



EPA Comprehensive Procurement Guidelines

Summary of Designated Products

Sustainable Facilities Practices Branch
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Introduction

The Comprehensive Procurement Guideline (CPG) program is part of EPA's continuing effort to promote the use of materials recovered from solid waste. Buying recycled-content products ensures that the materials collected in recycling programs will be used again in the manufacture of new products.

The CPG program is authorized by Congress under [Section 6002 \(PDF\)](#) of the Resource Conservation and Recovery Act (RCRA) and [Executive Order 13423 \(PDF\)](#). EPA is required to designate products that are or can be made with [recovered materials](#), and to recommend practices for buying these products. Once a product is designated, [procuring agencies](#) are required to purchase it with the highest recovered material content level practicable.

In 1995, EPA issued the first CPG which covered EPA's original 5 procurement guidelines and added 19 products. The first CPG update (CPG II), published in November of 1997, designated an additional 12 items. A second CPG update (CPG III), published in January 2000, designated an additional 18 items. A third CPG update (CPG IV), published in April 2004, designated an additional seven items and revised three existing item designations.

EPA also issues guidance on buying recycled-content products in Recovered Materials Advisory Notices (RMANs). The RMANs recommend recycled-content ranges for CPG products based on current information on commercially available recycled-content products. RMAN levels are updated as marketplace conditions change.

A key component of the CPG program is EPA's list of designated products and the accompanying recycled-content recommendations. EPA has already designated or is proposing to designate the products listed below. They are grouped into eight categories:

- [Construction Products](#)
- [Landscaping Products](#)
- [Nonpaper Office Products](#)
- [Paper and Paper Products](#)
- [Park and Recreation Products](#)
- [Transportation Products](#)
- [Vehicular Products](#)
- [Miscellaneous Products](#)

EPA also published final or proposed recycled-content recommendations for each item. All proposals, designations, and recommendations are published in the *Federal Register*.

This document contains a brief description for each of the designated products listed below. You also can view EPA's recommended recycled-content ranges and access a [Supplier Directory](#) which includes manufacturers, vendors, and suppliers for each item.

Note: CPG products do not include biobased products. EPA's web site does not have information on them. Biobased products are designated by the US Department of Agriculture as a requirement of the Farm Security and Rural Investment Act (2002 Farm Bill), Section 9002. Information can be found on the [USDA BioPreferred web site](#).

Product Information:

[Database of Manufacturers and Suppliers](#)
[GSA Advantage!](#)

CPG products can be ordered through the General Service Administration's (GSA's) online ordering system. In addition, GSA publishes various supply catalogues, guides, and schedules for recycled-content products available through the Federal Supply Service.



A) Construction Products

1) Building Insulation

Insulation made from recovered materials is available for thermal insulating applications. The product is available in several forms including rolls, loose-fill, and spray foam. Insulation also can include a range of recovered materials such as glass, slag, paper fiber, and plastics. One manufacturer grinds postconsumer glass bottles into a substitute for the sand used in glass fibers. Others use slag for rock wool or old newspaper for cellulose insulation.

EPA's Recommended Recovered Materials Content Levels for Building Insulation ¹			
Product	Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Rock Wool	Slag	--	75
Fiberglass	Glass Cullet	--	20-25
Cellulose Loose-Fill and Spray-On	Postconsumer Paper	75	75
Perlite Composite Board	Postconsumer Paper	23	23
Plastic Rigid Foam, Polyisocyanurate/Polyurethane:			
Rigid Foam	--	--	9
Foam-in-Place	--	--	5
Glass Fiber Reinforced	--	--	6
Phenolic Rigid Foam	--	--	5
Plastic, Non-Woven Batt	Recovered and/or Postconsumer Plastics	--	100

¹ The recommended recovered materials content levels are based on the weight (not volume) of materials in the insulating core only.

Product Specifications:

In 1993, the American Society for Testing and Materials (ASTM) issued a standard for the composition of cullet used in the manufacture of fiberglass insulation, D 5359, "Glass Cullet Recovered from Waste for Use in Manufacture of Glass Fiber." EPA recommends that procuring agencies reference this specification in Invitations for Bid and Requests for Proposals.



2) Carpet (Polyester)

NOTE: In most all instances, use of polyester carpet is not appropriate for EPA facilities.

EPA designated recycled-content polyester carpet for moderate-wear applications. Recycled fiber polyester carpet is manufactured from [PET](#) recovered soda bottles.

EPA's Recommended Recovered Materials Content Levels for Carpet ¹

Product	Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Polyester Carpet Face Fiber	PET	25-100	25-100

¹ EPA recommends that, based on the recovered materials content levels shown in the table above, procuring agencies establish minimum content standards for use in purchasing polyester carpet for moderate-wear applications. This recommendation does not include polyester carpet for use in heavy-wear or severe-wear applications.

Product Specifications:

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.

3) Carpet Cushion

Carpet cushion, also known as carpet underlay, is padding placed beneath carpet. Carpet cushion improves the insulation properties of carpet, reduces the impact of foot traffic or furniture indentation, enhances comfort, and prolongs appearance. It is available in a variety of thicknesses-the most common being ¼- and ½-inch and used in both residential and commercial settings. Carpet cushions made from bonded urethane, jute, synthetic fiber, and rubber can be made from recovered materials.

