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Ministry of Agriculture and  
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Bundesministerium  
für Umwelt, Naturschutz,  
Bau und Reaktorsicherheit

**Classification of waste  
according to the European Waste List  
Criteria on hazardous properties  
(reference values for hazardous substances)  
How to differentiate between hazardous and non-  
hazardous waste in practice**

**Klasifikacija otpada prema Evopskom katalogu otpada  
Kriterijumi za određivanje opasnih svostava  
(referentne vrednosti opasnih supstanci)  
Kako razlikovati opasni od neopasnog otpada u praksi**



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# Waste Classification

## Klasifikacija otpada

EWL *and* Rulebook Off. Gaz. RoS Nr 56/2010 - Annex 1

- Hazardous entries marked \*
- Hazardous properties for EWL listed in Annex 3 of Directive 2008/98/EC
- Hazard Criteria in Serbia: Art. 4 and Annex 5 of 56/2010

Keep in mind: Waste may exhibit more than one hazard characteristic.

Evopski katalog otpada i Pravilnik, Službeni glasnik RS, 56/2010 –Aneks 1

- Opasni otpad označen \*
- Opasna svojstva za EKO navedena u Aneksu 3 Direktive 2008/98/EC
- Kriterijumi za određivanje opasnosti u Srbiji: član 4 i Aneks 5 iz 56/2010

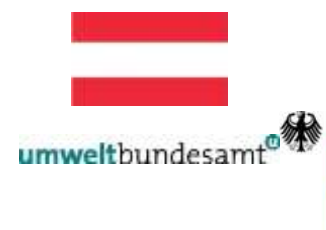
Ne zaboravite: Otpad može imati više opasnih svojstava



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# Waste Classification

## Klasifikacija otpada

Not yet defined

- H13 “sensitizing”
- H15 “yielding after disposal a substance (e.g. leachate) exhibiting hazard characteristic H1 – H14”

Difference EWL – 56/2010

- H10: limit value in Annex 3 Directive 2008/98/EC: 0,3% 3% (1a/1B)
- H10: limit value in Art. 4 of 56/2010: 5% (R60/R61 **and** R62/63)

Nije još definisano

- H13 “nadražujuće”
- H15 “oslobađa supstancu nakon odlaganja (npr. procedna voda) koja ima opasna svojstva H1 – H14”

Razlika između EKO i 56/2010

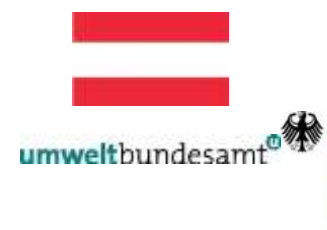
- H10: granična vrednost u Aneksu 3 Direktive 2008/98/EC: 0,3% 3% (1a/1B)
- H10: granična vrednost iz člana 4 56/2010: 5% (R60/R61 i R62/63)



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# Waste Classification

## Klasifikacija otpada

For handling/storage:

- ✓ hazard connected to ADR (class 3, 4, 8, 9) most important

For recovery/recycling/disposal:

- ✓ other criteria (e.g. carcinogenic, toxic, etc.) are more relevant (long time impact on human health *and/or* environment)

Za rukovanje/skladištenje:

- ✓ Opasnost povezana sa ADR (klasa 3, 4, 8 i 9) najvažnija

Za preradu/reciklažu/odlaganje:

- ✓ Ostali kriterijumi (np.r karcinogenost, toksičnost, itd.) su relevantniji (dugotrajan uticaj na zdravlje ljudi i/ili životnu sredinu)



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# Waste Classification

## Klasifikacija otpada

Classification based on origin *and* chemical substance

Origin:

- Specific industry (e.g. group 1 wastes from mining industry)
- Production process (e.g. group 12 mechanical surface treatment)

Substance:

- Chemical substance (e.g. group 13 mineral oil)

Klasifikacija na osnovu porekla i hemijske supstance

Poreklo:

- Specifična industrija (npr. otpad iz rudarstva)
- Proizvodni procesi (npr. grupa 12, mašinska površinska obrada)

Supstanca:

- Hemisjka supstanca (npr. grupa 13, mineralno ulje)



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# Waste Classification

## Klasifikacija otpada

### Substance:

- Specific waste type (e.g. group 15 01 packaging waste)

Start looking for a fitting code in

- Group 1-12, 17-20 (skip 99)

No code found:

