

SPECIFIC CRITERIA
FOR PRODUCT GROUPS FOR
THE ENVIRONMENTAL LABEL OF
THE REPUBLIC OF CROATIA



A1-0 RETURNABLE PACKAGING

- A1-1 RETURNABLE PAPER PACKAGING**
- A1-2 RETURNABLE GLASS PACKAGING**
- A1-3 RETURNABLE PLASTIC PACKAGING**
- A1-3.1 RETURNABLE PLASTIC CONTAINERS**
- A1-4 RETURNABLE METAL PACKAGING**

B1-0 WASTE COLLECTION

- B1-1 WASTE PAPER COLLECTION**
- B1-2 WASTE GLASS COLLECTION**
- B1-3 WASTE PLASTIC COLLECTION**
- B1-4 WASTE METAL COLLECTION**
- B1-5 WASTE RUBBER COLLECTION**
- B1-6 WASTE OIL COLLECTION**

**C1-0 SECONDARY RAW MATERIAL PRODUCTS
(RECYCLED PRODUCTS)**

- C1-1 SCRAP PAPER PRODUCTS**
- C1-2 SCRAP GLASS PRODUCTS**
- C1-3 SCRAP PLASTIC PRODUCTS**
- C1-4 SCRAP RUBBER PRODUCTS**
- C1-5 SCRAP WOOD PRODUCTS**
- C1-6 CARBON DIOXIDE (CO₂) FROM FERMENTATION WASTE**

D1-0 "FREE PRODUCTS"

- D1-1 ASBESTOS-FREE CLUTCH LININGS**
- D1-2 ASBESTOS-FREE BRAKE LININGS**
- D1-3 MATCHES FREE FROM TOXIC SUBSTANCES**
- D1-4 FIRE LIGHTING MATERIAL FREE FROM HAZARDOUS
SUBSTANCES**
- D1-5 EMULSIFIERS AND DISPERSERS OF OIL SPILLS ON
WATER, FREE FROM HAZARDOUS SUBSTANCES**
- D1-6 HYGIENIC LITTER FOR PETS FREE FROM HAZARDOUS
SUBSTANCES**
- D1-7 FUNERAL EQUIPMENT FREE FROM HARMFUL SUBSTANCES**

E1-0 OTHER PRODUCTS

- E1-1 RETREADED TIRES**
- E1-2 REUSABLE RIBBON CASSETTES**
- E1-2.1 RECOVERED TONER CARTRIDGES**
- E1-3 WATER DISPERSIVE POLYMERIC COATINGS**
- E1-4 WATER-BASED ADHESIVES**
- E1-5 LUBRICATING OIL FOR MOTOR SAW CHAINS**
- E1-6 LINEN TOWEL ON THE RAIL**
- E1-7 PAPER PRODUCTS FOR PACKAGING**

<u>E1-8</u>	<u>DETERGENTS</u>
<u>E1-9</u>	<u>CONTAINER FOR USED OIL</u>
<u>E1-10</u>	<u>ENVIRONMENTALLY FRIENDLY CHIMNEY-STACKS</u>
<u>E1-11</u>	<u>TEXTILE FLOOR COVERINGS</u>
<u>E1-12</u>	<u>GEOSYNTHETICS</u>
<u>E1-13</u>	<u>BIODEGRADABLE SYNTHETIC LUBRICANTS</u>

A1-0 RETURNABLE PACKAGING

Environmental Aspects

The use of returnable packaging, made either of plastic, wood, glass, paper, metal or similar materials, reduces the total amount of disposed waste, saves energy and raw materials and reduces the quantity of new packaging needed.

Requirements

The Environmental Label may be awarded to all sorts of returnable packaging if the following criteria are met:

- a) repeated usability of packaging depending on specific sorts of material that the packaging is made of;
- b) the possibility to recycle the packaging after expiry of its shelf-life;
- c) neither in any of its parts nor in the production process shall the packaging contain hazardous substances in the amount harmful for the environment;
- d) the packaging is to conform to all valid technical and other standards in relevant field.

NOTE:

The list of hazardous substances valid in the Republic of Croatia; in cases when no regulations are available in the Republic of Croatia, the EC guidelines for the relevant field will apply.

A1-1 RETURNABLE PAPER PACKAGING

Environmental Aspects

The quantity of waste material, huge as it is, is additionally burdened by the use of one-way packaging, particularly in terms of volume. Disposal of paper packaging at disposal sites without previous treatment of the same takes up large areas of land and causes additionally serious problems in the body of the disposal site.

Returnable paper packaging contributes directly to reducing the total volume of waste and to saving primary raw materials and energy required for production of new paper packaging.

The analysis shows that only 5% of scrap paper, contained in household waste to some 25-35% is reused.

Requirements

The Environmental Label may be used for all sorts of returnable paper packaging which, apart from the requirements referred to in item A1-0, meet the following criterion:

- may be reused for five more times at the minimum.

A1-2 RETURNABLE GLASS PACKAGING

Environmental Aspects

The use of returnable glass packaging reduces the amount of waste, saving energy and raw materials required for production of new glass packaging.

The one-way filling requires six times as much energy as returnable bottles, including energy spent on rinsing and transportation.

Requirements

The Environmental Label may be used for all sorts of returnable glass packaging (bottles for food and beverages and other products as well), which, apart from the requirements referred to in item A1-0, meet the following criteria :

- are fit to be refilled for ten more times at the minimum;
- have no lead-containing bottle-caps;
- have no labels containing gold bronze.

A1-3 RETURNABLE PLASTIC PACKAGING

Environmental Aspects

The use of returnable plastic packaging reduces considerably the total amount of waste, at the same time saving energy and raw materials required for the production of new plastic packaging.

According to some approximate estimates, for disposal of 10,000,000 non-returnable plastic 1,5 l bottles (which corresponds to annual consumption of a city with 1,000,000 inhabitants) the surface area of about 1,000 sq.m. is required, if disposed as waste without any particular previous treatment.

As the packaging made of plastic materials is widely in use, it is of particular importance to introduce returnable packaging of that kind, its recycling and then finally its incineration or disposing respectively.

Requirements

The Environmental Label may be used for all sorts of returnable packaging made of plastic materials which, apart from the requirements referred to in item A1-0, meet the following criterion:

- may be re-filled for ten more times.

A1-3.1 RETURNABLE PLASTIC CONTAINERS

Environmental Aspects

The use of returnable plastic containers economizes the consumption of energy and raw materials which would be necessary for production of new containers. This relates particularly to containers made of recyclable plastic materials.

In this way we are also avoiding environmental pollution which would be caused by disposing or incinerating containers that cannot be recycled (that do not belong to "thermoplastic" group).

Requirements

The Environmental Label may be awarded to all sorts of returnable plastic containers which, apart from the requirements referred to in item A1-0, meet the following criteria:

- every new container produced shall be at least 4 times recyclable after it has been damaged or its shelf-life expired;
- in production of returnable containers all sorts of recyclable plastic materials may be used, excluding polyvinyl chloride (PVC).

A1-4 RETURNABLE METAL PACKAGING

Environmental Aspects

The aim of introducing the Environmental Label for returnable metal packaging is to reduce the total amount of municipal wastes and to save energy and raw materials required for the production of new packaging of the sort.

The metal packaging waste, disposed without any previous treatment, causes serious difficulties as regards the volume of the space that it takes up and its impossibility to be degraded at the disposal sites.

The analysis showed that municipal wastes contain some 3% of metal waste of which 48% is reusable.

Requirements

The Environmental Label may be used for all sorts of returnable metal packaging which, apart from the requirements referred to in item A1-0, meet the following criterion:

- may be reused for ten more times.

B1-0 WASTE COLLECTION

Environmental Aspects

An integrated system of waste, energy and natural resources management is focused primarily on the effort to reduce generation of waste and exploitation of primary resources, and to enhance the usability of secondary raw materials.

The collection of either paper, glass, plastic, rubber, metal or any other wastes represents the immediate reduction of the total amount of wastes, of adverse effects on human health and environment and of the exploitation of limited natural resources.

Requirements

The Environmental Label is used to mark waste collection bins which meet certain criteria characterizing specific sorts of waste material.

These waste collection bins are to be marked with labels to inform the population of the purpose and subsequent use of the waste collected. There are specific labels for each sort of waste.

The location of the waste collection bins shall be acceptable for the neighboring population and shall in no way disturb the local traffic.

The conditions as to the location of bins and to the sites for waste acceptance and collection are laid down by current legal regulations, referring particularly to collection of inflammable and hazardous wastes.

It is necessary to establish a system to facilitate the reuse of collected wastes in compliance with environmental requirements.

B1-1 WASTE PAPER COLLECTION

Environmental Aspects

The analysis of the municipal waste composition showed that it contains some 23% of waste paper from the aspect of weight and over 40% from the aspect of volume. This ratio is even more unfavorable with the commercial waste: it contains, namely, as much as 70% of waste paper.

The collection of household waste paper and, even more important, the collection of waste paper generated by great consumers such as offices, shops and similar, will considerably - by at least one third - reduce amounts of wastes and costs of waste handling, contributing also to saving of energy and primary resources.

Requirements

The Environmental Label may be used for marking the waste paper collection bins which, apart from the requirements as referred to in item B1-0, meet the following criterion :

- the bins marked with the following inscription :

"COLLECTED WASTE PAPER FOR RECYCLING PURPOSES"
"FLATTEN BEFORE DISPOSAL" (with a graphic presentation)
"NO RETURNABLE PACKAGING, PLEASE"

B1-2 WASTE GLASS COLLECTION

Environmental Aspects

The collection of waste glass reduces the amount of household waste.

The reuse of waste glass in production process saves primary raw material resources and energy.

The analysis showed that waste glass makes 6% of the total household wastes, excluding returnable glass packaging, but only 40% can be collected and reused.

Requirements

The Environmental Label may be used for marking the waste glass collection bins which, apart from the requirements referred to in item B1-0, meet the following criterion :

- the bins marked with the inscription:

"NO RETURNABLE BOTTLES, PLEASE -
TO BE RETURNED FOR REFILLING"
"COLLECTED WASTE GLASS FOR RECYCLING PURPOSES"

B1-3 WASTE PLASTIC COLLECTION

Environmental Aspects

Products made of plastic are widely used to the extent showing a constant upward tendency and form a large part of disposed wastes (some 30% of the volume).

The collection of waste plastic is encouraged in order to reduce the total amount of wastes and facilitate the reuse of plastic granules in manufacture of new products. In that way plastic products already used are recycled in the first place and used in the second.

Requirements

The Environmental Label may be used to mark plastic waste collection bins which, apart from the requirements referred to in item B1-0, meet the following criterion:

- the bins marked with the inscription:

**"COLLECTED PLASTIC WASTE FOR RECYCLING PURPOSES"
"NO RETURNABLE PACKAGING, PLEASE"**

B1-4 WASTE METAL COLLECTION

Environmental Aspects

The share of metal waste in the total amount of wastes is considerable.

A portion of waste metal (packaging) may be negligible in the total mass from the aspect of weight, but is predominant in that of volume. Another portion of wastes may be predominant by its weight and insignificant by its volume, demonstrating very clearly the problem of duration and space required for such a type of disposed waste.

The purpose of introducing the Environmental Label for metal waste collection is to facilitate its reuse in form of a secondary raw material, thus preventing it from being merely disposed at sites without any previous treatment.

