II

(Acts whose publication is not obligatory)

COMMISSION

COMMISSION DECISION

of 25 March 2002

establishing the ecological criteria for the award of the Community eco-label to hard floor-coverings

(notified under document number C(2002) 1174)

(Text with EEA relevance)

(2002/272/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Regulation (EC) No 1980/2000 of the European Parliament and of the Council of 17 July 2000 on a revised Community eco-label award scheme [1], and in particular Article 4 and Article 6(1) thereof,

Whereas:

(1) Under Regulation (EC) No 1980/2000 the Community eco-label may be awarded to a product possessing characteristics which enable it to contribute significantly to improvements in relation to key environmental aspects.

(2) Regulation (EC) No 1980/2000 provides that specific eco-label criteria are to be established according to product groups.

(3) The measures provided for in this Decision are based on the draft criteria developed by the European Union Eco-labelling Board established under Article 13 of Regulation (EC) No 1980/2000.

(4) The measures provided for in this Decision are in accordance with the opinion of the committee instituted by Article 17 of Regulation (EC) No 1980/2000,

HAS ADOPTED THIS DECISION:

Article 1

In order to be awarded the Community eco-label under Regulation (EC) No 1980/2000, a hard floor covering must fall within the product group 'hard floor coverings' as defined in Article 2 of this Decision and must comply with the ecological criteria set out in the Annex.

Article 2

The product group 'hard floor-coverings' shall comprise the following hard products for internal/external flooring use, without any relevant structural function: natural stones, agglomerated stones, concrete paving units, terrazzo tiles, ceramic tiles and clay tiles.

Article 3

For administrative purposes the code number assigned to the product group 'hard floor-coverings' shall be '021'.

Article 4

This Decision shall apply from 1 April 2002 until 31 March 2006. If on 31 March 2006, revised criteria for this product group have not been adopted, this Decision shall apply until 31 March 2007.

Article 5

This Decision is addressed to the Member States.

Done at Brussels, 25 March 2002.

For the Commission

Margot WALLSTRÖM

Member of the Commission

[1] OJ L 237, 21.9.2000, p. 1.

ANNEX

FRAMEWORK

The aims of the criteria

These criteria aim in particular at promoting:

— the reduction of impacts on habitats and associated resources,

— the reduction of energy consumption,

— the reduction of discharges of toxic or otherwise polluting substances into the environment,

— the reduction of use of dangerous substances,

— information that will enable the consumer to use the product in an efficient way which minimises the whole environmental impact.

The criteria are set at levels that promote the labelling of hard floor-coverings that are produced with low environmental impact.

Assessment and verification requirements

The specific assessment and verification requirements are indicated within each criterion.

The product group is structured in the following way (CEN definitions are reported in brackets) and can be subdivided into 2 major subgroups, 'natural products' and 'processed products' as follows.

Natural stones (CEN TC 246) are pieces of naturally occurring rock, and include marble, granite and other natural stones. 'Other' natural stones refers to natural stones whose technical characteristics are on the whole different from those of marble and granite as defined by CEN/TC 246/N.237 prEN 12670 'Natural stones — Terminology'. Generally, such stones do not readily take a mirror polish and are not always extracted by blocks: sandstone, quartzite, slate, tuff, schist.

The group of 'processed stones' can be divided into hardened and fired products. Hardened products are agglomerated stones, concrete paving units and terrazzo tiles. Fired products are ceramic tiles and clay tiles.

Agglomerated Stones are industrial products manufactured from a mixture of aggregates, mainly from natural stone grit, and a binder as defined by CEN/TC 246-229. The grit is normally composed of marble and granite quarry granulate and the binder is made from artificial components as unsaturated polyester resin or hydraulic cement. This group includes also artificial stones and compacted marble.

Concrete paving units are products for outer floor-coverings obtained by mixing sands, gravel, cement, inorganic pigments and additives, and vibro-compression as defined by CEN/TC 178. This group also includes concrete flags and concrete tiles.

Terrazzo tiles are a suitably compacted element of uniform shape and thickness, which meets specific geometrical requirements as defined by CEN/TC 229. The tiles are single or dual-layered. The single-layered are tiles completely made of granulates or chipping of a suitable aggregate, embedded in grey and white cement and water. The dual-layered tiles are terrazzo tiles made up of the first face or wear layer (with single-layered composition) and a second layer, known as backing or base concrete layer, whose surface is not exposed during normal use and which may be partially removed. Ceramic tiles are thin slabs from clays and/or other inorganic raw materials, such as feldspar and quartz as defined by CEN/TC 67. They are usually shaped by extruding or pressing at room temperature, dried and subsequently fired at temperatures sufficient to develop the required properties. Tiles can be glazed or unglazed, are non-combustible and generally unaffected by light.

