COLORADO
Department of Public Health & Environment

Compliance Bulletin

Asphalt, Brick and Concrete Recycling & Beneficial Use

Updated - January 2019

Construction and demolition projects generate millions of tons of waste in the U.S. every year. Much of this waste consists of asphalt, brick and concrete materials. Recycling these materials can create jobs, save valuable landfill space and reduce environmental impacts from mining new materials. Asphalt, brick and concrete can often be recycled on the job site at reduced expense when compared to disposal alternatives which can provide significant savings during construction by avoiding new material purchase and waste disposal costs.

Applicability

This guidance is for fully-cured asphalt pavement, clay bricks with or without attached mortar, fully-cured concrete and concrete washout wastes. "Fully-cured" means the material has hardened for at least 60 days. Asphalt, brick, and concrete that have paint, adhesives, mastics, sealants or other coatings must be tested to ensure the coatings do not contain asbestos or lead paint before this guidance may be applied. **All recycling and beneficial use of these materials must meet all other local, state and federal requirements.**

Pre-Approved Beneficial Uses

The Colorado Department of Public Health and Environment (the Department) has approved beneficial uses for several types of uncontaminated materials in the Pre-Approved Beneficial Use Table 3, which is available on our website at: cdphe.colorado.gov/swregs

Clean and uncontaminated asphalt, brick and concrete material may be recycled and used in a variety of ways that do not require consultation and specific approval from the Department. Determining what qualifies as "clean and uncontaminated" requires a thorough inspection of the material to look for obvious signs of contamination such as odor, staining, discoloration or the presence of adhered materials as well as a thorough understanding of the site history. If the material came from a structure, ensure that a state demolition permit was issued and that all suspect asbestos-containing materials (including all non-friable materials) were tested and do not contain asbestos. Sampling and laboratory analysis may be needed if there is a reason to suspect contamination. Ideally, any potential contamination issues would have been found during a Phase I and/or Phase II environmental site assessment or an asbestos building inspection. If no such investigation has been performed, then it is very important to perform a thorough inspection prior to beginning the recycling process. Future liability issues may be avoided by taking steps to properly characterize the material as uncontaminated.

The tables below, taken from the Pre-Approved Beneficial Use Table 3, show the approved uses for uncontaminated asphalt, brick, concrete and concrete washout waste. All beneficial uses of reclaimed asphalt, brick, concrete and concrete washout materials must meet established engineering specifications or other appropriate specifications for the end use. The specifications must identify the physical characteristics of the material used (e.g., size, shape, gradation, durability and strength characteristics) and the intended benefit that the material provides. The recycled material must be selected and prepared to meet a specific need and used as a substitute for, or in conjunction with, a commercial product or raw material. Further information on the performance and storage standards for the beneficial use of solid waste, which must be met for all uses, can be found in Section 8.6.2 of Part 1 of the solid waste regulations, available on our website at cdphe.colorado.gov/swregs

Material Type	Pre-Approved Beneficial Uses
Reclaimed Asphalt	Road Base Component of hot or cold mix asphalt Re-compacted asphalt Roadside dressing Chip seal material Culvert cover Base stabilization Structural fill Mine backfill[a]
Reclaimed Concrete, Brick and Stone (non-asbestos bearing materials)	Road base Concrete aggregate Component of engineered structural fill Aggregate substitute Engineered rip rap (concrete only) Roadside dressing Mine backfill[a]

a. Mine backfill may only occur under a reclamation permit from the Division of Reclamation, Mining and Safety with the Colorado Department of Natural Resources.

While these uses are pre-approved by the Department, the following conditions also apply:

1) When using crushed material as a component of structural fill, crush the material to six inches or less, or size according to an engineer's backfill specification.
2) Ensure a minimum of three feet of separation between the placement of the material and the seasonally high ground water level.

Structural fill uses are limited to the use for a project specific need for strength and stability. The reclaimed material must be a direct substitute for a commercial earthen product in established engineering or other appropriate specifications.

If uncontaminated asphalt, brick or concrete will not be directly reused, there are many facilities that will accept these materials for recycling.

Reuse of Concrete Washout Materials

Material	Pre-Approved Beneficial Uses					
	Wash out mixer truck chutes or drums	*Ready mix concrete ingredient[a]*	*Ingredient in pre-cast concrete products[a]*	*Road base, Structural fill*	*Pave yard of a concrete plant*	*Treat and send to wastewater treatment plant*
Washwater	✓[b]	✓	✓			✓[c]
Cement Fines[d]	✓	✓	✓	✓		
Fine Aggregate		✓	✓	✓		
Coarse Aggregate		✓	✓	✓		
Hardened Concrete				✓[e]		
Unused Wet Concrete			✓		✓	

a. Materials checked in this column are recyclable if allowed by the concrete quality specifications.
b. No discharge of washwater to surface water or the ground unless in accordance with a CDPS or NPDES permit.
c. Treat to reduce pH and remove metals then deliver to municipal wastewater treatment plant. All discharges to wastewater treatment plant must be approved by the treatment plant operator.
d. Fine particles of cementitious material (Portland cement, fly ash)
e. Must be fully-cured for at least 60 days.