Requirements

The Environmental Label may be used to mark collection bins or rather areas provided for waste metal collection which, apart from the requirements referred to in item B1-0, meet the following criterion:

- bins and areas for waste metal collection marked with the inscription:

"COLLECTED WASTE METAL FOR RECYCLING PURPOSES"
"NO RETURNABLE METAL PACKAGING, PLEASE -
TO BE RETURNED FOR REFILLING"

B1-5 WASTE RUBBER COLLECTION

Environmental Aspects

The waste rubber collection contributes to the reduction of the total amount of wastes, saves primary raw materials and energy and at the same time facilitates the use of waste rubber granules to manufacture new rubber products.

The purpose of the Environmental Label is to encourage waste rubber collection campaign upon which waste rubber would be used as secondary raw material.

Requirements

The Environmental Label may be used to mark collection bins and areas used for waste rubber collection, which, apart from the requirements referred to in item B1-0, meet the following criterion:

- the bins and areas for waste rubber collection to be marked with the inscription:

"COLLECTED WASTE RUBBER FOR RECYCLING PURPOSES"

B1-6 WASTE OIL COLLECTION

Environmental Aspects

The fact that only 1 litre of oil may contaminate 1.000.000 litres of water accounts for the ever-growing attention paid to the controlled waste oil handling.

The purpose of collecting waste oil, which according to international criteria belongs to the group of hazardous wastes, is :

- to collect as much waste oil as possible with the view to prevent its uncontrolled disposal and preserve the environment;
- to facilitate the recycling of certain oil components with the aim to produce new, base oils;
- to make use of it in energy production facilities after a certain period of time.

Requirements

The Environmental Label may be used to mark the waste oil collection bins which, apart from the requirements referred to in item B1-0, meet the following criterion:

- the waste oil collection bins to be marked with the inscription:

"COLLECTED WASTE OIL FOR RECYCLING PURPOSES"

C1-0 SECONDARY RAW MATERIAL PRODUCTS (RECYCLED PRODUCTS)

Environmental Aspects

The quantity of waste material, huge as it is, is additionally burdened by a considerable quantity of diverse paper, glass, plastic, metal and other wastes, disposed without any previous treatment.

The purpose of the Environmental Label is to encourage and enhance the manufacture of products made of secondary raw materials (recycled products), with the aim to achieve a high usability of waste material as secondary raw material, thus saving the primary raw materials and energy and reducing the quantity of wastes.

Requirements

The Environmental Label is used to mark finished products made of waste material (paper, glass, plastic, metal, rubber and the like), resulting from products collected in the territory of the Republic of Croatia which, due to their shelf-life having expired, are not usable or simply not used any more.

The percentage of the waste material share in a finished product is determined for each sort of waste material separately. Minor deviations from the percentage determined are allowed, if required by technical or some other standards.

All finished products are to conform with valid technical and safety requirements.

All finished products made of secondary raw materials are to be recyclable or usable in any other environmentally friendly way, unless they are multiply usable products.

C1-1 SCRAP PAPER PRODUCTS

Environmental Aspects

By scrap paper recycling the total amount of scrap paper and wastes in general will be reduced.

Moreover, this will result in considerable reduction of environmental burdening (water pollution, water and energy consumption).

The Environmental Label may be awarded to scrap paper products used to replace those made of primary raw materials.

Requirements

The Environmental Label may be awarded to recycled paper to be used in graphic industry and to scrap paper products which, apart from the requirements referred to in item C1-0, meet the following criteria :

- products are to be 100% made of scrap paper with a 5% tolerance;
- the recycled paper shall contain at least 51% of the low-grade (sorted mixed scrap paper, multi-layered cardboard containing 70% of corrugated cardboard at the minimum, paperboard and mixed cardboard, brochures, books, magazines, telephone directories, catalogues and journals) and the middle-grade scrap paper (duplicating paper, daily newspapers, cardboard boxes without paperboard, multi-layered cardboard used for manufacture of cardboard packaging and kinds containing kraft-sulphate cellulose);
- in paper production no chlorinated bleaching agents and no EDTA (ethylenediamine-tetra acetic acids) shall be used;
- scrap paper products may contain some of hazardous substances in limited quantities only. Hazardous substances may be considered additives or pollutants if present in following concentrations:
 - 0.1 % of toxic substances and
 - 1.0 % of harmful, corrosive or irritating substances.

NOTE: In cases when no regulations in the Republic of Croatia are available, the EC guidelines for relevant field will apply (67/548/ECC and 88/379/EEC).

C1-2 SCRAP GLASS PRODUCTS

Environmental Aspects

Since there is still a high share of scrap glass in the total amount of wastes there is a tendency to reduce the mass of waste and reuse scrap glass as secondary raw material in the best possible way. Therefore the purpose of the Environmental Label is to enhance and encourage production and sale of products made of recycled glass.

Requirements

The Environmental Label may be used to mark finished products made of scrap glass which, apart from the requirements referred to in item C1-0, meet the following criterion:

- products are to be made of at least 85% scrap glass. The limit of the 70 % scrap glass share is allowed if required by technical or some other standards.

C1-3 SCRAP PLASTIC PRODUCTS

Environmental Aspects

So far it has been very difficult to recycle any amount of plastic wastes, either mixed or polluted with other sorts of waste, generated in households, agriculture and industry. This applies to about 75% of all wastes.

As it is possible to manufacture new, applicable products from this mixed plastic wastes, the purpose of Environmental Label is to promote their wider use.

Requirements

The Environmental Label may be used to mark products made of mixed plastic wastes (mixed plastic wastes come from products that cannot be used or are not fit for use) which, apart from the requirements referred to in item C1-0, meet the following criteria:

- products may be made of materials containing at least 85% of "mixed scrap plastic".

The "mixed scrap plastic" includes:

- plastic wastes from households,
 - mixed plastic wastes of diverse categories, e.g. of polyolephins, polystyrene and polyvinyl chloride,
 - plastic wastes of unknown origin,
 - plastic wastes in combination with other used materials, such as paper and fabric,
- exempted are wastes of the same sort coming from production and processing.

C1-4 SCRAP RUBBER PRODUCTS

Environmental Aspects

The purpose of the Environmental Label is to promote the production and sales of products made of scrap rubber.

Requirements

The Environmental Label may be used for finished products made of scrap rubber, which, apart from the requirements referred to in item C1-0, meet the following criteria:

- products are to contain at least 85% scrap rubber. The scrap rubber level of 70% is allowed if required by technical or some other standards.
- exempted are wastes of the same sort coming from production and processing.

C1-6 CARBON DIOXIDE (CO₂) FROM FERMENTATION WASTE

Environmental Aspects

CO₂ is a colourless and odourless gas which, when dissolved in water, makes carbonic acid, carbonate and hydrocarbonate (bicarbonate) and gives water an acid taste (carbonated beverages). It may be supplied in the gaseous, liquid or solid state. The solid CO₂ (dry ice) is used for cooling. When used for this purpose the evaporation of the solid causes the rise of the gas concentration in the working area and the need to improve the ventilation (over 5 p.c. of CO₂ in the air causes death and lower concentrations cause quickened breathing). The liquid CO₂ is kept on the temperature between -56.6°C and +31°C beside related pressures which exceed the atmospheric pressure.

CO₂ is separated/spent during natural processes and the equilibrium concentration in the atmosphere may be degraded by human activities such as fossil fuel combustion, incineration of crop residues, clearing of forests, technological process by-products and similar.

The increased CO₂ concentration in the atmosphere may cause the rise in the average temperature of the earth's surface and the atmosphere (greenhouse effect) which might bring about the thawing of a part of polar ice and a change in circulation of air masses, and also the sea level rise and global changes in the status of surfaces used for diverse purposes. Recognizing the impact that the increased CO₂ concentration in the atmosphere may have on the climate, the European Union has introduced a number of regulations to limit the emissions and also to control procedures to keep the emissions in the year 2000 at the 1990 level.

The Environmental Label may be awarded to exhaust, fermented CO₂ for its contribution to minimisation of the "greenhouse effect" (not emitted directly into the atmosphere). Besides, the fermented CO₂ is sounder for the environment than CO₂ generated by targeted chemical reactions (lime-stone annealing, separation out of certain industrial gases or gases generated by carbon fuel combustion), because it is the result of beer malt fermentation or fermented barley. Therefore no additional energy is required to produce it and concentrate before liquefaction or to apply more expensive purification procedures (separated CO₂ shows high purity grade and is suitable for production of carbonated beverages).

Requirements

The Environmental Label may be awarded to carbon dioxide (CO₂) produced from 100 p.c. fermented waste, if, apart from the conditions set under item C1-0, it meets the following requirements:

- purity grade of min. 99.9 p.c.,
- up to 0.1 p.c. moist, N₂ and Ar+O from the air dissolved in liquid CO₂ and only traces of other components are allowed,
- energy consumption must not exceed 0.003 kWh/kg CO₂ liq.

ENVIRONMENTALLY FRIENDLY - CO₂ FROM FERMENTATION WASTE

D1-0 "FREE PRODUCTS"

Environmental Aspects

Products of diverse use (in households, industry and the like) may be awarded the Environmental Label if they contain no hazardous substances as related to other products of the same purpose.

In this way the manufacture and consumption of less hazardous products of the same purpose is encouraged, ensuring less negative impacts of such products on the environment.

Requirements

The Environmental Label may be awarded to products containing no hazardous substances in any stage of their life cycle. Only exceptionally may the presence of hazardous substances in a product be tolerated, if their content puts them into the category of additives or pollutants (hazardous substances classification and content taken over from the EC guidelines).

"Free products" are to meet all valid technical and safety requirements.

NOTE: When in the Republic of Croatia no regulation is available, then EC directives for the relevant field are to be followed

D1-1 ASBESTOS-FREE CLUTCH LININGS

Environmental Aspects

Measurements performed during traffic jams in big cities showed that asbestos dust may be discharged into the environment as a result of abrasion of clutch linings.

Such dust may also be released in workshops while replacing the clutch linings.

Asbestos-free clutch linings help reduce the discharge of this hazardous dust into the environment.

Requirements

The Environmental Label may be used to mark clutch linings for vehicles which, apart from the requirements referred to in item D1-0, meet the following criteria:

- clutch linings shall not contain asbestos;
- lead-content shall be lower than in clutch linings containing asbestos.

D1-2 ASBESTOS-FREE BRAKE LININGS

Environmental Aspects

Measurements performed during traffic jams in big cities showed that asbestos dust may be discharged into the environment as a result of abrasion of brake linings.

Such dust may also be released in workshops where such linings are replaced.

Asbestos-free brake linings help reduce the discharge of this hazardous substance into the environment.

Requirements

The Environmental Label may be used to mark all brake linings used for disc brakes or drum brakes which, apart from the requirements referred to in item D1-0, meet the following criterion:

- do not contain asbestos in the friction material provided as wearing parts.

D1-3 MATCHES FREE FROM TOXIC SUBSTANCES

Environmental Aspects

The use of nontoxic substances in production of matches helps reduce the emission of toxic substances in the environment, at the same time reducing the possibility of environmental pollution and circulation of toxic substances through water and land eco- systems.

The use of nontoxic substances means the direct reduction of negative impacts on man and the environment in the course of the immediate production process and when using and disposing matches.

Requirements

The Environmental Label may be awarded to matches which either do not contain or do not use toxic substances for production process, thus being environmentally more acceptable than other products of the same purpose.

Matches shall not contain the following substances:

- S (sulphur)
- ZnO (zinc oxide)
- K₂Cr₂O₇ (potassium dichromate).

The packaging shall be made of recycled material.

D1-4 FIRE LIGHTING MATERIAL FREE FROM HAZARDOUS SUBSTANCES

Environmental Aspects

There are various fire lighting materials on the market, containing substances hazardous for the environment and human health or releasing hazardous products in the atmosphere during combustion.