Clay tiles are units which satisfy certain shape and dimensional requirements, used for the surface course of pavements and manufactured predominantly from clay or other materials, with or without additions as defined by CEN. The specific weight of such tiles shall not exceed 40 kg/m^2.

Where so indicated, certain criteria apply specifically to one of the above subgroups. If no particular mention is given, the criterion applies to all products. Details on calculation procedures are given in the Technical Appendix.

Where appropriate, test methods other than those indicated for each criterion may be used if their equivalence is accepted by the competent body assessing the application.

Where possible, testing should be performed by appropriately accredited laboratories or laboratories that meet the general requirements expressed in standard EN ISO 17025.

Where appropriate, competent bodies may require supporting documentation and may carry out independent verifications.

The competent bodies are recommended to take into account the implementation of recognised environmental management schemes, such as EMAS or ISO14001, when assessing applications and monitoring compliance with the criteria (*note:* it is not required to implement such management schemes).

CRITERIA

1. **Raw materials extraction**

1.1. *Extraction management (for natural products only)*

The overall extraction management score for natural stones shall be calculated as the total score based on a matrix of 9 main indicators (I). The final score results from the sum of the individual scores given to each indicator, after multiplication by a corrective weighting (W) if appropriate (see Technical Appendix — A1 for calculation procedures). Quarries shall reach a weighted score of at least 25 points. The score for each indicator shall be within the bounds indicated by the exclusion hurdle (where one is given).

In addition, all of the following conditions shall be met:

— there shall be no interference with any deep confined waterbed (see Technical Appendix — A1),

— there shall be no interference with surface water-bodies with civil catching or springs, or if the water-body is included in the Register of Protected Areas established by a Member State according to Directive 2000/60/EC of the European Parliament and the Council of 23 October 2000 establishing a framework for Community action in the field of water policy [1] or if the watercourse's average flow is >5 m^3/s (see Technical Appendix — A1),

— there shall be a waste water recovery closed system for avoiding sawing waste dispersion to the environment and to feed the recycling loop. Water shall be contained in close proximity to the place where it is used in quarrying operations and then it shall be conveyed by closed pipes to the suitable processing plant. After clearing, water shall be recycled.

Assessment and verification: the applicant shall provide the calculation of the weighted overall extraction management score, and related data for each of the nine indicators (showing amongst others that each score is within the bounds of the corresponding exclusion hurdle, if one is given), according to the following matrix and to the corresponding instructions in the Technical Appendix — A1. The applicant shall also provide appropriate documentation and/or declarations that prove compliance with all of the abovementioned criteria.

Indicator	Notes		Score				
			5 (excellent)	3 (good)	1 (sufficient)	Exclusion hurdle	Relative weights
I.1. Water recycling ratio	$\frac{\text{Waste water recycled}}{\text{Total water exits the process}} \cdot 100$ See Technical Appendix — A3		> 95	95-85	84-80	< 80	W4
I.2. Rehabilitation simultaneity degree	m^2 compromised area (quarry front + active dump)/m^2 authorised area (%)		< 15	15-30	31-50	> 50	W1, W2, W3
I.3. Block recovery	m^3 commercial blocks/m^3 extracted material (%)	Marbles	> 40	40-30	29-20	< 20	—
		Granites	> 50	50-40	39-30	< 30	
		Others	> 20	20-15	14-10	< 10	

[1] OJ L 327, 22.12.2000, p. 1.

Indicator	Notes		Score				
			5 (excellent)	3 (good)	1 (sufficient)	Exclusion hurdle	Relative weights
I.4. Natural resource appreciation	m^3 usable material/m^3 extracted material (%)	Marbles	> 60	60-45	44-35	< 35	—
		Granites	> 60	60-45	44-35	< 35	
		Others	> 50	50-35	34-25	< 25	
I.5. Working conditions of operating equipment	Total number of worked hours/yearly production (h/m^3)	Wheel loader	< 3,5	3,5-5,5	> 5,5	—	—
		Excavator	< 2,5	2,5-3,0	> 3,0	—	
I.6. Air quality	Yearly limit value measured along the border of quarry area PM 10 suspended particles (µg/Nm^3) Testing method EN 12341		< 20	20-100	101-150	> 150	W1, W3
I.7. Water quality	Suspended solids (mg/l) Testing method ISO 5667-17		< 15	15-30	31-40	> 40	W1, W2, W3, W4
I.8. Noise	Measured along the border of quarry area (dB(A)) Testing method ISO 1996/1		< 30	30-55	56-60	> 60	W1, W3
I.9. Visual impact	See Technical Appendix — A1		0-10	> 10-20	> 20-30	> 30	W1, W3