EPA's Recommended Recovered Materials Content Levels for Carpet Cushion ¹

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

¹ 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 requirement. Refer to Section C-4 in RMAN I for EPA's recommendations for purchasing polyester [carpet containing recovered materials](#).

**Product 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.

4) Cement and Concrete

Coal fly ash, ground granulated blast furnace (GGBF) slag, cenospheres, and silica fumes are recovered materials that are readily available in some areas for use as ingredients in cement or concrete. Coal fly ash is a byproduct of coal burning at electric utility plants. Slag is a byproduct of iron blast furnaces. The slag is ground into granules finer than Portland cement and can be used as an ingredient in concrete. Cenospheres are small, inert, lightweight, hollow, glass spheres that are a component of coal fly ash. They can be added to cement to produce a specialty, high performance concrete. Silica fume is a waste material recovered from alloyed metal production. It can also be added to cement to produce a high performance concrete.

Recommended Recovered Materials Content Ranges:

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.

Product Specifications:

[Learn more about specifications for cement and concrete containing recovered materials.](#)

5) Reprocessed and Consolidated Latex Paints for Specified Uses

Reprocessed paint is postconsumer latex paint that has been sorted by a variety of characteristics including type (i.e., interior or exterior), light and dark colors, and finish (e.g., high-gloss versus flat). Reprocessed paint is available in various colors and is suitable for both interior and exterior applications. Consolidated paint consists of postconsumer latex paint with similar characteristics (e.g., type, color family, and finish) that



is consolidated at the point of collection. Consolidated paint is typically used for exterior applications or as an undercoat.

EPA's Recommended Recovered Materials Content Levels for Reprocessed and Consolidated Latex Paints ¹		
Product	Postconsumer Content (%)	Total Recovered Materials Content (%)
Reprocessed Latex Paint:		
- White, Off-White, Pastel Colors	20	20
- Grey, Brown, Earthtones, and Other Dark Colors	50-99	50-99
Consolidated Latex Paint	100	100

¹ 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.

Product Specifications:

EPA recommends that procuring agencies refer to GSA commercial item description (CID) A-A-3185 when purchasing recycled paint. Currently, the CID is not available electronically.

6) Floor Tiles and Patio Blocks

Floor tiles for heavy duty or commercial specialty applications can contain up to 100 percent postconsumer rubber. They are made from used truck and airline tires. Floor tiles containing 90 to 100 percent recovered plastic are also readily available. Patio blocks made from 90 to 100 percent recovered plastic and 90 to 100 percent postconsumer rubber are used in garden walkways and trails.

EPA's Recommended Recovered Materials Content Levels for Floor Tiles and Patio Blocks ¹			
Product	Material	Postconsumer Content	Total Recovered Materials Content (%)
Patio Blocks	Rubber or Rubber Blends	90-100	--
	Rubber or Rubber Blends	--	90-100
Floor Tiles (heavy duty/commercial use)	Rubber	90-100	--
	Plastic	--	90-100

¹ EPA clarified in the *Federal Register* (FR) at 62 FR 60995, November 13, 1997, that the use of floor tiles with recovered materials content might 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.



7) Flowable Fill

Flowable fill is commonly used as an economical fill or backfill in road construction. It is usually a mixture of coal fly ash, water, a coarse aggregate (such as sand), and portland cement. Flowable fill can take the place of concrete, compacted soils, or sand commonly used to fill around pipes or void areas. Other applications include filling in bridge abutments, foundation subbases, or abandoned man holes and wells. Flowable fill can help put significant quantities of coal fly ash and spent foundry sand, two types of recovered materials, back to good use.

Recommended Recovered Materials Content Ranges:

EPA recommends that procuring agencies use flowable fill containing coal fly ash and/or ferrous foundry sands for backfill and other fill applications. Specific content levels will depend on the specifics of the job, including the type of coal fly ash (Class C or Class F) or foundry sand used, strength, set time, flowability needed, bleeding, and shrinkage. [See table showing typical proportions for high and low coal fly ash content mixtures.](#)

Product Specifications:

- EPA recommends that procuring agencies use ACI229R-94 and the American Society for Testing and Materials (ASTM) standards when purchasing flowable fill or contracting for construction that involves backfilling or other fill applications. [View a list of recommended ASTM standards.](#)
- [See a list of states with specifications for flowable fill containing coal fly ash.](#)
- No national test methods or specifications exist for flowable fill mixtures containing foundry sand. Ohio has a specification entitled, "Flowable Fill Made With Spent Foundry Sand," however. In addition, Pennsylvania, Wisconsin, and Indiana are developing specifications.

8) Structural Fiberboard and Laminated Paperboard

Structural fiberboard is a panel made from wood, cane, or paper fibers matted together which is used for sheathing, structural, and insulating purposes. Laminated paperboard is made from one or more plies of kraft paper bonded together and is used for decorative, structural, or insulating purposes. Examples of these products include building board, insulating formboard, sheathing, and acoustical and non-acoustical ceiling tile.

