7, procuring agencies establish minimum content standards for use in purchasing plastic signs for non-road applications (e.g., building signs, trail signs) and aluminum signs for roadway or non-road applications containing recovered materials. EPA also recommends that, based on the recovered materials content levels shown in Table H-7, procuring agencies establish minimum content standards for use in purchasing sign supports and posts containing recovered plastic or steel.

Table H-7. -- Recommended Recovered Materials Content Levels for Signs Containing Recovered Plastic or Aluminum and Sign Posts/Supports Containing Recovered Plastic or Steel

| Item/Material | Postconsumer Content (%) | Total Recovered Materials Content (%) |
|-----------------------------|--------------------------|---------------------------------------|
| Plastic signs | 80 - 100 | 80 - 100 |
| Aluminum signs | 25 | 25 |
| Plastic sign posts/supports | 80 - 100 | 80 - 100 |
| Steel sign posts/supports | 16 67 | 25 - 30 100 |

Notes: Plastic signs and sign posts are recommended for nonroad applications only such as, but not limited to, railway signs in parks and directional/informational signs in buildings.

The recommended recovered materials content levels for steel in this table reflect the fact that the designated items can be made from steel manufactured in either a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF). Steel from the BOF process contains 25% - 30% total recovered materials, of which 16% is postconsumer steel. Steel from the EAF process contains a total of 100% recovered steel, of which 67% is postconsumer.

EPA's recommendations do not preclude a procuring agency from purchasing signs or sign posts made from other materials. They simply require that procuring agencies, when purchasing signs made from plastic or aluminum or sign posts made from plastic or steel, purchase them made with recovered materials when these items meet applicable specifications and performance requirements.

Specifications: EPA is not aware of specifications for non-road signs containing recovered materials. Standard specifications for road sign size, lettering, color, strength, and performance requirements can be found in the "Manual on Uniform Traffic Control Devices," which is published by the Federal Highway Administration. Applicable portions of this manual have been placed in the RCRA public docket for the proposed CPG/RMAN III notices.

Section H-8. Bike Racks Containing Recovered Steel or Plastic

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table H-8, procuring agencies establish minimum content standards for use in purchasing bike racks.

Table H-8. -- Recommended Recovered Materials Content Levels for Bike Racks

| Material | Postconsumer Content (%) | Total Recovered Materials Content (%) |
|----------|--------------------------|---------------------------------------|
| Steel | 16 | 25 - 30 |
| HDPE | 100 | 100 |

Note: The recommended recovered materials content levels for steel in this table reflect the fact that the designated item is generally made from steel manufactured in a Basic Oxygen Furnace (BOF). Steel from the BOF process contains 25% - 30% total recovered steel, of which, 16% is postconsumer steel.

Specifications: EPA did not identify any industry standards or specifications that would preclude the use of recovered materials in bike racks.

Section H-9. Blasting Grit Containing Recovered Steel, Coal and Metal Slag, Bottom Ash, Glass, Plastic, Fused Alumina Oxide, and Walnut Shells

Preference Program: EPA recommends that, based on the recovered materials content levels shown in Table H-9, procuring agencies establish minimum content standards for use in purchasing blasting grit containing recovered materials.

Table H-9. -- Recommended Recovered Materials Content Levels for Blasting Grit

| Material | Postconsumer content (%) | Total recovered materials content (%) |
|------------------------|--------------------------|---------------------------------------|
| Steel | 16 - 67 | 25 - 100 |
| Coal Slag | – | 100 |
| Copper and Nickel Slag | – | 100 |
| Bottom Ash | – | 100 |
| Glass | 100 | 100 |
| Glass/Plastic | 20 | 100 |
| Fused Alumina Oxide | 100 | 100 |
| Walnut Shells | – | 100 |

Note: The recommended recovered materials content levels for steel in this table reflect the fact that the designated item may contain steel manufactured in either a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF), or a combination of both. Steel from the BOF process contains 25% - 30% total recovered steel, of which 16% is postconsumer. Steel from the EAF process contains 100% total recovered steel, of which 67% is postconsumer. According to industry sources, blasting grit containing a combination of BOF and EAF steel would contain 25% - 85% total recovered steel, of which 16% - 67% would be postconsumer. Since there is no way of knowing which type of steel was used in the manufacture of the item, the postconsumer and total recovered material content ranges in this table encompass the whole range of possibilities, i.e., the use of EAF steel only, BOF steel only, or a combination of the two.

Specifications: EPA did not find any specifications that would preclude the use of recovered materials in blasting grit. EPA recommends that procuring agencies exercise OSHA or other required standard safety practices when using blasting grit, particularly when using blasting grit containing slag materials.