List of weights (to be used only where specified):

W1. Nature conservation: If the quarry area is located in:

— notified sites of Community importance pursuant to Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora ([1]), and its subsequent amendments,

— or in Natura 2000 network areas, composed of the special protection areas pursuant to Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds ([2]), and its subsequent amendments, and those areas under Directive 92/43/EEC together,

— or in equivalent areas located outside the European Community that fall under the corresponding provisions of the United Nations' Convention on Biological Diversity ([3]),

then W1 is relevant to the following indicators: rehabilitation simultaneity degree (I.2), air quality (I.6), water quality (I.7), noise (I.8), visual impact (I.9). The same rules shall apply if the quarry is outside such sites but could have significant effects on them, either individually or in combination with other plans and projects ([4]). The corresponding specific weight is 0,3.

Assessment and verification: the applicant shall provide a declaration accompanied by appropriate documentation to show if the quarry area is located in or adjacent to sites of Community importance pursuant to the Directives 92/43/EEC and 79/409/EEC, as detailed above. The sites forming the Natura 2000 network areas are listed and reported on maps drawn up by the Member States. In areas outside the European Community, the applicant shall provide a declaration accompanied by appropriate documentation to show if the quarry area is located in or adjacent to protected areas as determined under the United Nations' Convention on Biological Diversity 1992.

([1]) OJ L 206, 22.7.1992, p. 7.
([2]) OJ L 103, 25.4.1979, p. 1.
([3]) OJ L 309, 13.12.1993, p. 1.
([4]) OJ L 206, 22.7.1992, in particular Article 6.

W2. Soil protection: for rehabilitation simultaneity degree (I.2) and water quality (I.7) indicators, three different values of weights are considered, as a function of land use potentialities (see Technical Appendix — A1 for details):

Soil protection	Classes I — II	Classes III — IV — V	Classes VI — VII — VIII
Weight	0,3	0,5	0,8

Assessment and verification: the applicant shall provide appropriate documentation, including a map, of the land capability classification of the quarry site.

W3. Population density of settlements which lie within a 5 km radius (distance) from the quarry site: rehabilitation simultaneity degree (I.2), air quality (I.6), water quality (I.7) and noise (I.8), visual impact (I.9) indicators are weighted in function of three density ranges:

Population density	> 100 hab/km^2	20 to 100 hab/km^2	< 20 hab/km^2
Weight	0,5 (0,6)	0,7 (0,84)	0,9

Assessment and verification: the applicant shall provide a map and appropriate documentation to verify the population density of settlements lying within 5 km radius (distance) from the quarry border (authorised area). In the case of existing quarries and expanding settlements in the area concerned, the weight factor indicated in brackets shall be used. This does not refer to major extensions of the already authorised area of such quarries (>75 %).

W4. If the quarry interferes with surface water-bodies (average flow <5 m^3/s) there is a weight of 0,5 on both the indicators about water recycling ratio (I.1) and water quality (I.7).

Assessment and verification: the applicant shall provide appropriate documentation to show whether or not there is any interference between the quarry and the surface water-body.

1.2. *Extraction management (for processed products only)*

The raw materials used in the production of processed hard floor-coverings shall comply with the following requirements for the related extraction activities:

Parameter	Hurdle (to be passed)
Extraction activity project and environmental recovery	A technical report including a statement of the applicant is required to demonstrate that the extraction activity and the environmental recovery are in full compliance with both Directive 92/43/EEC (habitats) and Directive 79/409/EEC (birds), and their subsequent amendments. In areas outside the European Community, a similar technical report is required to demonstrate compliance with the UN Convention on Biological Diversity (1992) and knowledge of the national biodiversity strategy and action plans if available.
Visual impact See Technical Appendix — A1	X % ≤ 30

Assessment and verification: the applicant shall provide the related data and documents including a map of the area.

2. **Raw materials selection (for all flooring products)**

No substances or preparations that are assigned, or may be assigned at the time of application, any of the following risk phrases (or combinations thereof):

R45 (may cause cancer);

R46 (may cause heritable genetic damage);

R50 (very toxic to aquatic organisms);

R51 (toxic to aquatic organisms);

R52 (harmful to aquatic organisms);

R53 (may cause long-term adverse effects in the aquatic environment);

R60 (may impair fertility);

R61 (may cause harm to the unborn child);

as laid down in Council Directive 67/548/EEC of 27 June 1967 on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances [1], and its subsequent amendments,

may be added to the raw materials.