EPA's Recommended Recovered Materials Content Levels for Structural Fiberboard and Laminated Paperboard ¹			
Product	Material	Postconsumer Content	Total Recovered Materials Content (%)
Structural Fiberboard	--	--	80-100
Laminated Paperboard	Postconsumer Paper	100	100

¹ The recovered materials content levels are based on the weight (not volume) of materials in the insulating core only.

Product Specifications:

EPA recommends that procuring agencies use American Society for Testing and Materials (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 should do the following:

- Reference the technical requirements of ASTM C 208, "Insulating Board (Cellulosic Fiber), Structural and Decorative."
- Permit structural fiberboard products made from recovered paper where appropriate.



- Permit products, such as floor underlayment and roof overlay, containing recovered paper.

In addition, EPA 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.

9) Modular Threshold Ramps

Threshold ramps are used to modify door thresholds and other small rises to remove barriers that changes in level landing create, particularly with regards to access by people with disabilities. Modular threshold ramps are typically used for retrofitting buildings to comply with the Architectural Barriers Act (ABA) of 1968, the Rehabilitation Act of 1973, the Uniform Federal Accessibility Standards (UFAS) and the Americans with Disabilities Act (ADA) of 1990. Modular threshold ramps made from rubber, aluminum, and steel can be made from recovered materials.

EPA's Recommended Recovered Materials Content Levels for Modular Threshold Ramps		
Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Steel ¹	16-67	25-100
Aluminum	--	10
Rubber	100	100

¹ 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.

Product 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 curb ramps, 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.

10) Nonpressure Pipe

Nonpressure pipe is used throughout the United States as drainage pipe and conduit in construction, communications, municipal, industrial, agricultural, and mining applications. Nonpressure pipe containing steel, plastic, or cement can be made from recovered materials.



EPA's Recommended Recovered Materials Content for Nonpressure Pipe		
Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Steel ¹	16 67	25-30 100
HDPE	100	100
PVC	5-15	25-100
Cement	Refer to the cement and concrete specifications .	

¹ 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.

Product Specifications:

[Learn more](#) about specifications for nonpressure pipe containing recovered materials.

11) Railroad Grade Crossing Surfaces

Railroad grade crossings are surfacing materials placed between railroad tracks, and between the track and the road at highway and street railroad crossings, to enhance automobile and pedestrian safety. Railroad grade crossings are made from recovered rubber, concrete containing coal fly ash, steel, wood, or plastic.

EPA's Recommended Recovered Materials Content Levels for Railroad Grade Crossings			
Surface Material	Recovered Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Concrete	Coal Fly Ash ¹	--	15-20
Rubber ²	Tire rubber	--	85-95
Steel ³	Steel	16 67	25-30 100
Wood ⁴	Wood or wood composite	90-97	90-97
Plastic ⁵	Plastic or plastic composite	85-95	100

¹ 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 more workable and durable product but can prolong the curing process.

² The recommended recovered materials content for rubber railroad grade crossing surfaces are based on the weight of the raw materials, exclusive of any additives such as binders or adhesives.

³ 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.
- 4 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.
 - 5 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.

Product Specifications:

[Learn more about specifications for railroad grade crossing surfaces containing recovered materials.](#)

12) Roofing Materials

A building's roof system and its finished roofing materials shield a structure's interior from natural elements. Roofing systems generally fall into two general categories: 1) high-sloped or "pitched" roofs (residential) and 2) low-sloped or flat roofs (commercial). These two types of systems generally are constructed differently and use different materials, although some materials are used for both residential and commercial systems. EPA's designation specifically covers roofing materials containing steel, aluminum, fiber, rubber, plastic or plastic composites, and cement.

Recovered Materials Content Recommendations for Roofing Materials		
Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Steel ¹	16 67	25-30 100
Aluminum	20-95	20-95
Fiber (felt) for Fiber Composite	50-100	50-100
Rubber	12-100	100
Plastic or Plastic/Rubber Composite	100	100
Wood/Plastic Composite	--	100
Cement	Refer to the cement and concrete specifications .	

¹ 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.

Product 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.



13) Shower and Restroom Dividers/Partitions

Showers and restroom dividers/partitions are made of 20 to 100 percent recovered plastic or steel. They are used to separate individual shower, toilet, and urinal compartments in commercial and institutional facilities. EPA's designation specifically covers shower and restroom dividers/partitions containing recovered plastic or steel.

EPA's Recommended Recovered Materials Content Levels for Shower and Restroom Dividers/Partitions Containing Recovered Plastic or Steel		
Material	Postconsumer Content	Total Recovered Materials Content (%)
Steel ¹	16 67	25-30 100
Plastic	20-100	20-100

¹ 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.

Product Specifications:

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

- 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.
- US Army Corps of Engineers' Guide Specification CEGS-10160, "Toilet Partitions."



B) Transportation Products

1) Channelizers, Delineators, and Flexible Delineators

Channelizers: Channelizers are barrels or drums that direct traffic around areas of road repair or construction. Channelizers are designed and colored to be highly visible and can be constructed from [recovered HDPE](#) and rubber. The bases of the drums are weighted to provide stability and are often made from used tires.

Delineators: Delineators are temporary pavement markers that come in many shapes, sizes, and designs. They are manufactured primarily from recovered and postconsumer HDPE. Delineator bases are either steel stakes that can be driven into the ground or rubber to support the delineator on the road surface.

