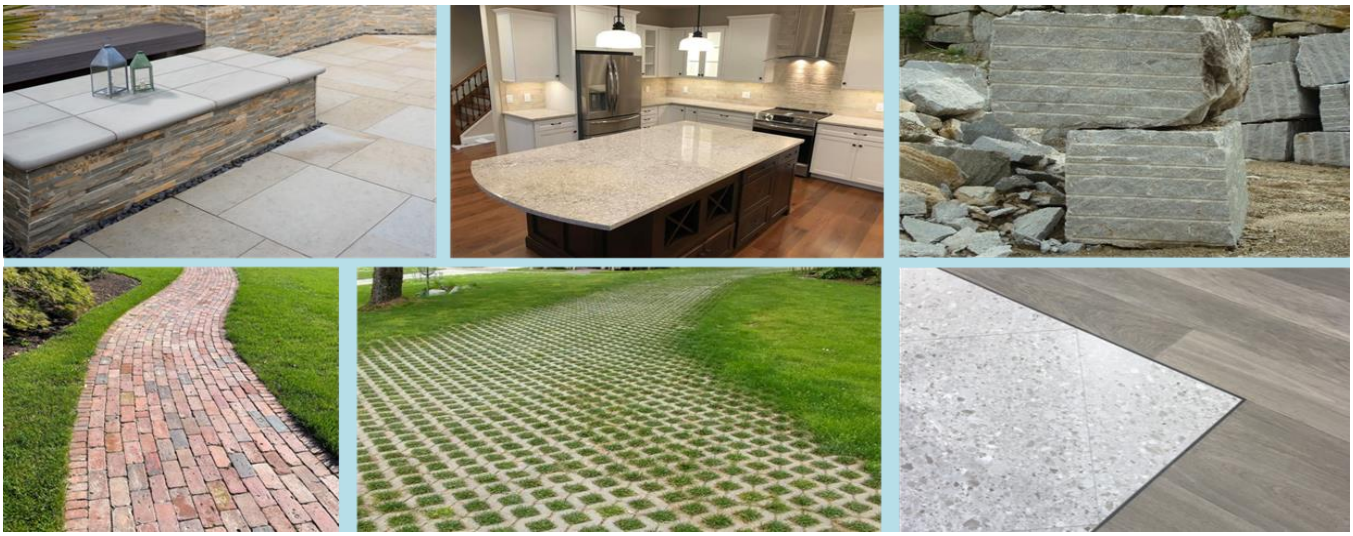
European Commission

Practical guide for the use of the EU Ecolabel in the green public procurement of hard covering products



HIGHLIGHTS

→ The EU Ecolabel and EU GPP are two European policy instruments that can be used by public procurers in a synergistic manner by matching supply and demand signals to green the market.

→ Suppliers receive general demand signals for greener products. However public procurers are often reluctant to state specific green criteria in calls for competition because of uncertainty about what exactly to ask for and the availability of compliant products on the market.

→ These practical guidelines help procurers to draw up technical specifications and award criteria in calls for the green public procurement of hard covering products.

→ Compliance with the recommended EU GPP criteria can be verified simply by products carrying the EU Ecolabel and, in some cases, by products carrying other ISO 14024 type I ecolabels.

QUICK GUIDE – Recommended environmental criteria focus on the following three environmental themes: (i) energy consumption and CO_2; (ii) emissions to air; and (iii) process waste reuse. These cross-cutting themes have criteria tailored for nature stone-, agglomerated stone-, ceramic/fired clay- and precast concrete-based hard covering products.

For more detailed information about the rationale behind these criteria, please consult related JRC reports (*Donatello et al., 2018*, *Donatello et al., 2021*, and *Donatello et al., 2024*).

Joint Research Centre

'The common goal of the EU GPP and EU Ecolabel policies is to promote products (goods and services) with a reduced environmental impact throughout their life cycle'

INTRODUCTION

Background to EU GPP

Green Public Procurement (GPP) is defined in the European Commission's Communication "Public procurement for a better environment" as "*a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured.*" Training toolkits[1] for public authorities are available to help understand the strategic thinking, legal aspects, needs assessment and how to engage with the market.

Scale of PP in the EU

Every year, over 250 000 public authorities in the EU spend around 14% of EU Gross Domestic Product (GDP) on the purchase of services, works and supplies[2], accounting for roughly EUR 1.8 trillion annually[3]. The public sector can use procurement to boost jobs, growth and investment, and to create an economy that is more innovative, more energy efficient and more circular.

The use of labels in PP

The EU Public Procurement Directives (2014/24/EU and 2014/25/EU) define the possibilities of using labels (e.g. ecolabels) in public tendering. Labels can be used at different stages of the procurement process (e.g. preparation of documents, market engagement, evaluation of bids and assessment of contract compliance for the winning bid). At the bid evaluation and at the contract compliance assessment stages, eco-labels provide a means of third party verification, which can considerably help save time and effort while ensuring the applicability of high environmental standards in public contracts.

In general, labels can be required as means of proof in bidding exercises as long as the following conditions are fulfilled (taken from Article 43 of Directive 2014/24/EU and Article 61 of Directive 2014/25/EU with some additional text added in square brackets [] for clarity):

a) the label requirements [set in GPP criteria] only concern [proof of compliance with] criteria which are linked to the subject matter of the contract and are appropriate to define characteristics of the supplies or services that are the subject matter of the contract;

b) the label requirements are based on objectively verifiable and non-discriminatory criteria;

c) the labels are established in an open and trans-parent procedure in which all relevant stakeholders, including government bodies, consumers, social partners, manufacturers, distributors and non-governmental organisations, may participate;

d) the labels are accessible to all interested parties [i.e. manufacturers or service providers can apply for the label and contracting authorities can access the underlying label criteria];

e) the label requirements are set by a third party over which the economic operator applying for the label cannot exercise a decisive influence.

The synergies between EU Ecolabel and EU GPP

In a similar manner to EU GPP, the aim of the EU Eco-label, as defined in Regulation (EC) No 66/2010 (EC, 2010) is to "promote products with a reduced environmental impact during their entire life cycle" via a voluntary ISO 14024 type I ecolabel award scheme. For any given product group, whenever procurers decide to set requirements based on EU Ecolabel criteria, the supply side EU Ecolabel policy is working in tandem with the demand side EU GPP policy to drive the market towards better products in terms of environmental performance.