Due to the environmental advantages of the recycling of materials, these criteria do not apply to the quota of closed-loop recycled materials used by the process and as defined in Appendix A2.

Where lead, cadmium and antimony (or any of their compounds) are used in the additives, their content shall not exceed the following specific limits:

Parameter	Hurdle (% in weight of the glazes)
Lead	0,5
Cadmium	0,1
Antimony	0,25

No asbestos shall be present in the raw materials used for natural and processed products.

The use of polyester resins in the production shall be limited by 10 % of the total weight of raw materials.

Assessment and verification: in terms of chemical and mineralogical analysis, the raw material formulation shall be provided by the applicant together with a declaration of compliance with the abovementioned criteria.

3. **Finishing operations (for natural products only)**

Finishing operations on natural products shall be made according to the following requirements:

Parameter	Hurdle (to pass)	Test method
Particulate emission to air	PM10 < 150 µg/Nm³	EN 12341
Styrene emission to air	< 210 mg/Nm³	
Water recycling ratio	$\text{Recycling ratio} = \frac{\text{Waste water recycled}}{\text{Total water exits the process}} \cdot 100 \geq 90\ \%$	Technical Appendix — A3
Suspended solid emission to water	< 40 mg/l	ISO 5667-17
Cd emission to water	< 0,015 mg/l	ISO 8288
Cr(VI) emission to water	< 0,15 mg/l	ISO 11083
Fe emission to water	< 1,5 mg/l	ISO 6332
Pb emission to water	< 0,15 mg/l	ISO 8288

[1] OJ 196, 16.8.1967, p. 1.

Assessment and verification: the applicant shall provide the corresponding analysis and test reports for each emission parameter measured at all emission points. Where no test method is specified, or is mentioned as being for use in verification or monitoring, competent bodies should rely as appropriate on declarations and documentation provided by the applicant and/or independent verifications.

4. **Production process (for processed products only)**

4.1. *Energy consumption*

The energy consumption shall be calculated as process energy requirement (PER) for agglomerated stones and terrazzo tiles or as energy requirement for firing (ERF) for ceramic tiles and clay tiles. Note: all the hurdles are expressed in MJ per square metre of final product ready to be sold. This criterion does not apply to concrete paving units or to the firing stage for tracery (decoration).

A. Process energy requirement (PER) limit

The process energy requirement (PER) for agglomerated stones and terrazzo tiles manufacturing processes shall not exceed:

	Hurdle (MJ/m^2)	Test method
Agglomerated stones	100	Technical Appendix — A4
Terrazzo tiles	60	Technical Appendix — A4

Assessment and verification: the applicant shall calculate the PER according to the Technical Appendix — A4 instructions and provide the related results and supporting documentation.

B. Energy requirement for firing (ERF) limit

The energy requirement for firing (ERF) stages for ceramic tiles and clay tiles shall not exceed:

	Hurdle (MJ/m^2)	Test method
Ceramic tiles (specific weight ≤ 19 kg/m^2)	50	Technical Appendix — A4
Ceramic tiles (specific weight > 19 kg/m^2)	70	Technical Appendix — A4
Clay tiles (specific weight ≤ 40 kg/m^2)	60	Technical Appendix — A4

Assessment and verification: the applicant shall calculate the ERF according to the Technical Appendix — A4 instructions and provide the related results and supporting documentation.

4.2. *Water use*

The waste water produced by the processes included in the production chain shall reach a recycling ratio of at least 90 %. The recycling ratio shall be calculated as the ratio between the waste water recycled, internally or externally at the plant, and the total water that leaves the process, as defined in the Technical Appendix — A3.

Assessment and verification: the applicant shall provide the calculation of the recycling ratio including raw data on total waste water produced, water recycled and the quantity and source of virgin water used in the process.

4.3. *Emissions to air*

Agglomerated stones

The emissions to air for the following parameters for the whole manufacturing process shall not exceed:

Parameter	Hurdle (mg/m²)	Test method
Particulates	300	ISO 9096
NO_x	1 200	ISO 11564
SO_2	850	ISO 7935
Styrene	2 000	—

Assessment and verification: the applicant shall provide appropriate documentation and test reports for each emission parameter mentioned above, following the indications of the Technical Appendix — A5. Where no testing method is specified, or is mentioned as being for use in verification or monitoring, competent bodies should rely, as appropriate, on declarations and documentation provided by the applicant and/or independent verifications.