Flexible Delineators: These products come in the form of stakes and are driven into the ground. The product is flexible enough so that vehicles can strike them without causing damage to the vehicle or delineator. They are used at golf courses, airports, military bases, shopping centers, and recreation areas. EPA's designation specifically covers channelizers, delineators, and flexible delineators containing recovered plastic, rubber, or steel.

EPA's Recommended Recovered Materials Content Levels for Channelizers, Delineators, and Flexible Delineators Containing Recovered Plastic, Rubber, or Steel ¹			
Product	Material	Postconsumer Content (%) ²	Total Recovered Materials Content (%)
Channelizers	Plastic	25-95	25-95
	Rubber ² (base only)	100	100
Delineators	Plastic	25-90	25-90
	Rubber (base only)	100	100
	Steel ³ (base only)	16 67	25-30 100
Flexible Delineators	Plastic	25-85	25-85

¹ 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.

² Content levels are based on the dry weight of the raw materials, exclusive of any additives such as adhesives, binders, or coloring agents.

³ 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.

Product Specifications:

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

- 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.



- 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 has specifications for "Driving Flexible Plastic Guide Marker and Clearance Marker Posts."

2) Parking Stops

Commonly found in parking lots, parking stops are used to mark spaces and keep vehicles from rolling beyond a designated parking area. EPA's designation specifically covers parking stops made from concrete or containing recovered plastic or rubber.

EPA's Recommended Recovered Materials Content Levels for Parking Stops Made from Concrete or Containing Recovered Plastic or Rubber ¹		
Material	Postconsumer Content(%)	Total Recovered Materials Content (%)
Plastic and/or Rubber ²	100	--
Concrete Containing Coal Fly Ash	--	20-40 ³
Concrete Containing Ground Granulated Blast Furnace Slag (GGBF)	--	25-70

¹ Transportation products containing recovered materials must conform to the *Manual on Uniform Highway Traffic Control Devices* used by the Federal Highway Administration, as well as other applicable federal requirements and specifications.

² 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.

³ Generally, 20 to 30 percent, but could be up to 40 percent. Fifteen percent when used as a partial cement replacement as an admixture in concrete.

Product Specifications:

American Society for Testing and Materials (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.

3) Traffic Barricades

Traffic barricades can be used to redirect or restrict traffic in areas of highway construction or repair. They are typically made from wood, steel, plastic, fiberglass, or a combination of these materials. Many manufacturers have switched to the use of recycled materials in both the supporting frame and rails of the barricades. EPA's designation covers only Types I and II traffic barricades.

EPA's Recommended Recovered Materials Content Levels for Traffic Barricades (Types I and II) ¹

Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Plastic (HDPE , LDPE , PET)	80-100	100
Steel ³	16 67	25-30 100
Fiberglass	--	100



¹ The recommended 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 BDF 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.

4) Traffic Cones

Traffic cones are used to mark a road hazard or to direct traffic. Recovered plastics are used in the upper component of the cones, and [crumb rubber](#) and/or plastics are used in the base.

**EPA's Recommended Recovered Materials Content Levels
for Traffic Cones**

Material	Postconsumer Materials (%):	Total Recovered Materials Content (%) ¹
Plastic (PVC and LDPE)	--	50-100
Crumb rubber	--	50-100

Manual on Uniform Traffic Devices

¹ 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.



C) Park and Recreation Products

1) Park Benches and Picnic Tables

Park benches and picnic tables are typically found in parks, outdoor recreational facilities, and on the grounds of office buildings. Recycled milk jugs and aluminum and steel cans can be used to manufacture these items.

EPA's Recommended Recovered Materials Content Levels for Park Benches and Picnic Tables		
Product	Postconsumer Content (%)	Total Recovered Materials Content (%)
Plastics ¹	90-100	100
Plastic composites	50-100	100
Aluminum	25	25
Concrete	--	15-40
Steel ²	16 67	25-30 100

¹ "Plastics" includes both single and mixed plastic resins. Park benches and picnic tables 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.

² 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.

Product Specifications:

Plastic lumber cannot be tested using the same tests already developed for virgin plastic. Tests on virgin plastic are performed on small cross-sections of the material. This is an accurate indicator of how the virgin plastic will perform as it is a homogeneous material. Plastic lumber, however, is not homogeneous in its construction, so tests on a cross-section of this material do not accurately predict how a length of lumber will perform in certain circumstances. For this reason, new test methods have been developed for lengths of lumber. These test methods apply to all types of plastic lumber or equivalent materials that are not homogeneous at the cross-section. These ASTM test methods are as follows:

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

ASTM is working on draft test methods for shear properties.



2) Plastic Fencing

Plastic fencing containing recovered materials can be used to control drifting snow and sand and as a warning or safety barrier at construction sites. Plastic fencing used in these applications goes by many names — snow fencing, temporary fencing, beach or dune fencing, warning barrier, and safety barrier. Such fencing is constructed from recovered and postconsumer [HDPE](#) in an open-weave pattern or from wood slats held together with wire strands. EPA's designation specifically covers plastic fencing containing recovered plastic.