The fire lighting materials free from hazardous substances will help reduce the pollution of environment caused by production and use of such products, reducing simultaneously the burdening of the atmosphere with noxious combustion products.

Requirements

The Environmental Label may be awarded to fire lighting materials which, apart from the requirements referred to in item D1-0, meet the following criteria :

- the highest allowed content of following substances in flue gases must not be exceeded:
 - a) CO max. 170 ppm
 - b) CO₂ value ranging from 8-14%
 - c) SO₂ max 1700 ppm,
 - d) Nox max 500 ppm.

- that at least 60% of the fat substance contained in the fire-lighting material is biodegradable.

The packaging shall be made of recycled material.

D1-5 EMULSIFIERS AND DISPERSERS OF OIL SPILLS ON WATER, FREE FROM HAZARDOUS SUBSTANCES

Environmental Aspects

Contamination of water by crude oil and other sorts of oil occurs very frequently. The basic problem of the chemical clean-up of oil spills on water lies in the fact that a new chemical, i.e. a new pollutant, is thus added into the water causing more damage to water organisms than crude oil and other oil sorts. Therefore the aim of the Environmental Label award is to encourage the manufacture and application of emulsifiers and dispersers which, apart from being highly biodegradable, have a less adverse effect to the world of water flora and fauna.

Requirements

The Environmental Label may be awarded to emulsifiers and dispersers, which, apart from the requirements referred to in item D1-0, meet the following criteria:

1. Biodegradability shall be over 90 %, with a very low toxicity:
 - a) with fresh-water fish: $LD_{50} / 72 \text{ hours} > 5,000 \text{ mg/l}$
 - b) with sea-fish: $LT_{50} / 5,000 \text{ ppm} > 12 \text{ hours}$ and
 - c) mortality rate / 48 hours / 1,000 ppm = 0

2. Dispersion stability shall be 3 days at least.

D1-6 HYGIENIC LITTER FOR PETS FREE FROM HAZARDOUS SUBSTANCES

Environmental Aspects

To ensure hygienic living conditions for pets, litters made of diverse materials are used: natural sand, crushed thermostone, fabric residues, wood-sand and minerals called sepiolite, atal pugite and bentonite.

Litters made of natural sand, crushed thermostone, fabric residues and wood-dust are to be removed completely after a day or two. Moreover, litters based on sepiolite and atal pugite contain in their structure the free SiO₂ which makes them harmful for human and animal health.

Litters made of bentonite do not endanger health and their use reduces considerably the burden of municipal waste, because after its being used once only a small portion is thrown away. The experience showed that in this manner the amount of waste might be some 4 times reduced. Even such, already used litters based on bentonite may be reused as useful wastes: to prepare compost and manure or to be thrown away into waste waters where they bind to themselves organic and inorganic cations.

Requirements

The Environmental Label may be awarded to hygienic litters for pets, which, apart from requirements as referred to in item D1-0, meet the following criteria:

1. The product shall be made of natural minerals containing in their structure no group which may endanger health.
2. The concentration of hazardous substances in finished products shall not exceed the limits which put them into the category of additives or pollutants:
 - 0.1% for substances classified as toxic and highly toxic except those carcinogenic, mutagenic or teratogenic;
 - 1.0 % for substances classified as explosive, irritating, oxidizing, corrosive, highly inflammable and hazardous.

D1-7 FUNERAL EQUIPMENT FREE FROM HARMFUL SUBSTANCES

Environmental Aspects

Funeral equipment, particularly the one used for cremation, has a considerable impact on the environment. In default of the burial ground the share of cremation in the total number of burials shows the upward trend and is approaching 50 p.c.

The funeral equipment consists of a coffin, a hand crucifix, inner fabric lining (equipment) and clothes and footwear for the deceased. As distinguished from burying or laying into a dry vault, no metal parts are allowed when cremating the body, special metal inserts may be allowed only exceptionally.

The funeral equipment can be divided modularly into the coffin, the fabric lining and the clothes and footwear for the deceased. This distinction means that the entire equipment may not be supplied by a single supplier. Still, when evaluating environmental soundness or rather bringing into line with environmental principles, the entire impact of the product on the environment is to be taken into consideration (impacts are summed up).

Such an approach is particularly justified in case of cremation. It is vital that the atmosphere is not loaded by excessive emissions of entire funeral equipment so as to prevent too high emission values near the crematorium.

When burying the dead into dry vaults the environmental impact is negligible and when exhuming the body it is necessary to dispose of the funeral equipment residues which represent special wastes. The usual burial has only a small impact on precipitation and possible underground waters (depending on the geological structure of the burial ground). By the use of environmentally acceptable funeral equipment this impact may be even more reduced and neglected.

Wastes originating from the funeral equipment are to be disposed of as special wastes (metal, wood and fabric residues).

To limit the emission of gases and solid particles (heavy metal oxides) the provisions of TA Luft, Rule 17, § 5 (emission limit values) are applied. The guideline 67/548/EEC on restrictions of the use of harmful substances provides that substances classified as carcinogenic, teratogenic, mutagenic or allergenic are not allowed. Other European standards and agreements about funeral activities and funeral equipment are applied too.

Among the existing beneficiaries of the Environmental Label of the Republic of Croatia and those for which the award procedure is in process, the funeral equipment, considering its environmental impact, comes next to the detergents. The purpose of awarding the Environmental Label is further reduction of emissions into the atmosphere and partially into the water and soil by fulfilling specific criteria.

Requirements

In addition to environmental aspects the following requirements are to be met by the product, i.e. funeral equipment:

1. To make coffins only unimpregnated, glued, massive wood boards are to be used; chip-boards are not allowed.
2. It is recommended to cover coffins with a thin layer of natural coatings, such as shellac, beeswax and other types of wax. It is also allowed to apply aqueous transparent coatings which in cremation fume may contain harmful substances (from additives, dirt) up to the concentration allowed by TA Luft, Rule 17 (A), $a_{\max} = 0.35 \text{ mg/m}^3$ of fume.
3. The quantity of formaldehyde discharged by boards coated and glued together must not exceed 10 mg/kg of dry wood.
4. Natural coatings, if applied, are to be at least partially biodegradable, expressed by: BPK₅/KPK, 20 p.c. at the minimum.
5. Fabric lining used for the coffin is to be made of natural materials: paper, cardboard, linen, cotton, viscose, but PVC is forbidden. The heavy metal emission permitted is: $b_{\max} = 0.05 \text{ mg/m}^3$ fume; it is thus lower than permitted (according to TA Luft, Rule 17 = A).
6. The clothes of the deceased must also be made of natural materials mentioned, it is additionally allowed to use wool and silk. The footwear of the deceased is to be made of cardboard coated with environmentally acceptable paints or leather which has not been chromium tanned. Soles shall be made of cardboard or leather as mentioned and the following materials are forbidden: rubber, polyurethane and caoutchouc. The heavy metal content in this part of the funeral equipment is: $c_{\max} = 0.05 \text{ mg/m}^3$ of fume; it is thus lower than permitted (according to TA Luft, Rule 17 = A).
7. As a rule, when cremating the body inner metal inserts are not allowed. Under special circumstances, for instance in case of sanitary restrictions, it may exceptionally be allowed to perform cremation in an insert made of fire-proof steel or any other material resistant to the peak temperature of cremation. The insert is to be soldered by a low-temperature soldering material which is not harmful for the environment (according to Umweltzeichen Der blaue Engel, 1995). (In this exceptional case a higher emission level is allowed and metal residues are disposed of as special wastes.)
8. Inner inserts made of zinc plates may be used only in dry vaults, and after exhumation the metal wastes are disposed of separately (using also low-temperature solder which is not harmful for the environment). It is not allowed to use zinc plates to bury dead bodies directly into earthen graves; for this purpose steel plates must be used, if required.
9. The total heavy metal emission is calculated from the share of each particular part of the funeral equipment and must be lower than allowed (according to TA Luft, Rule 17 = A), that is $A > a + b + c$. $A = 0.5 \text{ mg/m}^3$.

It is suggested to put the following inscription into the graphic presentation of the Environmental Label:

ENVIRONMENTALLY FRIENDLY
FREE FROM HARMFUL SUBSTANCES

E1-0 OTHER PRODUCTS

E1-1 RETREADED TIRES

Environmental Aspects

Retreading the worn-out tires facilitates their further use. This procedure saves 2/3 of oil (oil derivatives) usually required to manufacture new tires.

Thus two objectives may be achieved: the reduction of both the total amount of wastes and of primary raw materials needed to manufacture new tires.

Requirements

The Environmental Label may be used to mark retreaded tires which comply with all current technical and safety standards and other relevant regulations.

E1-2 REUSABLE RIBBON CASSETTES

Environmental Aspects

For modern printers cassettes with carbon and/or textile tapes are being used, mostly as one-way products, accounting unnecessarily for the increasing amount of wastes.

The recovery of worn-out printer ribbon cassettes shall make them reusable.

The purpose of the Environmental Label is to encourage the manufacture and use of reusable ribbon cassettes in order to reduce the total amount of wastes and save energy and primary raw materials required to manufacture new ribbon cassettes.

Requirements

The Environmental Label may be used to mark reusable ribbon cassettes, if they, apart from current technical standards and other relevant regulations, meet the following criteria:

- recovered carbon ribbon cassettes may be used at least 9 more times after recovery;
- recovered textile ribbon cassettes may be used at least 5 more times after recovery;
- the use of cadmium to manufacture ribbon cassettes is not allowed;
- reusable ribbon cassettes are to be visibly marked as such.

E1-2.1

RECOVERED TONER CARTRIDGES

Environmental Aspects

For the operation of laser printers telefaxes and copying devices toner cartridges are required. A toner cartridge is an assembly consisting of mechanical elements, a toner powder container and a system for picture transmission to the copy. During operation the toner powder is being consumed, so after a certain number of copies it is used up.

According to unofficial information of the firms that perform the recovery some 80.000 toner cartridges were spent in the Republic of Croatia during 1994. By throwing away such cartridges after a single use the amount of wastes would increase by some 120 to 240 tons (one toner cartridge has a weight of 1.5 to 3 kgs depending on the machine). According to the estimates the consumption of toner cartridges in the Republic of Croatia is increasing by 30 to 40% a year, which could proportionally enlarge the quantity of wastes.

The purpose of awarding the Environmental Label is to encourage the recovering of toner cartridges and thus extend their shelf life, reduce the amount of wastes and save energy and raw material required for the production of new toner cartridges. Moreover, cartridges which cannot be recovered may be dismantled into pieces to be used for the repair of cartridges damaged.

Requirements

The Environmental Label may be used to mark toner cartridges if they, apart from current technical requirements and other relevant regulations in this field, meet the following requirements:

1. It must be possible to recover a toner cartridge at least 5 (five) times;
2. The recovered toner cartridges shall enable the number of copies equal to the nominal; a deviation of $\pm 5\%$ in relation to the manufacturer's declaration is allowed.
3. For the purpose of the recovery the application of substances classified as harmful for human health (highly toxic, carcinogenic, mutagenic) is not allowed, and the toner powder shall not contain more than 1% of substances classified as environmentally harmful (Annex 12 to the EC guidelines 67/548/EEC);
4. The use of cadmium for production of cartridges is not allowed;
5. The firm performing the recovery is obliged to divide the wastes by material types and to make it available for its reuse or forward to the company where it will be adequately disposed;
6. Toner cartridges are to bear a visible mark of the possibility to be recovered.

E1-3 WATER DISPERSIVE POLYMERIC COATINGS

Environmental Aspects

Water dispersion of polymers coating are applied to wall surfaces. Such dispersions frequently contain organic solvents including aromatic hydrocarbons, highly toxic biocides, silicate powder and pigments based on lead, cadmium chromium (VI) or other toxic metals.