- Group 13, 14, 15 (skip 99)

No code found:

- Group 16 (skip 99)

No code found:

- Code 99 in best fitting group

### Supstanca

- Specifična vrsta otpada (npr. 15 01 ambalažni otpad)

Tražiti odgovarajuću šifru u

- Grupa 1-12, 17-20 (preskočiti 99)

Nije pronađena šifra:

- Grupa 13, 14, 15 (preskočiti 99)

Nije pronađena šifra:

- Grupa 16 (preskočiti 99)

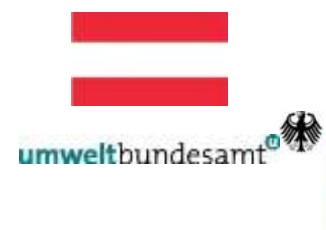
- Šifra 99 u najpogodniju grupu



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# Waste Classification

## Klasifikacija otpada

Keep in mind:

Classification can be ambiguous

Example: galvanic sludge

- 11 01 09\*/10
- 19 02 05\*

Decision making:

- ✓ Input in waste generating process (safety data sheets)
- ✓ Dilution/treatment applied
- ✓ Possible contaminations

Ne zaboravite:

Klasifikacija može da bude dvosmislena

Primer: mulj iz galvanizacije

- 11 01 09\*/10
- 19 02 05\*

Donošenje odluke:

- ✓ Input u procesu koji je proizveo otpad (bezbednosni listovi)
- ✓ Razblaživanje/primenjeni tretman
- ✓ Eventualna kontaminacija



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# Waste Classification

## Klasifikacija otpada

Insufficient information:

- ✓ request chemical analysis *or*
- ✓ classify as hazardous

e.g. galvanic sludge

19 02 05\* always hazardous

11 01 09\*/10 mirror entries

Sludge may contain

- hazardous metals (Ni, Cr (VI), Pb, etc.)
- Other hazardous substances (detergents, fluorinated chemicals, etc.)

Nedovoljno informacija

- ✓ Traži se hemijska analiza ili
- ✓ Klasifikuje se kao opasan

Npr. mulj iz galvanizacije

19 02 05\* uvek opasan

11 01 09\*/10 isti unosi

Mulj može da sadrži

- Opasne metale (Ni, Cr(VI), Pb, itd.)
- Ostale opasne supstance (detergente, fluorovane hemikalije, itd.)





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# Examples Primeri

Non hazardous example:

Production residue

Composite material paper (40%)  
coated with PE (55%) and Al(5%)

Primer neopasnog otpada

Ostaci iz proizvodnje

Compozitni papir (40%) obložen PE  
(55%) i Al (5%)





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# Examples Primeri

## Origin:

03 03 waste from pulp, paper and cardboard production and processing – no fitting code (99)

07 02 waste from the MFSU of plastics,... Code 07 02 13: plastic waste (55% plastic?; 07 Waste from organic chemical processes?)

15 01 packaging waste: 15 01 05 composite packaging

## Poreklo:

03 03 otpad iz proizvodnje i prerade celuloze, papira i kartona – bez odgovarajuće šifre (99)

07 02 otpad iz MFSU plastike, šifra 07 02 13: otpad od plastike (55% plastike?; 07 otpad iz organskih hemijskih procesa?)

15 01 ambalažni otpad: 15 01 05 kompozitna ambalaža



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# Examples Primeri

Origin:

Group 19 12 waste from mechanical waste treatment – 19 12 12 mixed materials

Possible codes:

(03 03 99) – 07 02 13 – 19 12 12 – 15 01 05

All three codes (other than 99) can be argued (based on composition *or* origin)

15 01 05 best classification

(best description of the waste – relevant to find a fitting disposal or recycling option)

Poreklo:

Grupa 19 12, otpad iz mehaničkog tretmana otpada – 19 12 12, mešani materijali

Moguće su šifre:

(03 03 99) – 07 02 13 – 19 12 12 – 15 01 05

Sve tri šifre (osim sa 99) mogu se diskutovati (na osnovu sastava ili porekla)

15 01 05 najbolja klasifikacija (najbolji

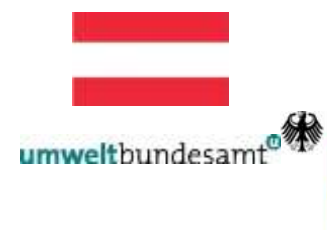
opis otpada – relevantno za pronalaženje odgovarajuće opcije odlaganja ili reciklaže



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# Mirror entries Isti unos

## 1 : 1 mirror entry

- 19 10 03\* FLUFF with hazardous properties
- 19 10 04 FLUFF, other than 19 10 03\*

Classification based on chemical analysis (analyze relevant parameters like hydrocarbons (HC), PCB, lead, etc.)