Ceramic tiles

The total emissions to air of particulates for pressing, glazing and spray drying ('cold emissions') shall not exceed 5 g/m².

Assessment and verification: the applicant shall provide appropriate documentation and test reports, following the indications of the Technical Appendix — A5.

The emissions to air for the firing stage only shall not exceed:

Parameter	Hurdle (mg/m²)	Test method
Particulates	200	ISO 9096
F	200	ISO/CD 15713
NO_x	2 500	ISO 11564
SO_2	1 500	ISO 7935

Assessment and verification: the applicant shall provide appropriate documentation and test reports for each emission parameter mentioned above, following the indications of the Technical Appendix — A5.

Clay tiles

The emissions to air for the following parameters for the clay tiles' firing stage shall not exceed:

Parameter	Hurdle (mg/m²)	Test method
Particulates	250	ISO 9096
F	200	ISO/CD 15713
NO_x	3 000	ISO 11564
SO_2	2 000	ISO 7935

Assessment and verification: The applicant shall provide appropriate documentation and test reports for each emission parameter mentioned above, following the indications of the Technical Appendix — A5.

Terrazzo tiles and concrete paving units

The emissions to air for the following parameters for the whole manufacturing process shall not exceed:

Parameter	Hurdle (mg/m^2)	Test method
Particulates	300	ISO 9096
NO_x	2 000	ISO 11564
SO_2	1 500	ISO 7935

Assessment and verification: the applicant shall provide appropriate documentation and test reports for each emission parameter mentioned above, following the indications of the Technical Appendix — A5.

4.4. *Emissions to water*

After waste water treatment, whether on-site or off-site, the following parameters shall not exceed the following limits:

Suspended solid emission to water	40 mg/l	ISO 5667-17
Cd emission to water	0,015 mg/l	ISO 8288
Cr(VI) emission to water	0,15 mg/l	ISO 11083
Fe emission to water	1,5 mg/l	ISO 6332
Pb emission to water	0,15 mg/l	ISO 8288

Assessment and verification: The applicant shall provide appropriate documentation and test reports showing compliance with this criterion.

4.5. *Cement*

The use of raw materials for cement production shall be consistent with extraction management for processed products requirements (Criterion 1.2).

Those products that use cement in the production process shall provide the following information:

— cement included in any product shall be produced using not more than 3 800 MJ/t of process energy requirement (PER), calculated as explained in the Technical Appendix — A4,

— the cement included in any product shall be produced respecting the following air emission limits:

Parameter	Hurdle (g/t)	Test method
Dust	65	ISO 9096
SO_2	350	ISO 11632
NO_x	900	ISO 11564

Assessment and verification: the applicant shall provide the relevant test reports and documentation related to the PER and the air emissions deriving from the cement production.

5. **Waste management**

All plants involved in the production of the product shall have a system for handling the waste and residual products deriving from the production of the product. The system shall be documented and explained in the application and shall at least include information on the following three items:

— procedures for separating and using recyclable materials from the waste stream,

— procedures for recovering materials for other uses,

— procedures for handling and disposing of hazardous waste.

Assessment and verification: The applicant shall provide appropriate documentation.

5.1. *Recovery of waste (for processed products only)*

At least 70 % (by weight) of the total waste generated by the process or the processes shall be recovered according to the general terms and definitions established by Council Directive 91/156/EEC of 18 March 1991 amending Directive 75/442/EEC on waste [1].

Assessment and verification: the applicant shall provide appropriate documentation based on, for example, mass balance sheets and/or environmental reporting systems showing the rates of recovery achieved whether externally or internally, for example, by means of recycling, re-use or reclamation/regeneration.

6. **Use phase**

6.1. *Release of dangerous substances (glazed tiles only)*

In order to control the potential release of dangerous substances in the use phase and at the end of the glazed tile's life, the products shall be verified according to the EN ISO 10545-15 test. The following limits shall not be exceeded:

Parameter	Hurdle (mg/m^2)	Testing method
Pb	80	ISO 10545-15
Cd	7	ISO 10545-15

Assessment and verification: the applicant shall provide an analysis and test reports with regard to the emission parameters mentioned above. This shall include a declaration of conformity of the product with the requirements of Council Directive 89/106/EEC of 21 December 1988 [2] on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products and with relevant harmonised standards created by CEN once published in the *Official Journal of the European Communities*.

7. **Fitness for use**

The product shall be fit for use. This evidence may include data from appropriate ISO, CEN or equivalent test methods, such as national or in-house test procedures.