Types of procurement criteria

There are several different types of procurement criteria, with the most relevant to green requirements being:

(i) Technical Specifications (TSs), which are mandatory requirements that ALL relevant products covered by a call for competition must meet.

(ii) Award Criteria (ACs), which can be used as additional optional requirements that would make compliant products more competitive, depending on

[1] See: https://ec.europa.eu/environment/gpp/toolkit_en.htm

[2] See: https://ec.europa.eu/info/policies/public-procurement_en

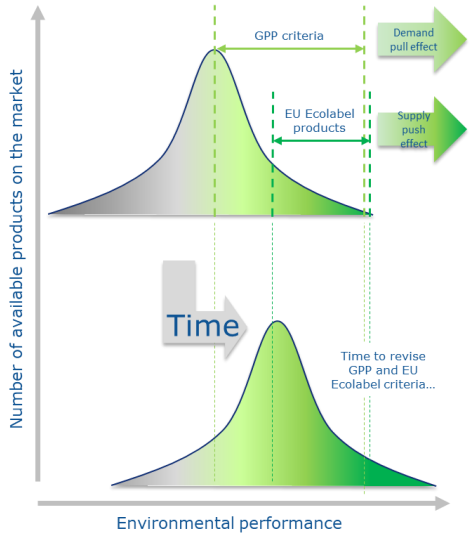
[3] See: https://ec.europa.eu/environment/gpp/buying_handbook_en.htm

the weighting applied to the award criteria. In many cases, good environmental performance is stipulated as an award criterion.

(iii) Contract Performance Conditions (CPCs), which are mandatory rules for how a contract must be carried out. They shall not have any influence on the awarding of the contract and no means of proof can be requested during the tendering phase, but failure to comply with them is linked to clear penalties and other consequences, such as the cancellation of the contract.

To make green criteria better known, it is up to procurers to specify them in calls for tender and explain more about them to potential bidders through market engagement exercises before calls for tender are published. For more information on market engagement, please see module 6 of the EU GPP training toolkit[4].

Figure 1 – Intended synergistic effect of voluntary EU Ecolabel & EU GPP policies on the "greening" of a market



Source: JRC own elaboration.

SCOPE AND DEFINITION

The scope of products covered by these recommended EU GPP criteria reflects the scope defined for EU Ecolabel criteria for hard covering products (Article 1 of Commission Decision (EU) 2021/476, as presented in Figure 2 below).

Figure 2 – Scope of hard covering product group pursuant to Art. 1 of Commission Decision (EU) 2021/476 (EC, 2021)

Materials	Product types	Product types
Natural stone Agglomerated stone Ceramic / fired clay Precast concrete	Floor tiles Wall tiles Roof tiles* Blocks Slabs Panels Pavers Kerbstones Table-tops Vanity tops & Kitchen-worktops.	Masonry units under EN 771. Reinforced concrete products. *Fired clay roof tiles under EN 1304 Ancillary products associated with the installation and fitting of hard covering products (e.g. grouts, adhesives, fastenings etc.) Refactory ceramics, technical ceramics, clay pipes, ceramic tableware, ornamental ware or sanitary ware.

Source: JRC own elaboration.

The scope for hard covering products is based on four main types of material used.

1. **Natural stone** is stone that has been directly cut from blocks and slabs from a natural stone quarry.

2. **Agglomerated stone** uses crushed stone powder mixed with an organic resin before being moulded into slabs at carefully controlled temperature and pressure.

3. **Ceramic and fired clay products** are produced from clay and feldspar minerals by firing in a high temperature kiln. Ceramic tiles are normally glazed as well.

4. **Precast concrete** is made by pouring and pressing mixtures of cement, water and aggregate into moulds to form precast concrete products.

The EU Ecolabel can also be awarded to certain **intermediate products**, namely dimension stone (large natural stone blocks from quarries) and to cement (used to make concrete). However, the EU GPP criteria recommendations in this document are focused on the final hard covering products

Common Procurement Vocabulary (CPV) codes

When procurers publish a call for competition, a CPV code should be used when describing the subject matter of the call. Consequently, it is worthwhile to check how products included in the scope of EU

4 See the GPP Training toolkits here: https://ec.europa.eu/environment/gpp/toolkit_en.htm

Ecolabel criteria sit within the hierarchy of CPV codes set out in Regulation (EC) No 213/2008.

The procurement of hard covering products can be as a part of a broader works contract or as a supply contract (either broadly on construction materials, or more focused on hard covering product types). The following codes were found to be of most relevance to the scope of the product group (Table 1).

Table 1 – Relevant CPV codes that could involve EU Eco-label for hard covering products

For work contracts
CPV 45210000-2: building construction work
CPV 45233161-5: footpath construction work
CPV 45233252-0: surface work for streets
CPV 45233253-7: surface work for footpaths
CPV 45233260-9: pedestrian ways construction work
CPV 45260000-7: roof works and other special trade [...] works
CPV 45430000-0: floor and wall covering work.
For supply contracts
CPV 44111700-8: tiles
CPV 44111900-0: ceramic flags
CPV 44113100-6: paving materials
CPV 44911100-0: marble
CPV 44912100-7: granite
CPV 44912400-0: kerbstones
CPV 44930000-8: slate

Source: JRC own elaboration.

Procurer must be clear in their call for competition and specify in writing what type of hard covering product they are looking for AND what materials they should be made of – if the procurer does actually have a preference.

Potential and real-life procurement examples

The procurer might use real-life good practice examples as an aid to identify the elements of the tendering process that raise the demand for "green" products and help shift the market towards more sustainable products.

Stakeholder and supplier consultation at the planning stage is critical for understanding the awareness, capability and appetite of the market in providing "green" products. Good practice inevitably involves market engagement exercises prior to publishing of any calls for competition in order to maximise the preparedness of potential bidders. When setting requirements that are related to the EU Ecolabel, attention should be paid to the number of existing EU Ecolabel license holders for hard covering products. It should be noted that obtaining the EU Ecolabel can take 12-18 months.

As implied by the relevant CPV codes listed above, it is common that hard covering products are included in works contracts where the contract budget is dominated by labour costs, machinery hire and material costs, while hard covering products will just be one of many different materials that fall under material costs.

A search of all contracts published on the TED platform since 2015 for the "supplies" CPV codes listed above showed that there were around 150-250 such contracts each year, in the EU, of which roughly 50% were "works" types procurement exercises and the other half were "supplies".