Analysis may be not necessary, provided the input in the shredding process is well defined (and free of hazardous substances).

## 1 : 1 isti unos

- 19 10 03\* ostaci iz sečenja sa opasnim svojstvima
- 19 10 04 ostaci iz sečenja osim 19 10 03\*

Klasifikacija se vrši na osnovu hemijske analize (analiza relevantnih parametara, kao što su ugljovodonici (HC), PCB, olovo itd.)

Analiza možda i ne bude potrebna pod uslovom da je ulazni materijal u procesu sečenja dobro definisan (i da ne sadrži opasne supstance)



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# Mirror entries Isti unos

Several non hazardous entries – one hazardous catch all position

E.g.           17 02 01 wood  
                  17 02 02 glass  
                  17 02 03 plastic

17 02 04\* glass, plastic and wood containing or contaminated with dangerous substances

Content of dangerous/hazardous substances is the decisive criterion, prevails substance specific classification

Nekoliko neopasnih unosa – jedna opasna zauzima celokupnu poziciju

Npr.           17 02 01 drvo  
                  17 02 02 staklo  
                  17 02 03 plastika

17 02 04\* staklo, plastika i drvo koje sadrži ili je kontaminirano opasnim supstancama

Sadržaj opasnih supstanci je kriterijum za donošenje odluke, a preovlađuje supstanca specifične klasifikacije



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# Reference values

## Referentne vrednosti

### Information sources

- “product wastes” – safety data sheet, labelling, literature
- “production wastes” – input into the production process

### Necessary analysis

- Physical analysis, e.g. flash point
- Chemical analysis in accordance with the rulebook on testing (Annex 8)
- Additional parameters (e.g. specific classified metals like lead)

### Izvori informacija

- “otpadni proizvodi” – bezbednosni list, elementi obeležavanja, literatura
- “otpadi iz proizvodnje” – ulazni materija u proizvodnom procesu

### Potrebna analiza

- Fizička analiza, npr. tačka paljenja
- Hemijska analiza u skladu sa pravilnikom o ispitivanju (Aneks 8)
- Dodatni paramtri (npr. specifično klasifikovani metali, npr. olovo)



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# Reference values

# Referentne vrednosti

Reference values:

Rulebook on testing and classification  
Off. Gaz. RoS Nr 56/2010: Article 4

“Carcinogenic elements” e.g.

- Ni (compounds) 0,1%,
- Cr-VI (compounds) 0,1%,
- As (compounds) 0,1%,
- Sb (compounds) 1,0%.

“Carcinogenic compounds” e.g.

- benzene 0,1%
- PAHs 0,1%

Referentne vrednosti:

Pravilnik o ispitivanju i klasifikaciji, Sl.  
glasnik RS, 56/2010: član 4

“Karcinogeni elementi” npr.

- Ni (jedinjenja) 0,1%,
- Cr-VI (jedinjenja) 0,1%,
- As (jedinjenja) 0,1%,
- Sb (jedinjenja) 1,0%.

“Karcinogena jedinjenja” npr.

- Benzen 0,1%
- PAH 0,1%



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# Reference values

# Referentne vrednosti

Reference values:

“Teratogenic elements” e.g.

Pb and Pb compounds: 5%

Keep in mind: EU 0,3% and 3%

H15 – leachate

- see Annex 10 table 1 of 56/2010 (reference values for landfilling)

Annex 7 – Reference Values

- empty at the moment

Referentne vrednosti:

“Teratogeni elementi”, npr.

