C&D-Waste: end of life, recycling possibilities and landfilling restrictions in Austria

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Summary of contents

End of Life
- When a building becomes waste
- When waste becomes a construction material

Recycling Possibilities
- Dismantling
- Recycling

Landfilling Restrictions
- Types of landfill
- dos and dont´s
Regulations to be implemented

Regulations issued by the Austrian Ministry

- Treatment obligations concerning construction and demolition waste
- “End of waste act” concerning recycled building materials
- Austrian Standards Institute
  - ÖNORM B 3151 recovery-oriented dismantling
  - ÖNORM B 3140 Recycled aggregates for the construction industry
Regulations from the Ministry
Responsibilities during construction and demolition activities

• Separation and treatment of waste derived from construction and demolition activities
• End of waste regulations concerning recycled building materials (Recycled Building Materials Decree)

→ applies to builders (client) and construction company
End of waste status

Requirements:

• Usage for a specific purpose
• A market for subjected materials exists
• Quality criteria, written down in technical or legal standards as well as recognized quality guidelines, which consider the various kinds of waste specific pollutants.
• Recycling material should cause neither more pollution nor higher environmental risk than comparable primary raw material
Following requirements must be met

- Materials that draw from **recovery-oriented dismantling processes**
- Quality criteria is fulfilled (Class U-A)
- Complies to one of the technical grades of S, I, II, III or IV according to ÖNORM B 3140
- Proven quality according to § 13
- All relevant technical and legal standards are adhered to
ÖNORM B 3151

Dismantling of buildings as a standard method for demolition (ÖNORM B 3151)

- noxious substance prospecting
- dismantling concept
- preliminary dismantling
- clearance
- mechanical dismantling
During the preparatory dismantling process all sources of hazardous substances have to be cleared away.

- asbestos as well as materials containing tar
- building elements containing mineral oil
- pollutant containing electrical components (e.g., fluorescent tubes, energy-saving lamps, etc.)
- industrial chimneys
- refrigerant from refrigeration equipment, CFC-containing insulation
- radioactiv fire detectors
- other hazardous waste and slag waste
During the preparatory dismantling process, following items, materials and substances have to be cleared away. (If necessary by means of disassembling):

- floor constructions and double bottoms
- non-mineral flooring materials
- non-mineral wall coverings (e.g., plastic, cork, wood)
- installations of plastic
- facade structures, insulation
- glass, glass walls, glass block walls
- building elements made of gypsum
- partition walls made of cork, wood, plastic
- doors and windows
Guidelines for Recycled Construction Material

The guideline for recycled building materials

Scope: Manufacture of recycled building materials from mineral construction waste


Fulfills technical standards und law!
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Qualitymanagement

Selective Dismantling

Segregate C&D-Waste

Acceptance Control

First Examination (proof of qualification)

External and Internal Quality Control
According to the proposed civil engineering application areas, recycled building materials are divided into following grades:

Grade S, I, II
used in unbound upper layers and sub-base layers
used for hydraulically or bituminous bound base layers
frost proof, frost resistant construction materials
(increased resistance against fragmentation)

Grade III, IV
used for both hydraulically bound base layers and filling materials for roads, parking areas, noise protection walls, general filling, trench filling and ground improvement.
Environmental Compatibility – Quality Classes

Quality Classes
Recycled construction materials produced in recycling plants are classified into quality classes according to their composition. The classes are defined by means of a list of parameters and associated limit values.

Fields of Application
In order to regulate the environmentally sustainable use of recycled construction materials, it is necessary to determine the type of application with regard to hydro-geological application areas. Fundamentally, the use of recycled construction materials of quality class lower than U-A is permitted in water-source preservation areas and in areas with set conditions for water management.
# Environmental Compatibility – Quality Classes

## Quality classes, parameter range and limits
Designation of the quality classes, areas of use and usage prohibitions

<table>
<thead>
<tr>
<th>Abbr.</th>
<th>Quality class</th>
<th>Description</th>
<th>Unbound use without a low-permeability, bound surface or base layer</th>
<th>Unbound use under a low-permeability, bound surface or base layer</th>
<th>Manufacture of concrete from C12/15</th>
<th>Manufacture of asphalt mix for exclusive use for Federal and State roads in accordance with RVS 8.16.01</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-A</td>
<td>unbound – A</td>
<td>Aggregates for unbound and hydraulically or bituminously bound use</td>
<td>Yes</td>
<td>Yes¹</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>U-B</td>
<td>unbound – B</td>
<td>Aggregates for unbound and hydraulically or bituminously bound use</td>
<td>No</td>
<td>Yes¹</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Quality and use

RA – Recycled crushed asphalt granulate

Recycled crushed asphalt granulate

RB – Recycled crushed concrete granulate

Recycled crushed concrete granulate
Quality and use

**RAB** – Recycled crushed mixed asphalt and concrete granulate

**RM** – Recycled crushed granulate mix of concrete and asphalt.

**RAB**
Recycled crushed mixed asphalt and concrete granulate

**RM**
Recycled crushed granulate mix of concrete and asphalt with a maximum content of stone (natural and/or recycled) of 50%
Quality and use

**RH** – Recycled sand or gravel from above-ground construction

Recycled sand from above ground structures; recycled gravel from above ground structures

**RMH** – Recycled mineral demolition wastes from above ground construction

Recycled mineral demolition waste from above-ground structures

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Recycled sand from bricks; recycled gravel from bricks

Recycled sand from bricks used for above ground structures; recycled gravel from bricks used for above ground structures

Quality and use

RZ - Recycled brick sand; recycled brick

RHZ – Recycled brick sand as well as brick gravel gained from above-ground construction

RHZ
Recycled sand from bricks used for above ground structures; recycled gravel from bricks used for above ground structures
Quality and use

RS – Recycled sand

Recycled sand
Applicable Law

Decree for waste sites

Sets 4 types of waste sites:
1. Soil excavation dump ➔ only clean excavated soil
2. Inert waste dump
3. Non-dangerous waste dump
   - Mineral C&D waste dump
   - Residual substance dump
   - Mass refuse dump
4. Dump for dangerous waste [non-existent in Austria]
Landfill ban to strengthen recycling

Landfill ban to promote circular economy (from 1.1.2024):
Waste collected separately according to Recycling-BaustoffVO:

- SN 31407 Ceramics restricted to bricks (e.g. faulty batches) from production.
- SN 31410 road rubble
- SN 31411 34 or 35 excavated soil (technical bulk material)
- SN 31427 concrete demolition and SN 31427 17 concrete demolition (from construction and demolition measures)
- SN 31467 Track ballast
- SN 54912 Bitumen, asphalt
- SN 91501 21 Road sweepings (only sweeping chippings as natural aggregate)
- SN 31490 Recycled building material of quality class U-A in accordance with the Recycling Building Materials Ordinance.

As of January 1, 2026, a landfill ban applies to gypsum boards, gypsum wallboards and fiber-reinforced gypsum boards with some exceptions mentioned.

From 1.1.2023 recycled building materials have to used as building materials in landfill construction
Guideline for Recycled Construction Material

Austrian Construction Materials Recycling Association – reference booklet

available at brv@brv.at or www.brv.at

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Hvala vam na pažnji!