A closer look at a random selection of contracts shows that hard covering product CPV codes were mostly being specified together with other construction materials like bricks, steel, concrete, aggregates, asphalt, paints and windows. Nonetheless, some hard covering product centred contracts could be found, for example for precast concrete tiles, for kerbstones or for flagstones.

ENVIRONMENTAL HOTSPOTS

Although the four main categories of hard covering products have some raw material supply chains in common, and although they can also have similar properties and product applications, the production processes are very different and thus so are the environmental hotspots. Consequently, it is necessary to provide an overview of four different production processes in Figure 3 further below.

Hard covering products are mineral-based, and so the extraction of mineral materials accounts for the vast majority of mass in the final products. However, the extraction of organic chemical feedstocks is also relevant for those organic chemicals to be used later on in hard covering product manufacture, mainly for resin used in agglomerated stone manufacture (up to 10% by mass of final product). Impacts associated with the extraction of crude oil and its refining are well documented. With bio-based organic chemical feedstocks, impacts associated with land use, fertiliser application, harvesting, transport and processing are relevant.

All raw material extraction and processing in the upstream stages require inputs of energy (fuel and electricity) for operating heavy machinery, other onsite equipment and their transport offsite.

Upstream processes

For **natural stone**: the quarrying of natural stone (like the quarrying of any material) is associated with land use and biodiversity impacts. Emissions of dust to air or water are a particular issue and even collecting waste dust from cutting operations will not re-solve overall emissions if waste is not stored correctly before reuse or disposal. Due to inherently low material extraction efficiencies, it is important to find a reuse application for broken rock fragments and other pieces that are unsuitable for slab and tile production.

For **agglomerated stone**: no combustion is required to manufacture agglomerated stone products. Crushed stone powder is normally sourced from by-products of natural stone production but could also include other inorganic mineral wastes like glass or ceramics. The stone is mixed with a precise amount of resin (typically a polyester resin at levels of 5-10% by mass of the mixture) and is poured into the patented Breton-style moulding system or similar. The mould is closed, subjected to pressure and slightly elevated temperatures that allow the resin to set, creating a uniform solid slab of agglomerated stone.

For **ceramics and fired clay**: the mined clay raw material is milled (wet or dry) to the required particle size specifications. In the case of fired clay, the milled clay may be simply combined with any additives (e.g. pigments) and then be mixed, extruded or moulded and fired in the kiln at temperatures between 900 and 1000°C. With ceramic tile production, the clay material will often be “atomised” using a spray drying procedure that rapidly dries a slurry of clay and water at around 400°C. The process uses natural gas and is quite energy intensive. Ceramic tiles are normally glazed and fired at temperatures of 1000-1200°C. There is a separate supply chain for frits, pigments and other ingredients associated with glazing formulations.

For **precast concrete**: the dominant source of energy consumption is actually associated with the production of cement used in concrete, which can account for 10-15% by mass of the concrete. Cement is produced by the firing of a mixture of limestone and clay in a rotary kiln at temperatures of up to 1450°C. Emissions of CO_2 (both from combustion and from limestone decarbonation), of NOx, of SOx and of dust to the atmosphere are particular concerns.

Downstream processes

Impacts associated with **distribution relate** to transport from the factory gate to the consumer, which may or may not go via intermediate actors in the commercial and retail parts of the supply chain. With installation, some losses are inevitable due to the need to cut some tiles, slabs or blocks to size on-site or due to installer error.

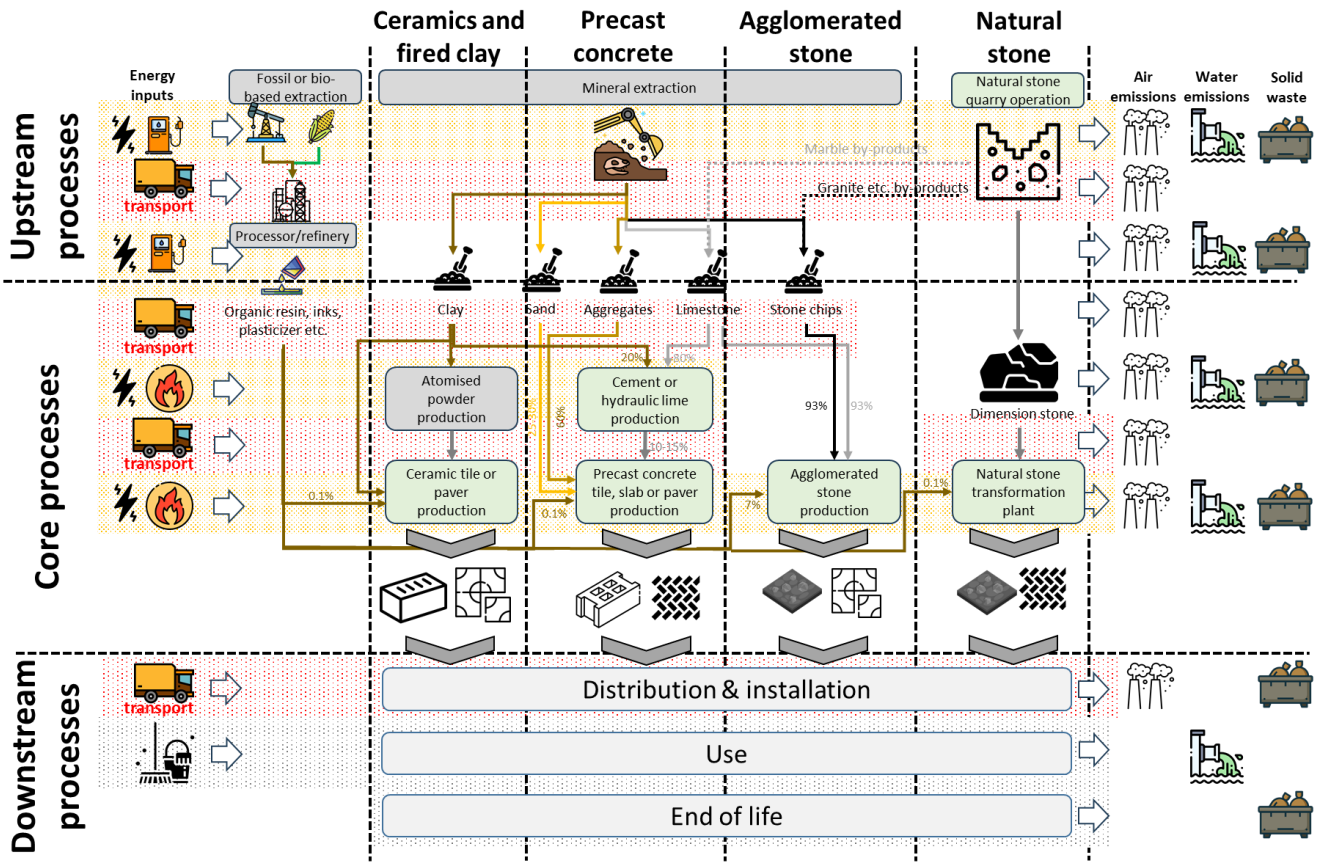
The **use phase** impacts will be dominated by any cleaning operations to maintain the surface. These will vary greatly depending on the use environment and on the degree to which dirt is likely to accumulate (e.g. wall tiles need a lot less cleaning than floor tiles).