By improving the production technology in terms of reducing the share of organic solvents, silicate powder biocides and toxic metals a less harmful effect of a product to the environment during its life cycle may be achieved.

Requirements

The Environmental Label of the Republic of Croatia may be awarded to water dispersive polymeric coatings with a minimum content of substances harmful from the aspect of environment protection, but still retaining the features defined by technical standards in this field valid in the Republic of Croatia.

In addition, these coating are to fulfil the following conditions:

1. It is not allowed to use substances which, according to the Rule Book on Maximum Permitted Concentrations of Hazardous Substances in the Atmosphere of Working Areas and Rooms and on Biological Limit Values (Official Gazette No. 92/93), are classified as carcinogenic: CA1, CA2.
2. Coatings for inner wall surfaces are to comply with the basic criteria of sanitary fitness of polymeric substances according to the Rule Book on Conditions regarding Sanitary Fitness of Commonly Used Utensils which Can Be Marketed (Official Gazette No. 92/93).
3. It is not allowed to use either hazardous substances classified as “harmful for human health” (toxic, carcinogenic, mutagenic or teratogenic) or those classified as “environmentally harmful”. Substances classified as irritating, noxious, corrosive, inflammable, oxidizing or explosive must not exceed 1.0% (Annex 12 to the EEC guideline No. 67/548, i.e. EC 50.48^h /Daphnia magna/ > 100 mg/l).
4. Coatings must not contain any biocide substances, but only preserving or fungicidal agents up to a concentration of 0.3%.
5. Coating must not contain compounds based on lead, cadmium, chromium (VI) or other toxic metals.
6. The share of organic solvents in coating for inner application may be up to 0.3%, of which 0.1% shall be aromatic hydrocarbons.
7. The content of free formaldehydes shall not exceed 0.001%.
8. The properties of the packaging material must not engender the environment. In order to avoid the decay and throwing away of the unused portion of the coating it is required:
 - to enable the package to be properly closed again,
 - to put on the market coating packages in a wide range of quantities.

E1-4 WATER-BASED ADHESIVES

Environmental Aspects

For sticking the floor coverings adhesives are used manufactured on the basis of:

- artificial (synthetic) resins dissolved in organic solvents, and
- a mixture of natural resins and polymeric water dispersions.

Adhesives based on artificial (synthetic) resins dissolved in organic solvents most frequently contain polychlorophene caoutchouc and polyurethane as artificial resins and easily volatile organic solvents as white spirit, toluene and ethyl acetate. The share of organic solvents in the finished product may be as high as 30% which makes the adhesives inflammable substances. The same organic solvents are used to clean the surfaces made dirty during manufacture and the use of adhesives, or as additional thinners for the same adhesive type which contributes to the increased concentration of hazardous substances in the environment.

Adhesive based on the mixture of natural resins and polymeric water dispersions contain water as solvent rather than organ solvents which are harmful from environmental aspect.

On the Croatian market over 90% of adhesives offered are manufactured on the basis of artificial (synthetic) resins dissolved in organic solvents. The purpose of awarding the Environmental Label is to encourage the manufacture and use of adhesives made on the basis of mixture of natural resins and polymeric water dispersions due to their less harmful effect on the environment.

Requirements

The Environmental Label may be awarded to adhesives which, apart from binding safety and technical standards for the relevant product group valid in the Republic of Croatia, fulfill the following criteria:

1. Adhesives shall not contain organochlorine or nitric components.
2. Adhesives shall not contain easily volatile organic hydrocarbon solvents excepting ethanol which may be present in the quantity of 2.0%.
3. The content of fungicidal agents in the finished product shall not exceed 0.5% and of biocide agents 0.1% (LD 50 > 4.000 mg/kg).
4. Adhesives shall not contain hazardous substances classified as carcinogenic, mutagenic or teratogenic, whereas other hazardous substances may be present in concentrations which put them into the category of additives (EU guidelines 67/548/EEC, 88/379/EEC and 91/325/EEC).

E1-5 LUBRICATING OIL FOR MOTOR SAW CHAINS

Environmental Aspects

Lubricating oils for motor saw chains are used to reduce the friction between the gear and the chain and between the cutting surface and the wood. In order to raise the viscosity and reduce the corrosion of metal components, additives of a diverse biodegradability level are added to oils.

According to the data obtained from oil manufacturers, in the course of 1993 some 500 tons of mineral oils for lubrication of motor saw chains were discharged into the soil in the Republic of Croatia, thus causing a considerable pollution.

In connection with the origin there are several types of lubricating oils for motor saw chains: mineral, vegetable or animal and mixed oils (a mixture of mineral and vegetable or animal oil). Mineral oils are obtained by fractional distillation of petroleum and represent a mixture of hydrocarbons and ingredients such as oxygen, sulphur and nitrogen compounds. These oil types belong to the group of hardly biodegradable oils which, when applied, cause adverse effects on the working environment: irritation of skin, of the mucous membrane of eyes and of the respirators tract.

Vegetable or animal oils are obtained from the fat animal tissue and from the plant seeds. These oil types belong to the group of highly biodegradable oils and, when applied, shown no adverse effects on the working environment.

The purpose of the Environmental label is to encourage the manufacture and use of such lubricating oils for motor saw chains which have the least adverse effect on the environment.

Requirements

The Environmental Label may be awarded to lubricating oils for motor saw chains which, apart from binding safety and technical standards for the relevant product group valid in the Republic of Croatia, fulfill the following criteria:

1. Oils must neither contain hazardous substances classified as carcinogenic, mutagenic or teratogenic nor be classified as harmful for the environment (according to Annex 12 to the EU guideline No. 67/584 or rather EC 50, 48h (*Daphnia magna*) > 100 mg/l).
2. The sulphur content in the finished product shall not exceed 0.5%.
3. Oils are to be over 80% biodegradable (applying the procedure CEC-L-33T-82).
4. Oils may contain max. 11% additives each of which shall be over 70% biodegradable.
5. Oils shall not contain any chlorine or nitric compounds.

E1-6 LINEN TOWEL ON THE RAIL

Environmental Aspects

In public sanitary and other rooms there are three ways of drying hands after washing:

- towels made of cotton cloth
- towels made of bleached cellulose or recycled paper
- warm-air hand-driers.

The use of towels made of cotton cloth reduces the energy consumption, which is particularly high with warm-air hand-driers, and at the same time also the amount of wastes in relation to paper towels.

Towels made of cotton cloth are characterized by a long duration and the possibility to be used afterwards (as polishing or cleaning cloth and similar).

The purpose of the Environmental Label is to encourage the use of linen towels with the component towel rail (a roll of linen on the rail), because by using this way of drying hands and by washing the towels in the appropriate way negative impacts on the environment may be considerably reduced in comparison with other two methods.

Requirements

The Environmental label of the Republic of Croatia may be applied to mark towel rails with linen towels (a roll of cloth on the rail) if, in addition to valid standards and other regulations in the relevant field (it is implied that the clean and used section of the towel are technically completely separated), they fulfill the following criteria:

1. One roll of cloth is to be used 80 times at least.
2. One roll must provide 80 portions for wiping.
3. The manufacturer/distributor shall ensure washing of towels, collecting used towels, their later use and disposal.
4. Apart from the conditions mentioned there are special requirements for linen towels washing:
 - no preliminary cleaning with organic solvents is allowed;
 - additional agents for removing stains are allowed if not exceeding the quantity of 10g Aox per ton of dry cloth;
 - the consumption of water must not exceed 10 m³/t of dry cloth;
 - the detergent must bear the Environmental Label of any country.

E1-7 PAPER PRODUCTS FOR PACKAGING

Environmental Aspects

Paper products for packaging may be made of recycled paper, unbleached and bleached cellulose.

There is a tendency to use as much as possible recycled paper for manufacture of these paper products. Nevertheless, due to certain technical properties required, e.g. the strength of the paper, the recycled paper cannot be used or can be used in a very small portion.

So, for example, commercial bags and bags used to pack flour, sugar, cement and lime are made of paper originating from unbleached sulphate cellulose or unbleached paper containing 100 p.c. recycled paper.

In present processes of bleaching chlorine and peroxide are used. Bleaching by chlorine has an adverse impact on the environment, because during the process chlorinated compounds are generated which are then through industrial waste water discharged into water recipients: rivers, lakes and the sea.

The paper bags disposed of are biodegradable which gives them the advantage over the packaging made of polyethylene.

Owing to technological improvements of the production process, minimization of the share of harmful substances (organic solvents for colours, adhesives) and use of biologically degradable substances (starch adhesives) the product has a less adverse impact on the environment during its entire life-cycle.

The purpose of awarding the Environmental Label is to stimulate manufacture and use of packaging made of unbleached or recycled paper to minimize the impact on the environment.

Requirements

The Environmental Label of the Republic of Croatia may be used to mark paper products for packaging if, apart from valid standards and other regulations in this field, they also meet the following requirements:

1. Cellulose fibre in the product must not be bleached or the paper is to be at least 90 p.c. made of recycled paper.
2. Paper packaging must not release more than 0.5 mg/dm² formaldehyde.
3. The share of polychlorinated biphenyls in the paper packaging must not exceed 10 mg/kg, the share of arsenic 3 mg/kg and the concentration of lead 10 mg/kg.
4. The use of colours containing Hg, Pb, Ni, Cd and Cr (VI) is not allowed.
5. Water dispersions of colouring agents are to be used.
6. Water soluble and biodegradable adhesives (BPK₅/KPK > 0.5) are to be used.
7. It is not allowed to use substances which, according to the EC guideline 91/325/EEC, are classified as harmful for health (carcinogenic, teratogenic, genotoxic or allergenic).

8. The manufacturer is obliged to collect, press and bale up the production waste paper and provide conditions for its recycling.

ENVIRONMENTALLY FRIENDLY
UNBLEACHED PAPER PACKAGING

OR

ENVIRONMENTALLY FRIENDLY
RECYCLED PAPER PACKAGING

E1-8 DETERGENTS

Environmental Aspects

Detergents are mixtures of various ingredients, among which the dominating substance (tenside) is active on the surface, containing softeners, bleaching agents, alkalis, protective colloids, corrosion inhibitors, optical bleaching agents, enzymes, filling agents, perfumes, colours and preservatives.

- Substances active on the surface, which reduce the surface tension at the intermediate stage of dirt / water and facilitate separation of the dirt, are divided into anion, cation, amphoteric and non-ionic substances;
- Softeners are used to reduce the hardness of water and affect the pH solutions; the most commonly used softeners are phosphates, zeolites and phosphonates.
- Bleaching agents remove stains that cannot be separated by tensides. In most cases perborates and percarbonates are used, whereas TAED (tetraacetylene-ethylene-diamine) and TAGU (tetraacetyl-glycoluril) activate bleaching agents at lower temperatures.
- By adding the alkali the activity of tensides is increased.
- Protective colloids (cellulose, starch) prevent re-depositing of the dirt separated.
- Corrosion inhibitors (mostly Na-silicates) prevent corrosion of washing-machine metal components.
- Optical bleaching agents increase the psychological effect of cleanness by transforming the ultraviolet portion of the spectrum into its visible part.
- Enzymes dissociate protein dirt.
- Perfumes give laundry a pleasant smell.
- Preservatives prevent microbiological decay of the mother lye.

The use of detergents causes high pollution of recipients, which is due not only to the ingredients contained in the mixture, but also to the total volume which in EC countries in 1992 reached 3.5 million tons.

Croatian criteria for this product build for the most part on the criteria set by the European Union (95/365/EC), omitting only less influential parts which currently cannot be implemented in Croatia.