Pb i jedinjenja Pb: 5%

Ne zaboravite: EU 0,3% i 3%

H15 – procedna voda

- Videti Aneks 10, tabelu 1 56/2010 (referentne vrednosti za odlaganje na deponije)

Aneks 7 – Referentne vrednosti

- Trenutno prazno





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# Reference values

## Referentne vrednosti

### General limit values

- Very toxic (R26, R27, R28) 0,1%
- Toxic (R23, R24,, R25) 3%
- Harmful (R20, R21, R22) 25%
- Very corrosive (R35) 1%
- Corrosive (R34) 5%
- Irritant (R41) 10% (R36, R37, R38) 20%
- Carcinogenic class 1 or 2 (R45) 0,1%
- Carcinogenic class 3 (R45) 1%
- Teratogenic (R60, R61, R62, R63) 5% (!!!)
- Mutagenic class 1 or 2 (R46) 0,1%
- Mutagenic class 3 (R40) 1%

### Opšte granične vrednosti

- Veoma toksično (R26, R27, R28) 0,1%
- Toksično (R23, R24, R25) 3%
- Štetno (R20, R21, R22) 25%
- Veoma korozivno (R35) 1%
- Korozivno (R34) 5%
- Iritativno (R41) 10% (R36, R37, R38) 20%
- Karcinogeno klasa 1 ili 2 (R45) 0,1%
- Karcinogeno klasa 3 (R45) 1%
- Teratogeno (R60, R61, R62, R63) 5% (!!!)
- Mutageno klasa 1 ili 2 (R46) 0,1%
- Mutageno klasa 3 (R40) 1%



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# Reference Values Referentne vrednosti

## Physical reference values

(testing in accordance with UN-RTDG,  
Test and criteria; class 1, class 3, class  
4.1/4,2/4.3)

- Flash point
- Generation of inflammable gases
- Self-heating
- Explosive

## Fizičke referentne vrednosti

(ispitivanje u skladu sa UN-RTDG,  
Ispitivanje i kriterijumi; klasa 1, klasa 3,  
klasa 4.1/4,2/4.3)

- Tačka paljenja
- Oslobađanje zapaljivih gasova
- Samozagrevanje
- Eksplozivnost



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# Practical examples Praktični primeri

## Use common sense

e.g. mixed waste from garages

15 02 02\* versus 15 02 03

- Does the waste contains not emptied containers ?
- Is there a smell for solvents?
- Is there visible oil?
- Does the waste contains oil filters?
- Is there a separate collection of hazardous waste (paints, solvents, etc.)?

## Koristiti zdrav razum

npr. mešoviti otpad iz radionica

15 02 02\* naspram 15 02 03

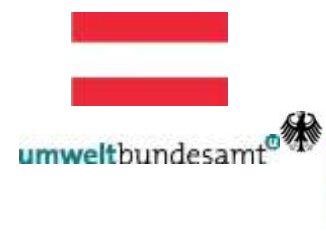
- Da li otpad sadrži neotvorenu ambalažu?
- Da li se oseća miris rastvarača?
- Da li se vidi ulje?
- Da li otpad sadrži filtere za ulje?
- Da li se opasni otpad sakuplja odvojeno (boje, rastvarači, itd.)?



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# Cable waste Otpadni kablovi

Mirror entries

17 04 10 \* - 17 04 11

Typical hazardous substances contained in hazardous cables: oil (hydrocarbons), PCB-oil, tar



17 04 10 \*



17 04 10 \*

Isti unosi

17 04 10\* - 17 04 11

Tipične opasne supstance u opasnim kablovima: ulje (ugljovodonici), ulje sa PCB, katran



17 04 10 \*

17 04 09

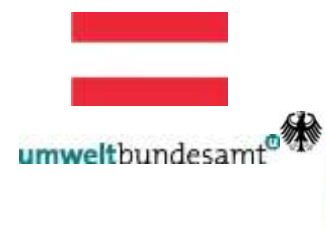




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# Wood waste Drvni otpad

## Mirror entries

17 02 01 versus 17 02 04\*

- surface treated (painted) – non hazardous
- impregnated (soaked) – hazardous



railway sleeper soaked with tar oil (carcinogenic – limit value 0,1%) 17 02 04\*  
painted wood (non hazardous paint) 17 02 01

## Isti unosi

17 02 01 naspram 17 02 04\*

- Površinski tretirano (obojeno) – nije opasan
- Impregvirano (natapano) - opasan



Daske iz železničkih šina natopljene katranskim uljem (karcinogeno, granična vrednost 0,1%) 17 02 04\*

Obojeno drvo (neopasna boja) 17 02 01



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# Discussion

## Diskusija

Specific request for the guidance document ?

Specifični zahtevi za smernice?



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# Discussion

# Diskusija

Thank you for your  
attention

Hvala vam na pažnji

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<https://www.bmlfuw.gv.at/en/>