The **end-of-life** stage will normally come during renovation or demolition works and, if not possible to re-cover the hard covering materials for direct reuse, they can be easily recycled as inert aggregate in a variety of applications.

The images in Figure 3 should be read in vertical for the production of particular hard covering products by material, going through the life cycle from top to bottom. Manufacturing processes are in grey or green boxes. The green boxes show the processes that are most heavily covered by EU Ecolabel criteria and the product forms in green are examples of products which can be awarded with the EU Ecolabel. The most environmentally significant inputs at each stage (either electricity, fuel or transport) are shown on the left side, pass through the relevant production process(es) and come out as environmental pressures as set on the right hand side. When a stage relates to transport, the background is coloured in red, while if related to energy is yellow coloured. Grey is for the use stage.

Main environmental pressures are invariably emissions to air (including CO_2), emissions to water and/or solid waste generation.

Figure 3 – Overview of main processes and life cycle stages for the manufacturing of hard covering products



Source: JRC own elaboration.

PROPOSAL OF SUITABLE EU ECOLABEL-BASED REQUIREMENTS FOR EU GPP CRITERIA

EU Ecolabel requirements for hard covering products established by Commission Decision (EU) 2021/476 have been screened against their fitness for use as EU GPP criteria in calls for competition (Donatello et al., 2024). The three most suitable criteria areas were identified based on their link to the subject matter of the procurement contract, the ease of verifiability (in cases where there is no EU Ecolabel) and relevance to environmental hotspots. These most relevant criteria areas are as follows:

1. Energy consumption and CO_2 emissions.
2. Emissions to air.
3. Process waste reuse.

Hard covering products carrying the EU Ecolabel can be automatically assumed to comply with all of the EU GPP criteria recommended in this practical guide.

Contracting authorities requiring a specific label shall accept all labels that confirm that the supplies meet equivalent requirements (Table 2).

The recognition of other labels to be used as equivalent verification scheme(s) is of relevance to streamline the selection procedure and to amplify the market share of suitable green products.

Overall, no EU-based ecolabels were found that fully match the scope of EU Ecolabel for hard covering products and that include requirements proposed as EU GPP criteria. Outside of the EU, the two sets of combined GECA criteria cover the full scope of the EU Ecolabel hard covering products. These concern: (i) hard surfacing, and (ii) cement, concrete & concrete products.

Table 2 – Verification of proposed EU GPP criteria of hard covering products by means of EN ISO 14024 type I eco-labelling schemes (as of September 2024)

Scope and criteria	HCP[5]	BTP [6]	COF [7]	HS [8]	CCCP [9]
Scope					
Scope – natural stone	✓	X	X	✓	X
Scope – agglomerated stone	✓	X	X	✓	X
Scope – ceramic / fired clay	✓	X	X	✓	X
Scope – precast concrete	✓	✓	✓	X	✓
Criteria					
Criteria – Energy consumption & CO_2	✓	X	✓	✓	✓
Criteria – emissions to air	✓	X	X	✓	✓
Criteria – Process waste reuse	✓	X	X	✓	✓

**Note: the list of type I Ecolabels is not exhaustive. These schemes were selected due to their correlation with the EU Ecolabel*

✓ = covered; ✓ = partially or potentially covered/further assessment required; X = not covered

Source: JRC own elaboration.

RECOMMENDED EU GPP CRITERIA

The criteria below can be used in calls for competition for hard covering products, with material specific nuances when relevant, or all combined for the same criteria area if there is no preference on material.

The criteria recommended here are formulated as **technical specifications (TSs**) – which should be used in the case of buying standard products that have already been produced or that are currently being produced before the award of any contract. In this case, tenderers should be able to demonstrate compliance at the point of the deadline for the call for competition.

No award criteria (ACs) have been recommended for two main reasons: (i) that in cases of doubt about the ability of the market to meet the requirements, the TSs should be converted to optional ACs, and (ii) the potential ACs of simply rewarding higher recycling rates or lower energy consumption or emissions than the minimum requirements of the EU Ecolabel is possible. However, verification would be more complicated, even for products already carrying the EU Ecolabel, since these numbers are dynamic and will change each month.

TS criteria can be adapted to Contract Performance Conditions (CPCs). The only additional work needed from the contracting authority would be to decide on any penalties for non-compliance.

CRITERIA AREA 1: ENERGY CONSUMPTION & CO_2

TS1.1. Energy consumption and CO_2 emissions for natural stone products

For natural stone transformation plants:

The tenderer shall have established a program to systematically monitor, record and reduce specific energy consumption and specific CO_2 emissions to optimal levels* in the transformation plant where the products are manufactured. This shall explicitly cover any specific production line(s) for the products being procured. The tenderer shall report energy consumption as a function of energy source (e.g. electricity and diesel) and purpose (e.g. use of onsite buildings, lighting, cutting equipment operation, pumps and vehicle operation). The tenderer shall report on energy consumption for the site both on an absolute basis (in units of kWh or MJ) and on a specific production basis (in units of kWh or MJ per m^3, m^2 or t of material

[5] See: Commission Decision (EU) 2021/476 of 16 March 2021 establishing the EU Ecolabel criteria for hard covering products OJ L 99, 22.3.2021, p. 53–72, available at: https://eur-lex.europa.eu/eli/dec/2021/476/oj

[6] See: Milieukeur criteria for "*BETONPRODUCTEN: Betonstraatstenen, betontegels, betonbanden, daktegels van beton en Grasbetontegels*" BTP.17 MK.58, 2022 version. Only available in Dutch, but refers to concrete products.