The European criteria mentioned are methodical and transparent, and are the result of many years of co-operation between manufacturers, traders, consumers, environmental interest groups and scientific experts.

Environmental aspects facilitate the assessment of major environmental impacts, whereas the choice of criteria and evaluation of the total life-cycle show that the product has the strongest effect at the stage of using. For that reason the selected criteria include those parameters which point out to the impact of the emission into recipients.

The parameters mentioned are: total amount of chemicals (dose reduced by humidity, see Appendix II), soluble and insoluble inorganic substances, biologically degradable organic substances, biological oxygen demand (BPK) and the amount of phosphates.

For each parameter (criterion) the upper limit ("threshold") is set which must not be exceeded or otherwise the product will be eliminated from competition for the Croatian Environmental Label.

Within the values allowed up to the upper limit the level of "harmonization" with environmental principles, the so-called "ecological harmonization", will be assessed by means of specially worked out formulas and expressed in points. For each particular parameter 4 points at the most may be given and then multiplied by WF (harmonization factor determined for each parameter - criterion according to its relative environmental impact).

In this way 74 points may be obtained plus 6 points for packaging, making a total of 80 points.

The applicant for the Environmental Label must submit the calculation of all parameters required and other data as specified in Appendix III.

The State Directorate for Environment may exceptionally require that these preliminary activities should be carried out by a competent authority which will deliver the expert opinion. In this case the applicant must accompany the application with all data available and the rest will be provided by the competent authority mentioned.

For calculations the DID tables of criteria (Appendix I) are to be used.

The procedure for CDV_{TOX} calculation is foreseen for the case when DID tables do not contain data required for LTE (see Appendix I A).

The impact of detergents on the environment is considerable. If through the rules for the award of the Croatian Environmental Label this impact may be minimized, it would mean a significant contribution of the Environmental Label to preservation of the environment.

Requirements

1. General

To obtain the Environmental Label the product is to meet the following requirements consisting of:

- specific criteria for detergent ingredients and packaging,
- general criteria,
- the criteria of fitness for use.

Elements to be included in the application for Environmental Label are specified in Appendix III.

2. Scope of use

The application for the award of the Environmental Label is to be submitted for detergents used in washing-machines; their physical state is not relevant.

3. Functional unit and reference (standard) dose

The functional unit of quantity is expressed in **g** of the ingredient contained per a washing cycle or a related dose, whichever is equivalent.

In case of using a standard detergent (the same as "heavy-duty") in a washing cycle 4.5 kgs of dry fabrics may be washed applying the standard dose of the detergent or 2.5 kgs of dry fabrics in case of a milder formulation (the same as "low-duty").

Reference (standard) dose:

This dose is recommended to the user (consumer) by the manufacturer assuming that WH = 2.5 m mole Ca²⁺/l and a "normal dirtiness of the fabrics".

The reference dose is required for:

- calculation of environmental criteria and
- washing efficiency test.

If in Croatia detergents are used for diverse water hardness levels, the applicant shall specify the hardness higher and lower than standard and the related recommended doses.

4. Environmental criteria for detergent ingredients and packaging

4.1. Environmental criteria for ingredients

The following parameters are taken into consideration:

- total chemicals
- critical dilution volume - toxicity
- phosphates*
- insoluble inorganic substances
- soluble inorganic substances
- organic substances biologically undegradable in aerobic surroundings
- organic substances biologically undegradable in anaerobic surroundings
- biological oxygen demand (BPK).

* Phosphates contribute to eutrophication in waters; this criterion is considered temporary and its modification will depend on the future development and essential data to be given by the development.

An example of calculating the criteria :

Points Criterion	4	3	2	1	Points correct.	H _{exl}	W-factor
Total chemicals	60	80	100	120	12	200	3
CDV _{TOX}	3000	6000	9000	12000	32	13000	8
Phosphates	0	10	20	30	8	50	2
Insoluble inorg. substances	15	25	35	45	2	50	0.5
Soluble inorganic substances	20	40	60	80	2	140	0.5
Undegrad. organ. subst. (aerobic)	1	2	3	4	4	10	1
Undegrad. organ. subst.(anaerobic)	6	8	10	12	6	20	1.5

Biol. oxygen demand (BPK)	30	60	90	120	8	140	2
Points total	74						

NOTE:

CDV_{TOX} : 1 / washing cycle

Others: g / washing cycle

H_{excl} : upper exclusion limit (threshold)

W-factor: harmonization factor

The table shown is an illustration of the procedure (under 4.4) for evaluation of parameters.

4.2. Criterion for assessing "environmental suitability" of packaging

For calculation the total packaging is taken and the quantity of waste is calculated against the detergent dose used (g / washing cycle).

The upper exclusion limit is 12 g / washing cycle.

Packaging in g / washing cycle	Points
up to 6	6
6 - 12	12 - packaging qty. in g/washing cycle

Six points are also given in case of using the packaging that may be re-filled several times; at least 20x for metal and 10x for paper packaging.

4.3. Suitable / unsuitable

The sum of points given to ingredients and the packaging may be 80; a detergent is ecologically suitable if it has been given at least 63 points and other requirements have been met. (General criteria and criteria for suitability for use.)

4.4. Calculations related to specific criteria for ingredients and packaging

For this calculation analytical data and the DID table containing all the data required (see Appendix I) are used.

The parameters (criteria) mentioned (total chemicals, CDV_{TOX}, phosphates, soluble/insoluble inorganic compounds, biologically undegradable organic compounds: aerobic or anaerobic, BPK) are calculated for each ingredient of the dose taking into consideration the detergent moisture.

The critical dilution volume - toxicity, CDV_{TOX}, is calculated for each ingredient of the dose (i) and individual volumes are summed up.

For calculation the following formula is used:

$$CDV_{TOX} = \frac{g_{(i)} \times LF_{(i)}}{LTE_{(i)}} \times 1000$$

in which:

$g_{(i)}$ means the quantity of the i ingredient in the dose expressed in grams,

$LF_{(i)}$ means the loading factor

$LTE_{(i)}$ means the long-term effect

(as per the DID list, Appendix 1).

Other parameters (criteria) are calculated using the following formulas :

Total chemicals

Exclusion (upper) limit

Points (B)

>200 g/washing cycle

for 120 g/washing cycle

$B = 7 - x/20$;

for >120 g/washing cycle

$B = 0$

Maximum points

4

Phosphates

Exclusion (upper) limit

Points (B)

>50 g/washing cycle

for 40 g/washing cycle

$B = 4 - x/20$;

for >40 g/washing cycle

$B = 0$

Maximum points

4

Soluble inorganic substance

Exclusion (upper) limit

Points (B)

>140 g/washing cycle

for 80 g/washing cycle

$B = 5 - x/20$;

for >80 g/washing cycle

$B = 0$

Maximum points

4

Biologically undegradable

organic substance (anaerobic)

Exclusion (upper) limit

Points (B)

>20 g/washing cycle

for 12 g/washing cycle

$B = 7 - x/2$;

for >12 g/washing cycle

	B = 0
Maximum points	4
CDV _{TOX}	
Exclusion (upper) limit	>13000 l/washing cycle
Points (B)	for 12000 l/washing cycle B = 5 - x/3000;
	for >12000 l/washing cycle B = 0
Maximum points	4

Insoluble inorganic substance	
Exclusion (upper) limit	>50 g//washing cycle
Points (B)	for 45 g/washing cycle B = 5.5 - x/10;
	for >45 g/washing cycle B = 0
Maximum points	4

Biologically undegradable organic substance (aerobic)	
Exclusion (upper) limit	>10 g//washing cycle
Points (B)	for 4 g/washing cycle B = 5 - x/1;
	for >4 g/washing cycle B = 0
Maximum points	4

BPK	
Exclusion (upper) limit	>140 g//washing cycle
Points (B)	for 120 g/washing cycle B = 5 - x/30;
	for >120 g/washing cycle B = 0
Maximum points	4

New chemicals

To calculate the CDV_{TOX} for detergent ingredients for which no data are available in the DID lists the procedure is described in Appendix I.A. and the applicant for the Environmental Label

is obliged to submit the experimental data to the State Directorate for Environment (competent expert institution).

The applicant is to submit data on soluble/insoluble inorganic substances, on anaerobic biological degradability (ECETOC test No. 28 of 28 June 1988) and BPK.

The applicant is to submit all available documents with data on biological degradation, long-term effects (LTE, NOEC) on fish, D. magna or algae. Tests described in the Appendices to the Guideline of the Council 92/32/EEC (OJ. No. L 154, 5 June 1992, p. 1) are relevant. If complete data regarding LTE (NOEC) are not available, the procedure stated in Appendix I.A. will be applied.

5. Other criteria related to ingredients included

Concentrations of certain ingredients are limited and some are excluded:

- a) total mass of detergent ingredients having the acute toxicity for fish over 1 mg/l must not exceed 10 g/washing cycle;
- b) total mass of ingredients that are more toxic for fish, D. magna or algae than the acute toxicity of 1 mg/l, that have the additional feature of being undegradable and the coefficient of partition into ocytanal/water systems ≥ 3 (except if BCF ≤ 100), must not exceed 0.25 g/washing cycle;
- c) phosphonates must not exceed 1 g/washing cycle;
- d) no content of the APEO tenside (alkylphenolethoxylat), synthetic musk perfumes as specified in Appendix II, EDTA and ingredients classified as carcinogenic, teratogenic or mutagenic is allowed.

6. User (consumer) information

The packaging is to bear the following information:

- low-temperature washing is energy efficient,
- reduced doses are environmentally friendly,
- in case of doubt use the smaller dose for normally dirty fabrics.

6.1. Dosing instructions

Dosing instructions are to be printed on the packaging. Doses are to be specified for "normally" and "extremely" dirty fabrics and various water hardness grades. The dose recommended for WH=1 and normally dirty fabrics and the dose for WH=4 and extremely dirty fabrics must not differ by more than factor 2.

The recommended dose for "normally dirty fabrics" and WH = 2.5 mole CaCO₃/l is used to test washing efficiency and calculate the environmental criteria mentioned.

6.2. Exclusion of incorrect information and unfair promotion

Information on the product and promotional messages must not lead to false conclusions. In case of product features effecting the environment the manufacturer or importer or promotional agent must be able to prove the product features stated.

6.3. Information on and specification of ingredients contained

According to the recommendation 89/542/EEC (O.J. No. L. 291 of 10 October 1989, p. 55) related to marking of detergents and cleansing agents, the following ingredients are to be specified regardless of their content in the product:

- enzymes: enzyme type, e.g. protease, lipase;
- preservatives: specified according to the IUPAC nomenclature;
- disinfectants: specified according to the IUPAC nomenclature.

7. Enzyme purity test

Detergents competing for the Environmental Label must not contain any micro-organism that generated an enzyme (the test is carried out in 20 ml of a standard sample of final enzyme slide; in the presence of antibiotics defined no productive micro-organisms are allowed).

8. Applicability criteria

Washing performance of the detergent competing for the Environmental Label will be compared with a reference detergent (wash and wear test) of the same type after establishing a reference laboratory to test the washing in Croatia (to be introduced by the State Directorate for Environment or the National Bureau for Standardization and Metrology).

The test is to be carried out at $WH=2.5$ m mole $CaCO_3/l$ applying the dose for normally dirty fabrics.

Until the institution mentioned is established the following testing will be carried out assuming normal dirtiness of fabrics and water hardness grade:

Test criterion	Type of fabrics	Measurement
Removal of dirt	Washing fabrics	Visual evaluation
Removal of stains	Washing fabrics with stains of natural origin	Visual evaluation

Visual evaluation will be made according to principles of:

ISO 4319-1477, Surface active agents. Detergents for washing fabrics.