Assessment and verification: details of the test procedures and results shall be provided, together with a declaration that the product is fit for use based on all other information about the best application by the end-user. According to Directive 89/106/EEC a product is presumed to be fit for use if it conforms to a harmonised standard, a European technical approval or a non-harmonised technical specification recognised at Community level. The EC conformity mark 'CE' for construction products provides producers with an attestation of conformity easily recognisable and may be considered as sufficient in this context.

8. **Consumer information**

The product shall be sold with relevant user information, which provides advice on the product's proper and best general and technical use as well as its maintenance. It shall bear the following information on the packaging and/or on documentation accompanying the product:

(a) information that the product has been awarded the EU Eco-label together with a brief yet specific explanation as to what this means in addition to the general information provided by box 2 of the logo;

(b) recommendations for the use and maintenance of the product. This information should highlight all relevant instructions particularly referring to the maintenance and use of outdoor products. As appropriate, reference should be made to the features of the product's use under difficult climatic or other conditions, for example, frost resistance/water absorption, stain resistance, resistance to chemicals, necessary preparation of the underlying surface, cleaning instructions and recommended types of cleaning agents and cleaning intervals. The information should also include any possible indication on the product's potential life expectancy in technical terms, either as an average or as a range value;

(c) an indication of the route of recycling or disposal (explanation in order to give the consumer information about the high possible performance of such a product);

(d) information on the EU Eco-label and its related product groups, including the following text (or equivalent): 'for more information visit the EU Eco-label website: http://europa.eu.int/ecolabel'.

Assessment and verification: the applicant shall provide a sample of the packaging and/or texts enclosed.

[1] OJ L 78, 26.3.1991, p. 32.
[2] OJ L 40, 11.2.1989, p. 12.

9. **Information appearing on the ECO-label**

Box 2 of the Eco-label shall contain the following text:

Natural products:

— reduced impact of extraction on habitats and natural resources,

— limited emission from finishing operations,

— improved consumer information and waste management.

Processed products:

— reduced energy consumption of production processes,

— reduced emissions to air and water,

— improved consumer information and waste management.

Assessment and verification: the applicant shall provide a sample of the packaging and/or texts enclosed.

TECHNICAL APPENDIX

The applicant shall provide all the required information calculated, measured or tested for the period immediately before the application. Measurements shall be representative for the respective series of testing and it should be consistent for all parts of the application as appropriate.

A1. **Raw material extraction — indicators and weights definitions**

Confined waterbed

The expression 'confined waterbed' identifies an artesian waterbed.

Average flow of the surface water-bodies

The average flow of the watercourse that interferes with the quarry shall be calculated taking into account the authorised area of the considered quarry. The calculation shall be made multiplying the section of the water body by the velocity of the water. The values shall be representative of at least 12 months.

Indicator description

I.1. Water recycling ratio

See A3.

I.2. Rehabilitation simultaneity degree

The calculation of I.2 consists of the measurement of the compromised area, which includes quarry front and active dump areas, and of the authorised area. These areas should be measured during operating activities.

I.3. Blocks recovery

The calculation of I.3 consists of the evaluation of commercial blocks and of the total volume yearly excavated. Commercial blocks (according to the rough block definition in CEN/TC 246/N.237 prEN 12670 'Natural stones — Terminology') refers to the basis of utilisable stone consisting of rock from quarries suitable for further processing in order to obtain slabs or other architectural items.

I.4. Natural resource appreciation

The calculation of I.4 consists of the evaluation of the usable material and of the total volume extracted yearly. Usable material refers to all the volume which is not destined for dumps: for example commercial blocks, aggregate materials and everything else suitable for further processing and use.

I.5. Working conditions of operating equipment

The calculation of I.5 consists of the evaluation of the total number of hours worked by a machine for productive activities and its division by the yearly production (m^3) of usable material. Usable material refers to all the volume which is not destined to dumps: for example commercial blocks, aggregate materials and everything else suitable for further appreciation. If more than one excavator or wheel loader is present in the quarry, the highest number of worked hours shall be taken into consideration.

I.6. Air quality

This indicator is described in Council Directive 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air [1]. The calculation of I.6 consists of the measurement, along the border of quarry area, of PM 10 suspended particles based on the specific requirements of the test method and the general provisions of the Council Directive (PM 10 are defined in Article 2(11)). The test method is defined in EN 12341.

I.7. Water quality

This indicator considers the total emissions of suspended solids after treatment on surface water flowing out of the quarry site. The calculation of I.7 consists of the measurement of total suspended solids using the test method reported in ISO 5667-17.