[7] See: Blue Angel criteria for "*Concrete products containing recycled aggregates for outdoor flooring*", DE-UZ 216, 2021, version 1.

[8] See: GECA (Good Environmental Choice Australia) "Hard Surfacing" standard No. HS v2.0i-2019. Available online for free upon request at: https://geca.eco/standards/hard-surfacing-hsv2-0i-2019/

[9] See: GECA Good Environmental Choice Australia) "Cement, concrete & concrete products" standard No. CCCP v1.0iii-2021. Available online for free upon request at: https://geca.eco/standards/cement-concrete-concreteproducts-cccpv1-0iii-2017/

sold/produced and ready for sale) for a given calendar year.

A plan to reduce specific energy consumption and specific CO2 emissions shall describe measures already taken or planned to be taken (e.g. more efficient use of existing equipment, investment in more efficient equipment, improved transportation and logistics etc.).

Verification:

For natural stone transformation plants:

*Natural stone products which have been awarded the EU Ecolabel according to Commission Decision (EU) 2021/476 or with another EN ISO 14024 type I ecolabel** that has equivalent criteria, are deemed to comply with the requirements.*

*The tenderer shall provide an energy inventory for the transformation plant for a period of at least 12 months*** prior to the deadline date of the call for competition. The energy inventory shall distinguish the different types of fuel consumed, highlighting any renewable fuels or renewable content of mixed fuels. As a minimum, the specific energy consumption and CO_2 emission reduction plan must define the baseline situation with specific energy consumption at the natural stone transformation plant when the plan was established. The plan must also identify and clearly quantify the different sources of energy consumption at the transformation plant, and identify and justify actions to reduce specific energy consumption and to report results on a yearly basis.*

*Any program to reduce energy consumption will eventually reach an optimum level. Efforts to reduce energy consumption further than the optimal level are considered as those that would adversely affect product quality or consistency of quality.

**No other EU-based ecolabel schemes were identified during the screening exercise. Beyond the EU, GECA (Australia) criteria were found to be quite similar, but not fully equivalent.

***An exception to the 12 months can be made for production lines that are new and have been running for less than 12 months so long as a minimum of 2 months of data can be provided.

TS1.2. Energy consumption for agglomerated stone products

The specific process electricity consumption for agglomerated stone production (including raw material batching, primary mixing, secondary mixing, moulding and finishing) shall not exceed 1.1 MJ/kg.

If grinding of stone raw material is carried out, the specific electricity consumption of the grinding process (in MJ/kg) shall be reported separately but shall not be added to the total for the process.

Verification:

Agglomerated stone products which have been awarded the EU Ecolabel according to Commission Decision (EU) 2021/476, or with another EN ISO 14024 type I ecolabel that has equivalent criteria, are deemed to comply with the requirements.*

Specific process electricity consumption shall be calculated by dividing the electricity consumption for relevant process equipment by the volume of production (in kg or m^3). A report shall be presented with data that is representative of the product(s) being offered. In cases where different products covered by the same offer have significantly different values, the data shall be reported separately for each product. In cases where production data is available in m^3, it should be converted to kg using the relevant bulk density factor (in kg/m^3) for the agglomerated stone product(s).

*No other EU-based ecolabel schemes were identified during the screening exercise. Beyond the EU, GECA (Australia) criteria were found to be quite similar, but not fully equivalent.

TS1.3. Energy consumption and CO_2 emissions for ceramic and fired clay products

The specific fuel energy consumption and CO_2 emissions for drying and firing processes shall not exceed the relevant limits defined below.

- Spray dried powder (when used): 1.8 MJ/kg powder and 84 kgCO_2/t powder
- Ceramic tile individual product: 4.1 MJ/kg and 280 kgCO_2/t
- Ceramic tile family of products: 5.5 MJ/kg and 360 kgCO_2/t
- Fired clay pavers: 3.5 MJ/kg and 192 kgCO_2/t.

Verification:

Ceramic or fired clay products which have been awarded the EU Ecolabel according to Commission Decision (EU) 2021/476, or with another EN ISO 14024 type I ecolabel that has equivalent criteria, are deemed to comply with the requirements.*

Regarding energy consumption:

The tenderer shall declare the specific fuel consumption value(s) for the relevant product(s). The specific fuel consumption shall be calculated by dividing the fuel consumption (in MJ) for relevant process equipment by production volume (in kg) during the relevant production period.

In cases where production data is only available in m^3 but needs to be reported in kg, the value should be converted using a fixed bulk density factor (in kg/m^3) for the product or family of products.

*Data for an entire family of products shall be representative of any production line(s) for a 12-month period** prior to the deadline date of the call for competition. Data for specific individual products, shall be representative of stable conditions during the actual production run(s).*

Volumetric or mass inputs of fuel to the kiln and dryer systems shall be taken from site readings and be converted into MJ by multiplying the volume/mass of fuel consumed over the defined production period (e.g. in kg, t, L or Nm^3) by a specific or generic calorific value for the same fuel (e.g. in MJ/kg, MJ/t, MJ/L or MJ/Nm^3).

In cases where fuel used to generate heat for drying operations is fed to a cogeneration system, the electricity generated by the system during the defined production period (measured in kWh and converted into MJ) should be subtracted from the total dryer fuel consumption reading.

Regarding CO_2 emissions:

For products from installations within the scope of Directive 2003/87/EC, the calculation of specific emissions per tonne of product shall be based on the emissions level and activity levels as per the monitoring methodology plan established under Article 6 of Regulation (EU) 2019/331 on free allocation rules.

For products from installations not within the scope of Directive 2003/87/EC, results shall be declared in accordance with the relevant calculation methodology defined in Commission Implementing Regulation (EU) 2018/2066.

In all cases, the specific CO_2 emission value shall be estimated at the level of the product(s) being offered for the call for competition.

*No other EU-based ecolabel schemes were identified during the screening exercise. Beyond the EU, GECA (Australia) criteria were found to be quite similar, but not fully equivalent.

**An exception to the 12 months can be made for production lines that are new and have been running for less than 12 months so long as a minimum of 2 months of data can be provided.

TS1.4. Energy consumption and CO_2 emissions for precast concrete or compressed earth products

The tenderer shall have established a program to systematically monitor, record and reduce specific energy consumption and specific CO_2 emissions to optimal levels* in the production plant where the products are manufactured. This shall explicitly cover any specific production line(s) for the products being procured. The tenderer shall report energy consumption as a function of energy source (e.g. electricity and diesel) and purpose (e.g. use of onsite buildings, lighting, cutting equipment operation, pumps and vehicle operation). The tenderer shall report on energy consumption for the site both on an absolute basis (in units of kWh or MJ) and on a specific production basis (in units of kWh or MJ per m^3, m^2 or t of material sold/produced and ready for sale) for a given calendar year.