EPA's Recommended Recovered Materials Content Levels for Fencing Containing Recovered Plastic ¹		
Material:	Postconsumer Content (%):	Total Recovered Materials Content (%):
Plastic	60-100	90-100

¹ Designation includes fencing containing recovered plastic for use in controlling snow or sand drifting and as a warning/safety barrier in construction or other applications.

Product 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 4 to 6 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 6-foot safety barrier fencing. The New York specification also addressed mesh size, porosity, service temperature range, and strength for each application.

3) Playground Equipment

Slides, swings, climbing equipment, merry-go-rounds, and seesaws are all different types of playground equipment. These items can be made with recovered wood, steel, aluminum, [HDPE](#), [LDPE](#), [LLDPE](#), and [PP](#). A typical set of playground equipment made with recovered-content [plastic lumber](#) can contain plastic recovered from between 31,500 and 63,000 milk and water jugs.

EPA's Recommended Recovered Materials Content Levels for Playground Equipment		
Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Plastics ¹	90-100	100
Plastic composites	50-75	95-100
Steel ²	16 67	25-30 100
Aluminum	25	25

¹ "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.

² 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.

Product Specifications:



EPA recommends that procuring agencies use the specifications found in the US Consumer Product Safety Commission (CPSC) Publication No. 325 (Handbook for Public Playground Safety) and ASTM standard F-1487-95, *Safety Performance Specifications for Playground Equipment for Public Use*, 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 listed below for playground equipment made from plastic lumber. These test methods are:

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

ASTM is working on draft test methods for shear properties.

4) Playground Surfaces

Playground surfaces can contain recovered rubber and [PVC](#) materials that are often more desirable than wood chips, sand, or asphalt, because they can provide more cushioning and thereby may be safer for children. You can find playground surfaces made with recovered materials at schools, military bases, and housing developments.

EPA's Recommended Recovered Materials Content Levels for Playground Surfaces ¹ , ²	
Material:	Postconsumer Content (%):
Rubber or Plastic	90-100

¹ EPA's recommendation does not preclude procuring agencies from purchasing playground surfaces manufactured from another material. It simply recommends that procuring agencies, when purchasing playground surfaces made from rubber or plastic, purchase these items made from recovered materials.

² 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.

Product Specifications:

- Federal agency installations must comply with applicable state or local construction codes.
- The Consumer Products Safety Commission requires that playground surfaces meet certain performance standards to reduce head injuries, including ASTM specification F 1292, pertaining to impact attenuation standards.
- Playground surfacing must also comply with the Americans With Disabilities Act, which provides that mobility-impaired persons cannot be prohibited from access to public places.

5) Running Tracks

Running tracks can contain both recovered rubber and plastic. In fact, running tracks made with recovered rubber have been constructed at universities, schools, military bases, the U.S. Olympics, and at the White House.

**EPA's Recommended Recovered Materials
Content Levels for Running Tracks ¹ ²**

Material:	Postconsumer Content (%):
Rubber or Plastic	90-100

- ¹ EPA's recommendation does not preclude procuring agencies from purchasing running tracks manufactured from another material. It simply recommends that procuring agencies, when purchasing running tracks made from rubber or plastic, purchase these items made from recovered materials.
- ² 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.

Product Specifications:

Federal agency installations must comply with applicable state or local construction codes.



D) Landscaping Products

1) Compost and Fertilizer Made From Recovered Organic Materials

Mature compost is defined as a thermophilic converted product with high humus content that can be used as a soil amendment and can prevent or remediate pollutants in soil, air, and storm water run-off. Compost's various uses improve soil quality and productivity as well as prevent and control erosion. Mixed organic materials, such as animal manure, yard trimmings, food waste, and biosolids, must go through a controlled heat process before they can be used as high quality, biologically stable, and mature compost.

Fertilizer, as defined by the U.S. Department of Agriculture, is a single or blended substance containing one or more recognized plant nutrient(s) used primarily for its plant nutrient content claimed to have value in promoting plant growth. While compost contains many of the same characteristics as fertilizer, such as nutrients, it is not considered a complete fertilizer unless amended.

The recovered organic materials from which compost and fertilizer are made include, but are not limited to, yard waste, food waste, manure and biosolids. Additional organic materials are listed on pages 4-8 of the document below, [CPG V Appendices \(Biosolids, Manure, and Fertilizers\) \(PDF\)](#) (30 pp, 112K, [About PDF](#)). EPA recognizes that these organic materials are the most commonly used in commercially available compost but other organic materials could also be used. Yard waste utilizes organic waste from lawns and gardens, such as grass, leaves, and twigs, to create an effective soil amendment or fertilizer. Food waste is similarly comprised of items such as fruit and vegetable trimmings and kitchen preparation residuals. Biosolids are nutrient-rich organic materials resulting from the treatment of sewage sludge. When treated and processed, these residuals can be recycled and applied as fertilizer or compost to improve and maintain productive soils and stimulate plant growth. Manure is an agricultural waste not generally captured in collection programs, but nonetheless, is generated in high volumes and can offer multiple beneficial uses including nutrients for crop production and organic matter to improve soil properties.

Recommended Recovered Materials Content Ranges:

EPA does not recommend any content ranges for either compost or fertilizer since both are generally made exclusively from recovered organic materials.