Guide for comparative testing of performance,

and

DIN 66050, Criteria for performance requirements, definition

and

DIN 60052, Comparative testing.

APPENDIX 1
 DATABASE FOR DETERGENT COMPONENTS AND THE PROCEDURE APPLIED WHEN A COMPONENT IS NOT STATED
 IN DID

Tabular data on commonly applied components are used to calculate environmental criteria

DATABASE FOR DETERGENT COMPONENTS

Y = yes

CF = correction factor

o = not in use

COMPONENTS	DID No.	TOXICITY		Load factor	Anaerobic bio-unde- gradable	Aerobic bio-unde- gradable	Soluble inorg. subst.	Insolub. inorg. subst.	THOD
		NOEC measured	LTE						
Anion tensides									
C 10/13 LAS (Na Ø 11.5-11.8, C14<1%)	1	0.3	0.3	0.05	Y,CF= 0.75	o	o	o	2.3
Other LAS (c 14 > 1 %)	2	0.12	0.12	0.05	Y,CF = 1.5	o	o	o	2.3
C 14/17 alk. sulphonate	3	LC50 = 4.2	0.2	0.03	Y,CF= 0.75	o	o	o	2.5
C 12/15 AS	4	0.1	0.1	0.02	o	o	o	o	2.2
C 12/18 AS	5	LC50 = 3	0.15	0.02	o	o	o	o	2.3
C 16/18 FAS	6	0.55	0.55	0.02	o	o	o	o	2.5
C 12/15 A 1-3 EO sulphate	7	0.15	0.15	0.03	o	o	o	o	2.1
C 16/18 A 3-4 EO sulphate	8	no valid data	0.1	0.03	o	o	o	o	2.2
Dialkylsulfosuccinate	9	LC50 = 7.5	0.4	0.5	Y,CF = 1.5	y	o	o	0
C 12/14 sulpho-fat.-acid methylester	10	EC50 = 5	0.25	0.05	Y,CF= 0.75	o	o	o	2.1
C 16/18 sulpho-fat.-acid methylester	11	0.15	0.15	0.05	Y,CF= 0.75	o	o	o	2.3
C 14/16 alpha olefine sulphonate	12	LC50 = 2.5	0.13	0.05	Y,CF= 0.75	o	o	o	2.3
C 14/18 alpha olefine sulphonate	13	LC50 = 1.4	0.07	0.05	Y,CF = 2.0	o	o	o	2.4
Soaps	14	EC0 = 1.6	1.6	0.05	o	o	o	o	2.9

COMPONENTS	DID No.	TOXICITY		Load factor	Anaerobic bio-undegradable	Aerobic bio-undegradable	Soluble inorg. subst.	Insolub. inorg. subst.	THOD
		NOEC measured	LTE						
Non-ionic tensides									
C 9/11 A>3-6 EO lin. and/or mono br.	15	EC50 = 3.3	0.7	0.03	o	o	o	o	2.4
C 9/11 A>6-9 EO lin. and/or mono br.	16	EC50 = 5.4	1.1	0.03	o	o	o	o	2.2
C 12/15 A 2-6 EO lin. and/or mono br.	17	0.18	0.18	0.03	o	o	o	o	2.5
C 12/15 (Avg. C<14) A>6-9 EO lin. and/or mono br.	18	0.24	0.24	0.03	o	o	o	o	2.3
C 12/15 (Avg. C>14) A>6-9 EO lin. and/or mono br.	19	0.17	0.17	0.03	o	o	o	o	2.3
C 12/15 A>9-12 EO lin. and/or mono br.	20	LC50 = 0.8	0.3	0.03	o	o	o	o	2.2
C 12/15A 20-30 EO lin. and/or mono br.	21	EC50 = 1.3	0.65	0.05	o	o	o	o	2.2
C 12/15 A>30 EO lin. and/or mono br.	22	LC50 = 130	6.5	0.75	o	Y	o	o	0
C 12/18 A 0-3 EO lin and/or mono br.	23	no data	0.01	0.03	o	o	o	o	2.9
C 16/18 A 2-6 EO lin. and/or mono br.	24	0.03	0.03	0.03	o	o	o	o	2.6
C 16/18 A>9-12 EO lin. and/or mono br.	25	LC50 = 0.5	0.05	0.03	o	o	o	o	2.3
C 16/18 A 20-30 EO lin. and/or mono br.	26	EC50 = 18	0.36	0.05	o	o	o	o	2.1
C 16/18 A>30 EO lin. and/or mono br.	27	LC50 = 50	2.5	0.75	o	Y	o	o	0
Foaming control									
Silicon	28	EC0 = 241	4.82	0.5	Y,CF = 0.75	Y	o	o	0
Paraffine	29	no data	100	0.5	o	Y	o	o	0
Textile fibre softening									
Glycerol	30	LC50 > 5-10gl	1000	0.09	o	o	Y	o	1.2
Phosphate, as STPP	31		1000	0.6	o	o	o	Y	0
Zeolite A	32	120	120	0.05	o	o	o	o	0
Citrate	33	EC50 = 85	85	0.04	o	o	o	o	0.6
Polycarboxylates	34	124	124	0.5	Y,CF = 0.1	Y	o	o	0
Clay	35		1000	0.05	o	o	o	Y	0
Carbonate/bicarbonate	36	LC50 = 250	250	0.8	o	o	Y	o	0

COMPONENTS	DID No.	TOXICITY		Load factor	Anaerobic bio-unde-gradable	Aerobic bio-unde-gradable	Soluble inorg. subst.	Insolub. inorg. subst.	THOD
		NOEC measured	LTE						
Fatty acid (C >= 14)	37	EC0 = 1.6	1.6	0.05	o	o	o	o	2.9
Silicate/disilicate	38	EC50 > 1 000	1000	0.8	o	o	Y	o	0
NTA	39	19	19	0.09	o	o	o	o	0.6
Bleaching									
Perborate (as borate)	40	1-10	6	1	o	o	Y	o	0
Percarbonate (see carbonate)	41		250	0.8	o	o	Y	o	0
TAED	42	EC0 = 500	EC0=500	0.09	o	o	o	o	2
Solvents									
C 1-C 4 alcohols	43	LC50 = 8000	100	0.09	o	o	o	o	2.30
Mono-/Di-/Triethanolamin	44	0.78	0.78	0.09	o	o	o	o	2.7/2.3/2
Diverse									
Polyvinylpyrrolidon (PVP)	45	EC50 > 100	100	0.75	Y,CF=0.1	o	o	o	0
Phosphonates	46	7.4	7	0.5	Y,CF=0.5	Y	o	o	0
EDTA	47	LOEC = 11	11	1	Y,CF=0.1	Y	o	o	0
Critical micellar conc.	48	LC50 = 250	250	0.75	Y,CF=0.1	Y	o	o	0
Na sulphate	49	EC50 = 2460	1000	1	o	o	Y	o	0
Mg sulphate	50	EC50 = 788	800	1	o	o	Y	o	0
Na chloride	51	EC50 = 650	650	1	o	o	Y	o	0
Corrosion inhibitor	52		100	0.75	o	o	o	o	0
Urea	53	LC50 > 10000	100	0.09	o	o	o	o	2.1
Maleic/malic acid	54	LC50 = 106		0.09	o	o	o	o	0.8/0.6
Ca formate	55		100	0.09	o	o	o	o	2.0
Silica	56		100	0.05	o	o	o	Y	0
High MW polymers PEG > 4000	57		100	0.5	o	Y	o	o	0
Low WM polymers PEG < 4000	58		100	0.09	o	o	o	o	1.1
Gumene, xylene, toluene sulphonates	59	LC50 = 66	6.6	0.09	Y,CF=0.25	o	o	o	1.7/1.6/1.4

COMPONENTS	DID No.	TOXICITY		Load factor	Anaerobic bio-undegradable	Aerobic bio-undegradable	Soluble inorg. subst.	Insolub. inorg. subst.	THOD
		NOEC measured	LTE						
Na-/MG-/KOH	60		100	1	o	o	Y	o	0
Enzymes	61	LC50 = 25	25	0.09	o	o	o	o	2.0
Perfume mixture as used	62	LC50 = 2.10	0.02	0.1	Y,CF=3.0	Y	o	o	0
Dyes	63	LC50 = 10	0.1	0.5	Y,CF=3.0	Y	o	o	0
Optic bleaching agents = FWA									
FWA 1 ⁽¹⁾	64	LC0 = 10	1.0	0.5	Y,CF=1.5	Y	o	o	0
FWA 5 ⁽²⁾	65	3.13	3.13	0.5	Y,CF=0.5	Y	o	o	0
Additional components									
Alkyl (C 12-15) dimethylbetaine	66	EC0 = 0.03	0.03	0.05	CF = 2.5	o	o	o	2.9
Alkyl (C 12-15) amidopropylebetaine	67	EC0 = 0.03	0.03	0.05	CF = 2.5	o	o	o	2.8
Aminoxides (C 12-18)	68	EC= 0 0.08	0.08	0.05	CF = 2.5	o	o	o	3.2
Alkyl C 8-C 10 Sulphate	69	EC50 = 2.9	0.15	0.02	CF = 0	o	o	o	1.9
Glycereth (6-17) cocoate	70	EC50 = 32	1.6	0.05	CF = 0	o	o	o	2.1
Phosphate esters (C 12-18)	71	EC50 = 38	1.9	0.05	CF = 0.25	o	o	o	2.3
Starch	72	no data	250	0.07	CF = 0	o	o	o	0.97
C 12/14 glucose amide	73	NOEC = 4.3	4.3	0.03	CF = 0	o	o	o	2.2
C 16/18 glucose amide	74	NOEC = 0.116	0.116	0.03	CF = 0	o	o	o	2.5
Polyester (SRP)	75	NOEC = 310	310	0.5	CF = 0.1	Y	o	o	0
PVNO/PVPVI	76	85	85	1	CF = 0.1	Y	o	o	0
Zn Phtalocyanine sulphonate	77	NOEC = 0.16	0.016	0.04	CF = 2.5	Y	o	o	0
C12/14 Alkylpolyglucosides	78	NOEC = 1.0	1	0.03	CF = 0	o	o	o	2.3
⁽¹⁾ FWA 1 - disodium 4.4'-bis(4-anilino-5-morpholino-1,3,5-triazin-2-yl)amino stilbene-2.2'-disulphonate									
⁽²⁾ FWA 5 - disodium 4.4'-bis(2-sulphostyryl)biphenyl									

APPENDIX I A

The procedure applied if the detergent ingredient is not specified in the DID lists and the selection scheme for correction factor: CF, for LTE: ≤ 0.1 mg/l, < 1 mg/l and ≤ 10 mg/l, and $Pow \leq 10^4$ if the organic substance is not biodegradable in the aerobic surroundings.

Water toxicity

To calculate CDV_{TOX} the lowest LTE obtained by testing the fish, *D. magna* and algae is used. When the QSAR data are used, then the correction of the LTE selected is to be taken.

When no LTE data are available, the following procedure to specify the UF (uncertainty factor) is applied and the lowest concentration data used: NOEC or LC_{50} for the most sensitive species in the homologous series.

DATA AVAILABLE (non-tensides)	UF (applied)
at least 2 acute LC_{50} for fish, <i>D. magna</i> or algae	100
1 NOEC for fish, <i>D. magna</i> or algae	10
2 NOEC for fish, <i>D. magna</i> or algae	5
3 NOEC for fish, <i>D. magna</i> or algae (the lowest NOEC or LC_{50} is used)	1

Deviations from the above procedure may be allowed if proved that a lower UF or NOEC is to be taken.