A plan to reduce specific energy consumption and specific CO_2 emissions shall describe measures already taken or planned to be taken (e.g. more efficient use of existing equipment, investment in more efficient equipment, improved transportation and logistics etc.).

For cement or lime used in precast concrete, the specific CO_2 emissions shall not exceed the relevant mandatory limits defined below:

- Grey Portland cement clinker: 816 $kgCO_2/t$ clinker
- Lime: 1028 $kgCO_2/t$ hydraulic lime

- White Portland cement clinker: 1063 $kgCO_2/t$ clinker
- Alternative cements: 571 $kgCO_2/t$ cement.

Verification:

*Precast concrete or compressed earth products which have been awarded the EU Ecolabel according to Commission Decision (EU) 2021/476, or with another EN ISO 14024 type I ecolabel** that has equivalent criteria, are deemed to comply with the requirements.*

Regarding energy consumption:

*The tenderer shall provide an energy inventory for the production plant for a period of at least 12 months*** prior to the deadline date of the call for competition. The energy inventory shall distinguish the different types of fuel consumed, highlighting any renewable fuels or renewable content of mixed fuels. As a minimum, the specific-energy consumption and CO_2 emission reduction plan must define the baseline situation with specific energy consumption at the precast concrete plant, when the plan was established. The plan must also identify and clearly quantify the different sources of energy consumption at the precast concrete plant and identify and justify actions to reduce specific energy consumption and to report results on a yearly basis.*

Regarding CO_2 emissions for cement/lime production:

For products from installations within the scope of Directive 2003/87/EC, the calculation of specific emissions per tonne of product shall be based on the emissions level and activity levels as per the monitoring methodology plan established under Article 6 of Regulation (EU) 2019/331 on free allocation rules.

For products from installations not within the scope of Directive 2003/87/EC, results shall be declared in accordance with the relevant calculation methodology defined in Commission Implementing Regulation (EU) 2018/2066.

In cases where an alternative cement is used, the tenderer shall provide a copy of the carbon footprint analysis, which shall be in accordance with ISO 14067 and have been verified by an accredited third party. The footprint analysis must cover production of all of the main raw materials used and all chemical activators for life cycle stages A1-A3. In the absence of specific data from material suppliers, the generic emission factors from a life cycle inventory database should be used.

In all cases, the specific CO_2 emission value shall be estimated at the level of the product(s) being offered for the call for competition.

*Any program to reduce energy consumption will eventually reach an optimum level. Efforts to reduce energy consumption further than the optimal level are considered as those that would adversely affect product quality or consistency of quality.

**The screening exercise identified the Blue Angel criteria set out in DE-UZ 216 for precast concrete as suitably equivalent. Beyond the EU, GECA (Australia) criteria were found to be quite similar, but not fully equivalent.

***An exception to the 12 months can be made for production lines that are new and have been running for less than 12 months so long as a minimum of 2 months of data can be provided.

Specific fuel energy consumption limits have been set for **ceramics / fired clay** and specific CO_2 emissions have been set for cement or lime used in **precast concrete** because these are highly energy intensive processes where performance benchmarks are widely reported. Fuel energy accounts for over 90% of total energy consumption in these processes. A specific energy (electricity) consumption benchmark was also set for **agglomerated stone** which was possible thanks to feedback from industry stakeholders. However, for **natural stone**, such a benchmark was not possible due to the many variables that can affect specific energy consumption and which are often beyond the control of the producer. For example, harder rock requires more cutting energy than softer rock, or cutting to thinner slabs for clients will mean more material loss and thus higher specific energy consumption etc. The proposed approach with an energy inventory and reduction plans is in line with requirements set out by the Natural Stone Council in the US.

CRITERIA AREA 2: EMISSIONS TO AIR

TS2.1. Control of dust emissions at the natural stone or agglomerated stone production facilities

The tenderer shall demonstrate that operational measures have been implemented for dust control at the natural stone transformation plant or the agglomerated stone production facility, as relevant. Measures should include the following aspects for all production sites:

- Use of dust suppression water sprays or vacuum hoods linked to dust filter bags/electrostatic precipitators for any dry cutting or shaping activities that are likely to generate significant quantities of dust.
- Regular cleaning of dust from indoor floor areas using either water sprays on surfaces that drain to a water treatment system onsite or the use of a vacuum device for dry dust removal (sweeping of dry dust should not be carried out).
- Provision of an enclosed storage area for all dewatered sludge from wet cutting and/or all dust from dry cutting operations prior to sale, prior to shipment for reuse, prior to reuse onsite or prior to shipment to landfill.
- Covering the most heavily used road areas with concrete or asphalt paving.
- Provision of appropriate training* to employees about good practice for dust control and provision of adequate personal protective equipment** to employees and visitors.
- Provision of routine medical check-ups for employees, with the possibility for more frequent monitoring for the identification of respiratory problems and possible onset of silicosis (the latter point being applicable only to transformation plants processing granite and other siliceous rock).

Verification:

*Natural stone or agglomerated stone products which have been awarded the EU Ecolabel according to Commission Decision (EU) 2021/476, or with another EN ISO 14024 type I ecolabel*** that has equivalent criteria, are deemed to comply with the requirements.*

The tenderer shall provide a declaration of compliance with this criterion, supported by relevant documentation and: (i) a description of the dust control measures implemented at the natural stone transformation plant or agglomerated stone production facility, and (ii) details of the medical check-up system for employees, as appropriate.

*Appropriate training in this context means training on good practice to reduce the extent of dust emissions from site activities in general and to be aware of and competent in measures and behaviours to reduce exposure to dust already in the atmosphere.

**Adequate personal protective equipment refers to the provision of earplugs, safety helmets, safety boots, safety glasses and masks to any staff or visitors that are exposed to high noise levels, areas of dust emission and any other areas where heavy machinery is operating.

***No other EU-based ecolabel schemes were identified during the screening exercise. Beyond the EU, GECA (Australia) criteria were found to be quite similar, but not fully equivalent.