Exemption from Registration and Oversight as an Industrial Recycling Facility

Section 8.5 of the *Regulations Pertaining to Solid Waste Sites and Facilities* (6 CCR 1007-2, Part 1; the regulations) specifies the requirements for industrial recycling operations, including for the recycling of asphalt, brick and concrete. Some facilities that recycle these materials are subject to all of the requirements found in Section 8.5 including facility registration, general site requirements, recordkeeping, reporting and closure requirements. However, many facilities will meet one of the exemptions noted below, meaning the facility is exempt from the facility registration requirement, general site requirements, recordkeeping, reporting and closure requirements of Section 8.5. ***However, the use of the recycled material still must meet all of the criteria for pre-approved beneficial use outlined in this compliance bulletin***.

The first exemption is for facilities that process recyclable materials on the same site where the recyclable materials were generated and are recycling and storing only materials generated on-site.

The second exemption applies to concrete and asphalt operations that meet the following conditions: (1) the material is managed and separated into commodity-specific piles processed for reuse, (2) the material is managed in active piles separated by material type within one year of receipt, and (3) incoming loads have all non-concrete, non-asphalt and non-rebar material removed from the concrete and asphalt materials within thirty (30) calendar days. In addition, any material that is not asphalt, brick, concrete, or rebar cannot exceed 10% of the total material onsite by weight or volume.

Other Beneficial Uses

If the intended recycling and reuse of the asphalt, brick and concrete material is not found on the pre-approved list above, it may still qualify for a case-by-case beneficial use approval. In order for the Department to approve your beneficial use project, a facility must submit an "Application for a Solid Waste Beneficial Use Determination." The application form includes a list of performance criteria that must be met and a checklist of attachments that must be included in order for the Department to evaluate the project. The application form may be found on our website at: cdphe.colorado.gov/swregs

Recycling & Beneficial Use Best Management Practices

The ability to recycle asphalt, brick and concrete material safely and in a manner protective of public health and the environment requires not only meeting the requirements of the solid waste regulations, but also following established best management practices.

- Ensure that only uncontaminated material is crushed and processed.
    - Know the results of the Phase I or II environmental site assessment (ESA).
    - If no environmental site assessment was performed:
        - Perform a thorough visual inspection of the materials.
        - Learn the site history and whether prior contamination may have occurred.
        - Perform sampling and laboratory testing if there are any doubts whether the material may be contaminated.
- Do not crush material that has paint, finishes, adhesives, mastics, sealants, coatings or any other potential contaminants until the material is tested for lead and asbestos.
- Properly size and engineer the material for the intended use in accordance with the recommendations of a professional engineer.
- Manage and separate the material into commodity-specific piles for processing and reuse.
- Remove and recycle any rebar from the concrete.
- Notify the relevant local authorities of the intended activity to gain any necessary permits and approvals before crushing or material processing begins.

- Do not allow any unpermitted discharges to air, water or other environmental resources.
- Avoid creating nuisance conditions such as fugitive dust, excessive noise, or allowing exhaust off-site.

Waste Disposal

If there is obvious staining and discoloration, or if the site was previously home to a type of facility frequently found to be contaminated such as a dry cleaner, a gas station, or an industrial facility, then sampling and analysis should be performed on the material. Also, be aware that certain types of brick (e.g. refractory or fire brick) and concrete may be associated with asbestos and should be tested even if there may be no obvious evidence such as remnants of floor tile or mastic.

If the condition of the material is not suitable for reuse or recycling, then it will have to be disposed of as solid or hazardous waste. Knowledge of the site history along with analytical results will help determine what type of disposal is required. Contact the Department if additional information regarding sampling and analysis requirements or assistance with determining the type of disposal is needed.

Other Applicable Regulations

Crushing of asphalt, brick or concrete materials at a facility or on the work site may be subject to air permitting requirements. For more information, please contact the Air Pollution Control Division at 303-692-3100 or via email at: cdphe.commentsapcd@state.co.us

Stormwater permitting may be required for facilities or work sites that are recycling asphalt, brick or concrete materials. For more information, please contact the Water Quality Control Division at 303-692-3500 or via email at: cdphe.commentswqcd@state.co.us

If there are surface waters or wetlands near the processing site that may potentially be impacted by site activities, please contact the US Army Corps of Engineers at 202-761-7690 or via their website at: https://www.nwo.usace.army.mil/Locations/District-Offices/Colorado/

For more information on industrial recycling and beneficial use, refer to Sections 8.5 and 8.6 of the Colorado solid waste regulations (6 CCR 1007-2, Part 1), available on our website at: cdphe.colorado.gov/swregs

For more information

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