DATA AVAILABLE	UF (applied)
at least 2 NOEC for fish, <i>D. magna</i> or algae	1 (the lowest NOEC taken)
1 NOEC for fish, <i>D. magna</i> or algae	1 (the NOEC value applied if the species in question is the most sensitive one from the acute-toxicological aspect)
	10 (if the species in question is not the most sensitive one from the acute-toxicological aspect).
3 LC_{50} for fish, <i>D. magna</i> or algae	20 (the lowest LC_{50})

at least 1 LC₅₀ for fish,
D. magna or algae

50 (for the lowest LC₅₀) or
20 in particular cases
(see the explanation below).

NOTE:

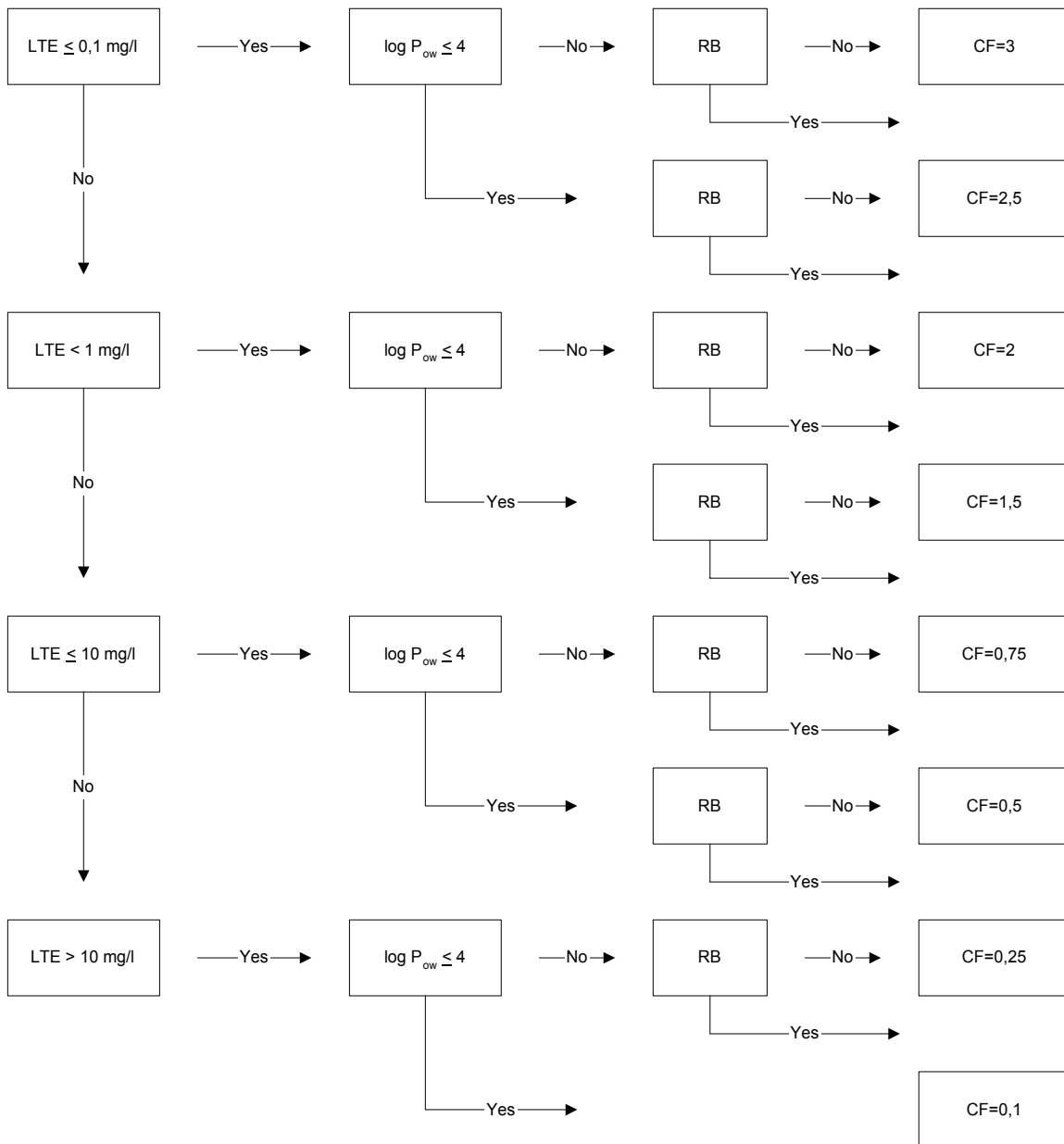
The factor (UF) 20 may be used instead of 50 when we have 1-2 L(E)C₅₀ (LC₅₀ in the case of toxicity for fish and EC₅₀ in the case of toxicity for D.magna or algae) and if it may be concluded that this is the most sensitive species (based on data for other homologous compounds).

When applying the QSAR there must be a consistency, e.g. according to the alkyl chain length with LAS. Each deviation from the above scheme is to be well justified.

Loading factors

Loading factors (LF) are determined according to the Guideline of the EC Commission (O.J. No. L.227 of 8 September 1993, p. 9) which lays down the principles of human and environmental risk assessment for the sake of the use of substances classified according to the Guideline of the EC Council and the Regulation of the EC Council No. 793/93 (O.J. No. L. 84 of 5 April 1993, p.1).

BIOLOGICALLY UNDEGRADABLE ORGANIC SUBSTANCE
Flow chart defining the correction factor



Abbreviations mean:

RB: biodegradable
 LTE: long-term effect
 CF: correction factor
 Pow: partition coefficient
 (octanol/water)

The CF value of the correction factor is set by features of detergent ingredients and is multiplied by concentration expressed in g/washing cycle (for biologically undegradable organic substance).

APPENDIX II

Definitions of specific criteria:

1. Total chemicals
This means the total dose reduced by humidity in g/washing cycle.
2. Critical dilution volume - toxicity (CDV_{TOX})
Is calculated for each ingredient of the dose according to data on the loading factor (LF) and the long-term effect (LTE) contained in the DID (in the Appendix) and expressed in l/cycle:

$$CDV_{TOX} = \frac{\text{weight/cycle}_{(i)} \times LF_{(i)} \times 1000}{LTE_{(i)}}$$

CDV_{TOX} of a detergent is a sum of all CDV_{TOX} values of individual ingredients of the detergent.

3. Phosphates
Weight per cycle of all inorganic phosphates (primary, secondary and tertiary) in g/cycle.
4. Insoluble inorganic compounds
Weight per cycle of all ingredients which are insoluble inorganic substances (see the DID list, in g/cycle).
5. Soluble inorganic compounds
Weight per washing cycle of all soluble inorganic substances (see the DID list), in g/cycle.
6. Biologically undegradable organic substances (aerobic)
Weight per cycle of all ingredients which are biologically undegradable organic substances in aerobic surroundings (see the DID list), in g/washing cycle.
7. Biologically undegradable organic substances (anaerobic)
Weight per cycle of all ingredients which are biologically undegradable in anaerobic surroundings and use the related correction factors (LF), (see Appendix IA), in g/washing cycle.
8. Biological oxygen demand (BPK)
The value of each component is calculated in g0/cycle, using corresponding THOD data (theoretical oxygen demand) on the DID list:
BPK_(i) = weight_(i)/cycle x g0/washing cycle THOD_(i), in g0/washing cycle.

BPK of a total detergent dose is a sum of BPK shares of individual ingredients, all expressed in g0/washing cycle.

THOD is applied only to biodegradable compounds.

9. Heavy-duty detergents

With such a heavy-duty detergent the washing performance is stressed (dirt and stain removal). Unless explicitly emphasizing the feature of mildness (e.g. fabrics care, low temperature washing, sensitive fibre and colours), each detergent is considered a heavy-duty detergent.

10. Synthetic musk perfumes

These are: musk xylene, ambrette, moskene, tibetene and musk ketone.

APPENDIX III

Data and information requested by the Ministry of Environmental Protection and Physical Planning from the Croatian Environmental Label applicant:

1.1. Declaration of the product formulation and "criteria calculation"

The Ministry of Environmental Protection and Physical Planning requires the manufacturer applying for the Environmental Label to submit:

- exact product formulation;
- exact chemical description of ingredients, e.g. identification according to the IUPAC, CAS No., gross and structural formulas, purity, type and percentage of dirt, additives; for ingredient compounds: the DID number, composition and spectrum of distributed homologues, isomeres and the trade name; analytical evidence of the detergent composition;
- exact quantity of products put on the market (on each 1 March for the previous year);
- detailed calculation of criteria;
- summarized report on enzyme purity according to item 7 of these criteria for special product groups, and a certificate stating that no production organisms are contained.

1.2. Declaration of the washing performance according to item 8 of these requirements.

1.3. Dosing, packaging and consumer (user) information

As a proof that the above-mentioned requirements have been met the State Directorate for Environment requires from the applicant the packaging and the dosing unit for the product in question.

A detailed calculation of packing (packaging) criteria is also requested.

1.4. Audit

The Ministry of Environmental Protection and Physical Planning, or rather its competent authority performs an environmental audit of the production and detergent packing.

1.5. Environmental Label application

The official application for the Environmental Label is to conform to the Rule Book on Environmental Label.

APPENDIX IV

LAS:	linear alkylbenzene sulphate
APEO:	alkyl-phenol-ethoxylat
BCF:	bioconcentration factor (fish)
BOD (BPK):	biological oxygen demand
CDV _{TOX} :	critical dilution volume (toxicity)
CF:	correction factor
DID:	detergent ingredients database
EO _S :	ethoxy groups
EC ₅₀ :	effect concentration (in which 50% of organisms tested show the effect in a defined period of time)
ECETOC:	Eurocenter for ecotoxicology and toxicology of chemicals
EDTA:	ethylene diamine tetraacetate
H _{EXCL} :	upper limit of exclusion (the so-called "hurdle")
IUPAC:	International Union of Pure and Applied Chemistry
IEC:	International Electrotechnical Commission
ISO:	International Standardization Organization
LTE:	long-term effect
LC ₅₀ :	50 % lethal concentration (in which 50% of organisms tested show lethal effects in a defined period of time)
NOEC:	concentration in which no effects are shown (yet) (with chronic testing)
P _{OW} :	partition coefficient: octanol / water
QSAR:	quantitative structure and activity relation
RB:	biodegradability
THOD:	theoretical biological oxygen demand
UF:	uncertainty factor
WF:	harmonization factor
LF:	loading factor

E1-9 CONTAINER FOR USED OIL

Environmental aspects

Inadequate disposal of used motor oil severely endangers the environment. The oil disposed at municipal waste disposal sites has already polluted the waste waters, and the proper disposing of such waste will require additional funds.

Furthermore, a portion of such oils is lead by sewers into the open waters, while the volumes isolated in individual separators are impure and contain emulsions, which influences the incineration process.

Since there is no possibility of recovery and no use of energy in cases of uncontrolled dumping, it is safe to say that the use of containers for used oil contributes to the environmental protection.

Requirements

The container should comply with the existent Croatian technical standards, at the same time meeting the following requirements:

1. The container-forming plastic materials should not contain heavy metals, such as lead, chromium, cadmium or mercury, in concentrations of over 300 ppm, or organo-halogenic compounds;
2. The plastic materials should not be coloured with dyes containing harmful components above ingredient levels (up to 1%), or dyestuffs (inorganic pigments) above Figure 1 concentrations;
3. The container-forming materials should not contain substances classified as toxic, cancerogenic, teratogenic or mutagenic according to the EEC systematization (EU guidelines 67/548/EEC);
4. Containers should be made of materially, chemically and energetically recyclable plastics;
5. Energy consumption per product unit must not exceed 250 W.