TS2.2. Control of dust, HF, NOx and SOx emissions at ceramic and fired clay production facilities

Measures to reduce dust emissions from "cold" dusty operations at the ceramic tile production site shall cover at least the reception, blending and milling of raw materials and the shaping and glazing/decoration of tiles.

The specific dust, HF, NOx and SOx emissions to air associated with the production of ceramic or fired clay products shall not exceed the relevant mandatory limits defined in the table below:

Kiln emission parameter	Mandatory limit	Test method
Dust	50 mg/kg	EN 13284
HF	20 mg/kg	ISO 15713
NOx as NO_2	250 mg/kg	EN 14792
SOx as SO_2	1300 mg/kg	EN 14791

Verification:

Ceramic or fired clay products which have been awarded the EU Ecolabel according to Commission Decision (EU) 2021/476, or with another EN ISO 14024 type I ecolabel that has equivalent criteria, are deemed to comply with the requirements.*

*The tenderer shall provide a declaration of compliance with the mandatory requirements of this criterion, supported by (i) a description of the measures in place to reduce dust emissions from "cold" dusty operations and, (ii) site data in mg/Nm^3 and expressed as an annual average** value calculated from daily average values. The data shall have been generated via continuous or periodic monitoring according to relevant EN or ISO standards. In cases of periodic monitoring, at least three samples shall be taken during stable running of the kiln for production runs of the product(s) being offered.*

In cases where production data is only available in m^3 but needs to be reported in kg, the value should be converted using a fixed bulk density factor (in kg/m^3) for the products being offered.

*Data should be representative of any production line(s) for a 12-month period** prior to the deadline date of the call for competition. Data for specific individual products from shorter production runs should be representative of stable conditions during the actual production run(s).*

To convert exhaust gas monitoring results from mg/Nm^3 (at 18% O_2 content) into mg/kg of ceramic/fired clay product, it is necessary to multiply by the specific gas flow volume (Nm^3/kg product). One Nm^3 refers to one m^3 of dry gas under standard conditions of 273K and 101.3 kPa.

In case it is not possible to provide specific data for a production line or product, the tenderer shall refer to data for the entire plant and allocate emissions to the EU Ecolabel production on a per mass basis.

*No other EU-based ecolabel schemes were identified during the screening exercise. Beyond the EU, GECA (Australia) criteria were found to be quite similar, but not fully equivalent.

**For production lines that are new and have been running for less than 12 months, representative data for a shorter period can be accepted in lieu of the annual average so long as a minimum of 2 months of data can be provided.

TS2.3. Control of dust, HF, NOx and SOx emissions at cement or lime kilns for cement or lime used in precast concrete products

Any alternative cements with a clinker content less than 30% by weight shall be considered as exempt from this technical specification.

The specific dust, NOx and SOx emissions to air from the cement kiln or lime kiln shall not exceed the relevant mandatory limits defined in the table below:

Kiln emission parameter	Mandatory limit	Test method
Dust	34.5 g/t clinker or hydraulic lime	EN 13284
NOx as NO_2	1472 g/t clinker or hydraulic lime	EN 14791
SOx as SO_2	460 g/t clinker or hydraulic lime	EN 14792

Verification:

Precast concrete or compressed earth products which have been awarded the EU Ecolabel according to Commission Decision (EU) 2021/476, or with another EN ISO 14024 type I ecolabel that has equivalent criteria, are deemed to comply with the requirements.*

*The tenderer shall provide a declaration of compliance with the mandatory requirements of this criterion, supported by site data for emissions from the cement kiln or lime kiln, in mg/Nm^3 and expressed as an annual average** value calculated from daily average values. The site data shall have been generated via continuous monitoring according to relevant EN standards or equivalent ISO standards.*

To convert exhaust gas monitoring results from mg/Nm^3 (at 10% O_2 content) into g/t of clinker, it is necessary to multiply by the specific kiln gas flow volume (Nm^3/t clinker). The specific gas flow volumes for cement kilns typically range from 1700 to 2500 Nm^3/t clinker. The cement producer must clearly state the specific airflow rate in the calculations of dust, NOx and SOx emissions. One Nm^3 refers to one m^3 of dry gas under standard conditions of 273K and 101.3 kPa.

To convert exhaust gas monitoring results from mg/Nm^3 (at 11% O^2 content) into g/t of lime, it is necessary to multiply by the specific kiln gas flow volume (Nm^3/t lime). The specific gas flow volumes for lime kilns can generally range from 3000 to 5000 Nm^3/t lime, depending on the kiln type used. The lime producer must clearly state the specific airflow rate in the calculations of dust, NOx and SOx emissions. One Nm^3 refers to one m^3 of dry gas under standard conditions of 273K and 101.3 kPa.

*For continuous production campaigns, data should be representative of a 12-month period**

prior to the deadline date of the call for competition. For shorter production campaigns, the actual production period(s) shall be stated and site data should represent at least 80 % of the production campaign.

In case it is not possible to provide specific data for a production line or product, the tenderer shall refer to data for the entire plant.

*No other EU-based ecolabel schemes were identified during the screening exercise. Beyond the EU, GECA (Australia) criteria were found to be quite similar, but not fully equivalent.

**For production lines that are new and have been running for less than 12 months, representative data for a shorter period can be accepted in lieu of the annual average so long as a minimum of 2 months of data can be provided.

Among the four main hard covering product materials, **natural stone and agglomerated stone** do not involve combustion processes, while ceramic/fired clay and cement used in precast concrete do. Another difference is that the **natural stone and agglomerated stone** production processes require cutting of the products to shapes demanded by clients and this produces a lot of localised dust emissions that vary in time and location in the factory. Consequently, different approaches for emissions to air are required for the different materials. The **natural stone and agglomerated stone** requirements are centred on good practice to minimise emissions of dust and minimise harm to workers and the wider environment. A particular concern is with the cutting or crushing of siliceous rock, because fine crystalline silica particles are well known to cause lung cancer in exposed workers (Requena-Mullor et al., 2021). With **ceramics and cement**, the high temperature combustion processes result in highly centralised and continuously monitored chimney stack emissions where quantitative benchmarks can be set. In addition to dust, the main emissions of concern are NOx, SOx and HF, which all contribute to acidification potential and NOx also to eutrophication potential impacts on the environment.

CRITERIA AREA 3: PROCESS WASTE REUSE

TS3.1. Reuse of process waste from the natural stone transformation plant or production facilities for agglomerated stone or ceramic/fired clay product

The tenderer shall complete an inventory of process waste production for the transformation plant, agglomerated stone production facility or ceramic / fired clay production facility, as appropriate. The inventory shall detail the type and quantity of waste produced (e.g. process scrap* and process sludge**).