I.8. Noise

This indicator considers the noise level recorded along the border of the quarry area. Non impulsive noises are to be measured. The calculation of I.8 consists in the measurement of the noise using the test method reported in ISO 1996-1.

I.9. Visual impact

The calculation of visual impact lies in tracing cross sections passing through the quarry front and other external 'visual points', which are important to determine the visual impact (for example either from nearby towns or from frequented places or major roads, etc.). The calculation of the final score, measured as a percentage, shall be taken from the highest value of originally calculated values (worst case situation). A short explanation for the finally chosen 'visual point' should be submitted to the Competent Body. From each visual point (P), the 'bottom radius' is traced, tangent to the topographic surface and intercepting the lowest point of the 'visible quarry area'. The visible quarry area is regarded as the area where the excavation is carried out or where there is an active dump. Already rehabilitated areas (both in front area and dumps) need not be considered. From the same visual point a second radius (called 'top radius') is traced, intercepting the highest point of the quarry front. The top radius and bottom radius allow the identification on the section of the quarry of the limits of the height of the visible front (the vertical distance from top to bottom radius matching the front). The calculation could be made on the basis of the quarry project. These geometric data are put into the following formula and the result is the quotient of visual impact of the quarry affecting a specific visual point.

$$x\,\% = \frac{h^2}{(L \tan 30°)^2} \cdot 100$$

where (Figure A1):

h = vertical height of front visible from P visual point (in meters);

L = horizontal distance between the worst P and the front (in meters);

tan 30° = tangent of the average angle of the human eye vision cone;

x % = percent of visual impact.

The term h^2 represents the base surface of the quarry visibility cone, while the term $(L \tan 30°)^2$ represents the base surface of the average visual cone of human eye.

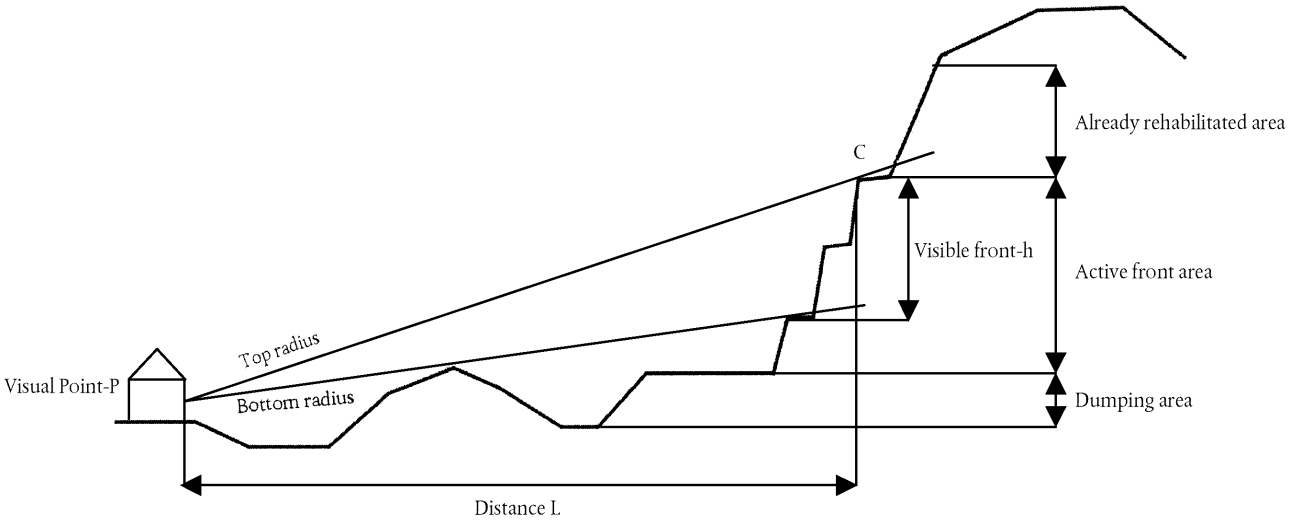


Figure A1: Graphical definition of the visual impact indicator

[1] OJ L 163, 29.6.1999, p. 41.

The calculation of the score shall consider the highest value among the calculated values.