ENVIRONMENTALLY FRIENDLY - CONTAINER FOR USED OIL

E1-10 ENVIRONMENTALLY FRIENDLY CHIMNEY-STACKS

Environmental aspects

Ecological triple-layer «rear ventilated chimneys» (RVC) are an element of the heat generation system: they enable air suction (vacuum chimneys) and conduct combustion products into the atmosphere. The applied structure provides for smoke tightness and savings in energy and natural resources.

The basic ecological features of the triple-layer RVC structure are: full combustion in the hearth/fireroom, utilisation of the condensation heat and low temperature at the entrance into the ceramic smoke tube: the smoke temperature is below the dew point, but the RVC structure is "insensitive to condensation», as «rear ventilation» of the condensate diffused through the ceramic refractory is applied. Manufacturing of the ceramic smoke tube involves reduced consumption of refractory material, the mineral glue for joining fireclay tubes does not contain water glass, while the mould lubrication oil and concrete additives have the feature WGK = 0 (water hazard class). Light components (ground brick, expanded clay) are integrated into the chimney liner, and as condensate is extracted, RVC chimneys cause less burden to ambient air.

Requirements

Chimneys have to meet existing Croatian standards, (HRN B.D8 group: 210, 301, 304 i 312; U.N4.015; U.N4.020; U.M2.014; U.M2.010; M.J1.170), while until the adoption of corresponding Croatian standards, DIN and ÖNORM standards shall be applied:

DIN 18147, T1. 4; DIN 4705; DIN 51102, T1.1,
ÖNORM-B 8240; ÖNORM B 8215 (No. 4 i 5), ÖNORM M 7515; DIN 18160-1 and DIN 4705.

In addition to this, chimneys shall meet the following requirements:

1. The chimney structure shall provide for energy savings of a minimum 10% as compared to classical chimneys (releasing water vapour from fuel combustion in the furnace into the atmosphere).
2. The density of the chimney liner shall not exceed 1.5 kg/dm³, and the thickness of the ceramic flue tube shall not exceed 17 mm.
3. Chimneys shall operate also at smoke gas temperatures of 35°C at chimney entrance.
4. If the chimney structure causes condensate separation/extraction, chimneys shall have a condensate collector, and the manufacturer shall provide for regeneration, replacement and disposal of the absorbent applied.
5. The guarantee for ecological chimney operation provided by the RVC chimney manufacturer shall cover a minimum period of 30 years.

ENVIRONMENTALLY FRIENDLY – LOWER AIR EMISSION

E1-11 TEXTILE FLOOR COVERINGS

Environmental aspects

Production and installation (glueing) of textile floor coverings involves substances that have adverse impacts on the environment and human health, causing environmental burden at production and disposal, as well as burden to the ambience air of living and working premises. Such noxious substances can be included in the top side and reverse of the floor covering and in additives, e.g., colour, fire-protection agents, agents for protection from moths and product aging, conservants, antistatic agents, glues, and in packaging materials.

The purpose of the environmental label is to promote production and use of floor coverings with a possibly low share of noxious substances in the covering itself and in additives, aiming at reduced environmental pollution during production, use and disposal.

Requirements:

1. Production shall not involve substances that according to the 20th amendment of Council Directive 67/548/EEC on dangerous substances, 91/625/EEC (NoL 180), were classified as carcinogenic, teratogenic, mutagenic, genotoxic, allergenic and toxic, while other dangerous substances may be used up to 1%.
2. Only colours providing compliance with requirements from ÖKO TEX 100 standards may be used, or ÖKO TEX 200 (para. 3; 6.1; 6.2; 6.3) respectively.
Floor coverings shall fulfill also the test of colour stability with regard to wet and dry rubbing pursuant to ISO 105-X12, and to HRN F.S3.021 standard.

The following substances shall not be used: conservation substances, substances for product aging protection, antistatic agents, fire-protection agents containing tin (Sn), arsenic (As), boron (B), bromine (Br), flourine (F) and chloroparafine, while halogenated compounds may be included below the instrument detection limits.

3. The following substances may be detected in the product up to the indicated limits:

pentachlorophenole	0.1 mg/kg
butadiene	0.5 mg/kg
vinilchloride	1.0 mg/kg

4. For manufacturing of reverse sides only natural materials can be used.
5. In case of wool floor coverings, anti-moth agents can be used manufactured on piretroide basis or substances containig a share of noxious pesticides in compliance with requirements of ÖKO TEX 100 norm.
6. The emission of volatile substances is allowed up to:

formaldehyde	0,005 ppm
toluene	0,05 mg/m ³

styrene	0,005 mg/m ³
vinyl cyclohexane	0,002 mg/m ³
vinyl acetate	<0,002 mg/m ³
4-phenyl cyclohexane	0,02 mg/m ³
aromatic hydrocarbons	0,15 mg/m ³
volatile organic compounds (VOC)	0,3 mg/m ³

7. Packaging materials are not allowed to contain halogenated hydrocarbons.
8. The advantage of floor coverings that are installed without using glue has to be emphasised.
In case where due to the surface area on which floor coverings are applied (>20 m²) glue is indispensable, the floor covering manufacturer shall recommend a glue with low emission of noxious substances into the environment.
In case of wool floor coverings already containing anti-moth agents, this has to be indicated.
9. The production of floor coverings has to be coordinated with all environmental regulations (soil and air protection, waste management, working environment) and other special regulations whose single provision refer to environmental protection.

E1-12 GEOSYNTHETICS

Environmental aspects

Geosynthetics are applied in solving hydrotechnical and geomechanical tasks in construction.

Geosynthetics include synthetic polymeric materials: HDPE, LDPE, polypropylenic and polyester fibres, sometimes impregnated with bitumen or betonite, and in this latter case they are called geocomposits.

Geosynthetics are products in the field of construction and they can be said to «protect the environment, as they reduce soil erosion, reduce the consumption of natural resources (stone, clay, gravel) and protect groundwaters from consequences of improper waste disposal. In terms of these special criteria geosynthetics include also plastic-coated wire-grids, if they are used to protect from erosion, e.g. hydrocrops (specially prepared autonomous nutritive layers sown with special food crops) and gabion structures (specially reinforced wire gabions combined with horizontal meshes, e.g. the *Terramesh System*), that are filled with stone material, while it is environmentally especially advantageous if material directly from the building site, e.g. sandstone, can be used.

With regard to environmental impact, erosion protection systems have been assessed very favourably, particularly when they are applied in road cuttings on karst ground, and in some slopes (examples in Italy – ecological «green» construction measures in nature).

Landfill insulation represent a rather complex hydrotechnical application of geosynthetics: usually at least three geomembranes are utilised, geotextiles in the mechanically protected layer and in the filter and drainage layer as well as in the drainage layer.

In view of general environmental commitments, as well as within the framework of preserving potable water reserves, application of geosynthetics will be relevant in the remediation of «temporary» waste disposal sites.

Requirements

When using geosynthetics, regular/common building practices in line with the General technical requirements for road works, Zagreb, 1989, have to be applied, while for the development and remediation of solid waste landfills the Technical requirements with regard to geomembranes, geotextile and the detection system for Jakuševac landfill, ZGOS, IGH, Golder Ass., Zagreb, 2000, as well as all standards and working procedures therein indicated.

If the previous basic requirements have been met, the procedure of applying for the Environmentally Friendly label for Geosynthetics may be initiated by the manufacturer, supplier (importer), designer-consultant-building supervisor and contractor, if their products or services were included in the technical execution of structures, through the integration of

- a minimum of 2.0 mill. m² of geotextiles,

- a minimum of 0.2 mill. m² of geomeshes, or
- a minimum of 0.2 mill. m² of geomembranes,

provided that

- the durability of Geosynthetics under the prescribed application requirements corresponds to a minimum of 40 years,

provided that

- at solid waste landfill sealing by geomembrane application a minimum of 0.3 m³ less clay per m² landfill surface area was utilised as compared to sealing with clay layers only,

provided that

- by application of geotextile and geomeshes at embankment construction under unsatisfactory base soil conditions (e.g. excessive humidity) a minimum of 0.2 m² of stone and gravel material per section m² can be saved,

provided that

- at embankment construction under unsatisfactory base soil conditions removal of a minimum of 0.3 m³ of earth material per m² can be avoided.

If the application for the environmental label is submitted by the manufacturer or supplier of Geosynthetics, the applicant is required to be IGS member (International Geosynthetics Society) and certified in line with ISO 9000 or ISO 14000 standard.

Geosynthetics production has to be coordinated with all environmental regulations (protection of water, soil, air; waste management; working environment) and other specific regulations including individual provisions related to the environment.

E1-13 BIODEGRADABLE SYNTHETIC LUBRICANTS

Environmental aspects

Significant quantities of lubricants are prepared from mineral oils and are used for lubrication of trains, rails, points, water turbines, construction and agricultural machinery, off-road and road vehicles. Such application causes soil and water pollution.

The pollution degree depends on the degree of negative impact on waters, heavy metal contents and biodegradability both with regard to the basic component, mostly mineral oil in lubricants, and to additives, condensers and paints (alkali, industrial additives in oil, e.g. preparations with alkanolamine with substituted triazoles in technologically appropriate waste; condensers, e.g., containing trimethylene chinoline; paints, e.g. asoantraxynone in toluene). Application of biodegradable synthetic lubricants would contribute to reducing adverse impacts on soil and water.

Requirements

Pursuant to rules, the Croatian environmental label can be awarded to «biodegradable synthetic lubricants», provided that, in addition to product specification and safety standards for the relative product group and environmental regulations, the following requirements are met:

1. Lubricants shall not contain substances that according to Council Directive 67/548/EEC and related Directives were classified as: «very toxic» (T+), «toxic» (T), «cancirogenic», «mutagenic», «teratogenic» or dangerous for the environment. Contaminants entered during the production process are exempt from this requirement, provided that their percentage by weight does not exceed 0.01%; with regard to this limit the scientific state of the art shall be taken into consideration.
2. The overall lubricant formulation shall be biodegradable, i.e., the biological degradability degree has to amount to or exceed 60% (tests based on oxygen consumption or generated CO₂).

Method: *ISO 9439/99 or OJ NoL 383/A/202-206 (Sturm method)
 *ISO 14593/99 (A test method to asses the «inherent» biodegradability of oil products, No. 99/59; c o n c a w e – the oil companies' European organization for environment, health and safety (established 1963).

Criteria: OJ No L 110A/68-70

3. The aquatic toxicity test of the overall lubricant formulation shall meet the following criteria:

EC₅₀/48h (Daphnia magna) ≥ 100 mg/l
or
IC₅₀/72h (alge) ≥ 100mg/l

Method *No L 383A/172

*Ecotoxicological testing of petroleum products: test methodology (report no 92/56), WAF method; c o n c a w e – the oil companies' European organization for environment, health and safety (established 1963).

Criteria: OJ No L 110A/68-69

4. The maximum allowed concentration of single additives shall not exceed 5%, or 3% respectively for additives that have not been proven biodegradable. The use of additives whose impact on aquatic organism according to the criteria and methods referred to in item 3 has been classified as «very toxic» shall be prohibited, i.e.

EC₅₀48h (Daphnia magna) ≤ 1 mg/l

ili

IC₅₀72h (alge) ≤ 1 mg/l

5. The overall lubricant formulation shall not contain:
 - more than 0.1% of petroleum products;
 - lead, zink, chromium, magnesium, vanadium;
 - organochloric compounds and nitrites.