Compost

EPA's [Recovered Materials Advisory Notice \(RMAN\)](#) recommends that procuring agencies purchase or use compost made from recovered organic materials in such applications as landscaping, seeding of grasses or other plants on roadsides and embankments, nutritious mulch under trees and shrubs, and in erosion control and soil reclamation.

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.

Fertilizer

Fertilizers made from recovered organic materials can contain up to 100 percent recovered materials and can have a mixture of various plant, animal, and mineral content depending on the desired use and the manufacturer.

EPA's [Recovered Materials Advisory Notice \(RMAN\)](#) recommends that procuring agencies purchase or use fertilizers 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.

Fertilizer is often characterized by its Nitrogen, Phosphorus and Potassium value or NPK value. The NPK value represents the percentage of fertilizer that each element composes. For example, an NPK of 3-2-1 indicates that a fertilizer is composed of 3 percent nitrogen, 2 percent phosphorous, and 1 percent potassium. These are the elements that most plants require for growth. For more information on the NPK



values for fertilizers please refer to the [Technical Background Document \(PDF\)](#) (30 pp, 112K, [About PDF](#)) for fertilizer.

Product Specifications:

EPA issued regulations in 1993 that limit the pollutants and pathogens in biosolids, entitled "The Standards for the Use or Disposal of Sewage Sludge," ([40 CFR part 503](#)). If biosolids are included as part of the compost or fertilizer, part 503 land application requirements in effect ensure that any biosolids that are land applied, through compost or fertilizers, contain pathogens and metals that are below specified levels to protect the health of humans, animals, and plants.

EPA recommends procuring agencies refer to the [Organic Materials Review Institute \(OMRI\)](#) which has developed guidelines and lists of materials allowed and prohibited for use in the production, processing, and handling of organically grown products. EPA also recommends procuring agencies refer to U.S. Department of Agriculture's [National Organic Program \(NOP\)](#) regulations, which prohibit the use of biosolids in organic production. Procuring agencies should also check for individual state and other applicable federal and local government regulations on the use of organic fertilizer and compost.

Compost

EPA recommends that procuring agencies ensure that there is no language in their specifications related to landscaping, soil amendments, erosion control, or soil reclamation that would preclude or discourage the use of compost. If, for instance, specifications address the use of straw or hay in roadside revegetation projects, procuring agencies should assess whether compost could substitute for straw or hay or be used in combination with them.

The US Department of Transportation's "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects 1996" specifies compost as one of the materials suitable for use in roadside revegetation projects associated with road construction. These standards do not preclude the use of compost made from yard trimmings, leaves, grass clippings, and/or food waste.

In addition, EPA recommends that procuring agencies obtain the following specification and adapt it or another suitable specification for their use in purchasing compost products:

- The state of Maine developed quality standards for compost products that are used by its agencies and/or purchased with state funds. Quality standards were set for six types of compost products ranging from topsoil (three classes) to wetland substrate to mulch (two classes). For each of these types of compost product, standards for maturity, odor, texture, nutrients, pH, salt content, organic content, pathogen reduction, heavy metals, foreign matter, moisture content, and density were established. Write: Maine Department of Environmental Protection, 17 State House Station, Augusta, Maine, 04333, phone: 207 287-7688 or 800 452-1942.

The [U.S. Composting Council \(USCC\)](#) is helping to define and develop industry wide standards for composts made from recovered organic materials. The Composting Council publishes these standards in "Test Methods for Examination of Composting and Compost (TMECC)." TMECC is a laboratory manual that provides detailed protocols for the composting industry to sample, monitor, and analyze materials at all stages of the composting process to help maintain process control, verify process attributes, assure worker safety, and avoid degradation to the environment in and around the composting facility. The USCC also offers the Seal of Testing Assurance (STA) program, 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. 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.

Fertilizer

EPA recommends that procuring agencies ensure that there is no language in their specifications relating to such applications as agriculture and crop production, landscaping, horticulture, parks and other recreational facilities, on school campuses, and for golf course and turf maintenance that would preclude or discourage the use of fertilizers made from recovered organic materials.



In proposing to designate fertilizers made from recovered organic materials in the CPG, EPA is not placing any limitations on the organic materials, but rather is relying on federal, state, and local regulations and guidance, as well as existing industry standards.

2) Garden and Soaker Hoses

A garden hose conducts water through its tubing to a specific location using a nozzle, while a soaker hose is perforated tubing that gently irrigates gardens or planted areas. Recovered-content garden and soaker hoses help create new uses for old tires and recycled plastics. EPA's designation specifically covers garden and soaker hoses containing recovered plastic or rubber.

EPA's Recommended Recovered Materials Content Levels for Garden and Soaker Hoses Containing Recovered Plastic or Rubber ¹		
Product	Material	Postconsumer Content (%)
Garden Hose	Rubber and/or Plastic	60-65
Soaker Hose	Rubber and/or Plastic	60-70

¹ 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.

Product Specifications:

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

- *ASTM D3901 Consumer Specification for Garden Hose*. This specification addresses physical and performance characteristics (i.e., pressure, tensile, and ripping strength tests) and states that the material components are to be agreed upon by the purchaser and seller.
- *Green Seal GC-2: Watering Hoses*. This standard calls for 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.