Weight description

W2. Soil protection/land capability classification

According to the European Soil Bureau's indication, land is graded on the basis of its potentialities and the severity of its limitations for crop growth into eight capability classes. An indicative description of the classes is as follows:

— Class I soils have slight limitations that restrict their use,

— Class II soils have moderate limitations that reduce the choice of plants or require moderate conservation practices,

— Class III soils have severe limitations that reduce the choice of plants or require special conservation practices, or both,

— Class IV soils have very severe limitations that restrict the choice of plants or require very careful management, or both,

— Class V soils have little or no hazard of erosion but have other limitations, impractical to remove, that limit their use mainly to pasture, range, forestland, or wildlife food and cover,

— Class VI soils have severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover,

— Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use mainly to grazing, forestland, or wildlife,

— Class VIII soils and miscellaneous areas have limitations that preclude their use for commercial plant production and limit their use to recreation, wildlife, or water supply or for aesthetic purposes.

A2. **Raw materials selection**

A closed-loop recycled material is defined as a material that is extracted from the production system and is returned to the same production system, eventually after a recycling treatment.

A3. **Water recycling ratio**

The calculation of the water recycling ratio shall be consistent with the following formula based on the flows highlighted in Figure A2.

$$\text{Recycling ratio} = \frac{\text{Waste water recycled}}{\text{Total water exits the process}} \cdot 100 = \frac{R}{W1} \cdot 100$$

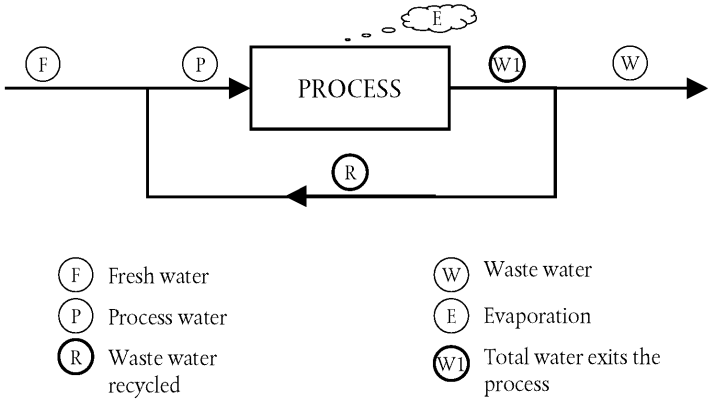


Figure A2: Water flow scheme that shall be used to calculate Water Recycling Ratio [1]

A4. **Energy consumption calculation (PER, ERF)**

When providing a calculation of process energy requirement (PER) or energy requirement for firing (ERF), the correct energy carriers shall be taken into account for the entire plant or for the firing stage only. Gross calorific values (high heat value) of fuels shall be used to convert energy units to MJ (Table A1). In case of use of other fuels, the calorific value used for the calculation shall be mentioned. Electricity means net imported electricity coming from the grid and internal generation of electricity measured as electric power.

Evaluation of PER for agglomerated stone production shall consider all energy flows entering the production plant both as fuels and electricity.

Evaluation of PER for terrazzo tiles production must consider all energy flows entering the production plant both as fuels and electricity.

Evaluation of ERF for ceramic tile production shall consider all energy flows entering all the kilns as fuels for the firing stage.

Evaluation of ERF for clay tile production shall consider all energy flows entering all the kilns as fuels for the firing stage.

Evaluation of PER for cement production shall consider all energy flows entering the production system both as fuels and electricity.

Table A1: Table for calculation of PER or ERF (see text for explanations)

Production period	Day	From	To	
Quantity (tons or m^3)				
Fuel	Quantity	Units	Conversion factor	Energy (MJ)
Natural gas		kg	54,1	
Natural gas		Nm^3	38,8	
Propane		kg	50,0	
Butane		kg	49,3	

[1] W means the waste water discharged into the environment.

Production period	Day	From	To	
Quantity (tons or m^3)				
Fuel	Quantity	Units	Conversion factor	Energy (MJ)
Kerosene		kg	46,5	
Gasoline		kg	52,7	
Diesel		kg	44,6	
Gas oil		kg	45,2	
Heavy fuel oil		kg	42,7	
Dry steam coal		kg	30,6	
Anthracite		kg	29,7	
Charcoal		kg	33,7	
Industrial coke		kg	27,9	
Electricity		kWh	3,6	
			Total energy	
			Specific energy consumption (MJ/quantity) [1]	

[1] Divide total energy (in grey) by quantity (in grey).

A5. **Emissions to air (for processed products only)**

The air pollutant emission factors shall be calculated as follow:

1. the concentration in the exhaust gas emitted to the environment of each parameter considered in the tables shall be calculated;
2. the measurements used for the calculation must be made following the testing methods indicated in the tables;
3. the samplings shall be representative of the considered production.