3) Hydraulic Mulch

Hydraulic mulch is comprised of small pieces of cellulose fibers, which can be made completely from wood waste or recovered paper. It stabilizes soil, prevents wind and water erosion, and provides protection and warmth for seeds, helping them grow. Through hydroseeding, a mixture of water, seeds, and hydraulic mulch is sprayed over bare soil to quickly promote plant growth.

EPA's Recommended Recovered Materials Content Levels for Hydraulic Mulch Products ¹			
Product	Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Paper-Based Hydraulic Mulch	Paper	100	100
Wood-Based Hydraulic Mulch	Wood and Paper	--	100

¹ 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.



4) Lawn and Garden Edging

Lawn and garden edging creates a barrier between lawns and landscaped areas or garden beds. The underground portion helps keep grass and weeds out of flower and vegetable beds. Lawn and garden edging can be manufactured with scrap rubber, milk jugs, and other plastic containers. EPA's designation specifically covers lawn and garden edging containing recovered plastic or rubber.

EPA's Recommended Recovered Materials Content Levels for Lawn and Garden Edging Containing Recovered Plastic or Rubber ¹		
Material:	Postconsumer Content (%):	Total Recovered Materials Content (%):
Plastic and/or Rubber	30-100	30-100

¹ 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.

5) Plastic Lumber Landscaping Timbers and Posts

Landscaping timbers and posts are used as raised beds, retaining walls, and terracing. Plastic lumber landscaping timbers and posts are used in urban plazas, zoos, and outside office buildings-in fact, the National Park Service alone has more than a dozen projects planned with these recycled-content products. Timbers and posts manufactured with plastic or composite (plastic mixed with wood or fiberglass) lumber give new life to recovered wood and plastic materials such as milk jugs and plastic bags.

EPA's Recommended Recovered Materials Content Levels for Plastic Lumber Landscaping Timbers and Posts ¹		
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

¹ 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.

Product Specifications:

Plastic lumber cannot be tested using the same tests already developed for virgin plastic. Tests on virgin plastic are performed on small cross-sections of the material. This is an accurate indicator of how the virgin plastic will perform as it is a homogeneous material. Plastic lumber, however, is not homogeneous in its construction, so tests on a cross-section of this material do not accurately predict how a length of lumber will perform in certain circumstances. For this reason, new test methods have been developed for lengths of lumber. These test methods apply to all types of plastic lumber or equivalent materials that are not homogeneous at the cross-section. These test methods are as follows:

- 6108-03 Standard Test Method for Compressive Properties of Plastic Lumber.



- 6109-03 Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastic Lumber.
- 6111-03 Standard Test Method for Bulk Density and Specific Gravity of Plastic Lumber and Shapes by Displacement.
- 6435-99 Standard Test Methods for Shear Properties of Plastic Lumber and Plastic Lumber Shapes.
- 6112-97 Standard Test Method for Compressive and Flexural Creep and Creep Rupture of Plastic Lumber and Shapes.
- 6117-97 Standard Test Method for Mechanical Fasteners in Plastic Lumber and Shapes.

ASTM is working on draft test methods for shear properties.



E) Miscellaneous Products

1) Bike Racks

Bike racks provide a method for cyclists to secure their bicycles safely. Commonly found in public areas, bike racks can be designed to hold 1 to 50 bicycles and can be free standing units, anchored by bolts or cement, or embedded into the ground.

EPA's Recommended Recovered Materials Content Levels for Bike Racks

Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Steel ¹	16	25-30
HDPE	100	100

¹ 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.

Product Specifications:

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

2) Blasting Grit

Blasting grit is an industrial abrasive used to shape, cut, sharpen, or finish a variety of other surfaces and materials. Abrasives are used in many industries, including construction, automotive, and landscaping and can be fashioned for use on metals, ceramics, carbides, composites, glass, and plastics.

EPA's Recommended Recovered Materials Content Levels for Blasting Grit

Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Steel ¹	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

¹ 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.



Product 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

3) Industrial Drums

An industrial drum is a cylindrical container used for shipping and storing liquid or solid materials. According to the Plastic Drum Institute (PDI), between 12 and 15 million plastic drums are manufactured annually. Most drums are used to ship chemical and petroleum products. Steel, plastic, and pressed fiberboard drums can be manufactured with recovered steel, [HDPE](#), and paperboard, respectively.

EPA's Recommended Recovered Materials Content Levels for Steel, Plastic, and Fiber Industrial Drums ¹

Product	Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Steel drums	Steel ²	16	25-30
Plastic drums	HDPE	30-100	30-100
Fiber drums	Paper	100	100

¹ EPA's recommendations do not preclude a procuring agency from purchasing another type of industrial drum. They require that a procuring agency, when purchasing industrial drums made from steel, plastic, or fiber, purchase these items made with recovered materials when they meet applicable specifications and performance requirements.

² 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.

Product Specifications:

- Industrial drums containing recovered materials can meet applicable US Department of Transportation Specifications for packaging hazardous materials.
- The National Motor Freight Traffic Association also develops performance specifications for containers used to transport goods via truck. Their specifications do not specify materials and do not prohibit the use of recovered materials.

4) Manual-Grade Strapping

Strapping is used in transport packaging to hold products in place on pallets or in other methods of commercial, bulk shipment to prevent tampering and pilferage during shipping. EPA's designation is limited to manual-grade strapping products that are made from recovered [PP](#), [PET](#), and steel.

EPA's Recommended Recovered Materials Content Levels for Manual-Grade Polyester, Polypropylene, and Steel Strapping

Product	Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Polyester strapping	PET	50-80	50-85
Polypropylene strapping	PP	–	10-40
Steel strapping ¹	Steel	16 67	25-30 100



¹ 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 materials, of which 16% is postconsumer steel. Steel from the EAF process contains a total of 100% recovered steel, of which 67% is postconsumer.

Product Specifications:

Specifications and guidance for breaking strength, elongation, and other characteristics of various types of strapping can be found in the American Society for Testing and Materials (ASTM) standards listed in the following table. These specifications neither recommend nor preclude the use of recovered materials.

ASTM Recommended Specifications and Guide for Strapping	
ASTM Specification or Guidance 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

Source: ASTM, 1990; ASTM, 1991; ASTM, 1994; ASTM, 1995

5) Mats

Mats are temporary or semipermanent protective floor coverings used for numerous applications including protecting carpet from wear and tear or providing traction on stairs or slippery floors. Manufacturing mats with recovered content diverts a whole range of materials from disposal including postconsumer rubber, [PVC](#), [HDPE](#), [LDPE](#), [PET](#), [PP](#), and some metals.

EPA's Recommended Recovered Materials Content Levels for Mats ¹		
Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Rubber	75-100	85-100
Plastic	10-100	100
Rubber/Plastic Composite	100	100

¹ 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.

6) Pallets

Pallets are rigid platforms made of wood, plastic, or paperboard used for shipping a variety of products including food, paper, and military supplies. Wooden pallets can be repaired or rebuilt with wood from old pallets. Plastic and corrugated pallets can be manufactured from recovered materials.



EPA's Recommended Recovered Materials Content Levels for Pallets Containing Recovered Wood, Plastic, or Paperboard ¹		
Product	Material	Postconsumer Content (%)
Wooden pallets	Wood	95-100
Plastic pallets:		
- Plastic lumber	Plastic	100
- Thermoformed	Plastic	25-50
- Paperboard pallets	Paperboard	50

¹ 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.

Product Specifications:

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

- The Grocery Manufacturers of America issued a widely used standard for 48 by 40-inch stringer pallets known as the "GMA spec."
- The National Wooden Pallet and Container Association (NWPCA) 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.
- US Postal Service (USPS) specification USPS-P-1108, "Pallet, Nestable, Plastic, Thermoformed (Item No. 3919B)" is for thermoformed [HDPE](#) pallets.

7) Signage

Signs made from recovered materials are used for public roads and highways, as well as inside and outside of office buildings, museums, parks, and other public places. EPA's designation pertains to plastic signs used for nonroad applications (e.g., building signs, trail signs) and to aluminum roadway and nonroadway signs. The designation also covers any associated plastic or steel supports.

EPA's Recommended Recovered Materials Content Levels for Signage		
Item/Material	Postconsumer Content (%)	Total Recovered Materials Content (%)
Plastic signs ¹	80-100	80-100
Aluminum signs	25	25
Plastic sign posts/supports ¹	80-100	80-100
Steel sign posts/supports ²	16 67	25-30 100

¹ 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.

² 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.



Product Specifications:

EPA is not aware of specifications for nonroad 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 (FHWA).

8) Sorbents

Absorbents and adsorbents (referred to as "sorbents") are used in environmental, industrial, agricultural, medical, and scientific applications to retain liquids and gases. Absorbents incorporate substances throughout the body of the absorbing material, while adsorbents gather substances over the surface of the material. Sorbents can be manufactured using recovered paper, textiles, plastics, wood, and other materials. EPA's designation covers sorbents containing recovered materials for use in oil and solvent clean-ups and for use as animal bedding, although recycled-content sorbents can be used in other applications.

EPA's Recommended Recovered Materials Content Levels for Sorbents Used in Oil and Solvents Cleanups 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 ¹	--	100
Other Organics/Multi-Materials ²	--	100

¹ "Wood" includes materials such as sawdust and lumber mill trimmings.

² Examples of other organics include, but are not limited to, peanut hulls and corn stover. An example of multimaterial sorbents would include, but not be limited to, a polymer and cellulose fiber combination.

Product Specifications:

- The U.S. General Service Administration's (GSA's) specification for *Absorbent Material, Oil and Water (For Floors and Decks)* states that "the absorbent material shall consist of a uniform mixture of **minerals of the silicate type.**"
- The National Institutes of Health specification for *Laboratory Animal Bedding, Softwood*, precludes the use of recovered material. The specification states that sorbents used for "contact bedding for animals ... shall be from **unused** white pine (or related species of low resin soft pine) lumber."

In addition, the American Society for Testing and Materials has test methods for both absorbents and adsorbents used to remove oils and other compatible fluids from water. These are *Standard Method of Testing Sorbent Performance of Absorbents (F 716-82)* and *Standard Method of Testing Sorbent Performance of Adsorbents (F 716-81)*. Neither mention any exceptions or differences for testing of sorbents made from recovered materials.