The process waste inventory shall cover a 12 month*** period and, during that same period, the total product output shall be estimated both in terms of mass (kg or tonne) and surface area (m^2).

For natural stone products: At least 80% by mass of the process scrap generated from natural stone processing operations onsite shall be reused in other applications or stored onsite in preparation for future sale.

For agglomerated stone products: At least 70% of process waste (scrap plus sludge) generated from agglomerated stone slab and block production shall be reused in other production processes.

For ceramic/fired clay products: At least 90% by mass of the process waste (scrap plus sludge) generated by ceramic or fired clay product manufacturing shall be reincorporated into the production process onsite, be reincorporated into ceramic or fired clay production processes offsite or be reused in other production processes.

Verification:

Natural stone, agglomerated stone, ceramic or fired clay products which have been awarded the EU Ecolabel according to Commission Decision (EU) 2021/476, or with another EN ISO 14024 type I ecolabel[†] that has equivalent criteria, are deemed to comply with the requirements.

*The tenderer shall provide a waste inventory for the transformation plant or production facility for a period of at least 12 months*** prior to the deadline date of the call for competition.*

The tenderer shall provide a declaration of compliance with this criterion, supported by a calculation of total production process scrap (in kg or t). Details about the destination of these process wastes shall also be provided with clarifications about whether it is external reuse in another process or sent to landfill. For any

external reuse or landfill disposal, shipment notes shall be presented.

*'Process scrap' means fragments and trimmings from cutting operations and reject products in the production of natural stone or agglomerated stone hard covering products.

**'Process sludge' means solids recovered from the onsite treatment of wastewater resulting from dust control, cutting and/or finishing operations in the production of natural stone, agglomerated stone or ceramic / fired clay hard covering products.

***An exception to the 12 months can be made for production lines that are new and have been running for less than 12 months so long as a minimum of 2 months of data can be provided.

†No other EU-based ecolabel schemes were identified during the screening exercise. Beyond the EU, GECA (Australia) criteria were found to be quite similar, but not fully equivalent.

TS3.2. Reuse of process waste from precast concrete production

The tenderer shall have procedures in place for any batches of returned or rejected concrete in which all returned/rejected material is either:

- Recycled directly into new concrete batches which are cast prior to the returned/rejected concrete hardening; or
- Recycled as aggregate in new batches after returned/rejected concrete hardening; or
- Recycled offsite either prior to or after hardening as part of a contractual arrangement with a third party.

Verification:

Precast concrete products which have been awarded the EU Ecolabel according to Commission Decision (EU) 2021/476, or with another EN ISO 14024 type I ecolabel that has equivalent criteria, are deemed to comply with the requirements.*

*A monthly balance sheet of recycled/secondary materials and responsibly sourced materials shall be presented based on the 12 months** of production prior to the deadline date of the call for competition. The balance sheet shall provide the quantities of ingoing recycled/secondary materials (justified by delivery notes and invoices) and outgoing recycled/secondary materials in all sold or ready for sale precast concrete production with recycled/secondary material or responsibly sourced content claims (justified by product quantities and % claims).*

Due to the batch nature of the precast concrete production process, recycled/secondary material content claims shall be based on mix compositions used at the batch level. Allocation of recycled/secondary/responsibly sourced materials shall not be permitted.

*The screening exercise identified the Blue Angel criteria set out in DE-UZ 216 for precast concrete as potentially equivalent. Beyond the EU, GECA (Australia) criteria were found to be quite similar, but not fully equivalent.

**An exception to the 12 months can be made for production lines that are new and have been running for less than 12 months so long as a minimum of 2 months of data can be provided.

All the requirements here have the same common foundation, a waste inventory. Regarding **natural stone** solid process waste, it is impossible to return waste back into the same process that generated it. Furthermore, there is a need to distinguish between process sludge (which will be difficult to reuse or recycle because it contains elevated concentrations of metals from cutting blades, and may contain flocculant residuals) and process scrap (which will be generally inert material and a potentially attractive by-product for many industries). With **agglomerated stone** process waste, a similar issue to natural stone exists in practice, but data on benchmarks for waste being reused by other industries was not presented. However, **agglomerated stone** process scrap is a valuable input material for the cement industry if marble- and granite- based wastes can be well segregated. With **ceramic / fired clay products**, a high potential for the reincorporation of process waste into the same process exists, hence the different criteria wording for this type of material. Finally with **precast concrete**, a separate criterion is used because the requirements on waste monitoring are also linked to the incoming recycled material from downstream users, and this needs to be coordinated with waste produced onsite so that accurate recycled material flows can be kept. **For clarity, process waste reincorporated into the same process that generated it, is NOT considered as recycled content**. It is just a number for onsite waste that would tend towards zero as it is reincorporated.

FURTHER READING

This practical guide has been set out not only to provide guidance to authorities for the use of EU Ecolabel criteria in public contracts by recommending ready-to-use green criteria, but also to link to more detailed, market-based and science-based support for choosing these criteria in the first place.

More detailed research behind this practical guide can be found in the corresponding JRC report (Donatello et al., 2024). If readers want to know more about the full EU Ecolabel criteria for these products, they can be found online, as can supporting research reports (Donatello et al., 2018, Donatello et al, 2021).

REFERENCES

[1] Donatello, S., Perez Camacho, M.N. and Wolf, O., Background report to the guide for the use of the EU Ecolabel. In the green public procurement of hard covering products (of natural stone, agglomerated stone, ceramic or precast concrete), Publications Office of the European Union, Luxembourg, 2024, doi:10.2760/08280, JRC131863.

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[4] EC, 2010. Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel. OJ L 27, 30.1.2010, p.1-19.

[5] Requena-Mullor M., Alarcón-Rodríguez R., Parrón-Carreño T., Martínez-Lopez J.J., Lozano-Paniagua D. and Hernández A.F., 2021. Association between Crystalline Silica Dust Exposure and Silicosis Development in Artificial Stone Workers. Int. J. Environ. Res. Public Health, June, 18(11): 5625, doi:10.3390/ijerph18115625.

DISCLAIMER OR OTHER FINAL DETAILS

Generally speaking, these criteria can be copy-pasted into calls for competition so long as the subject matter of the contract is relevant. Care should be taken that these criteria do not end up discriminating against hard covering products made of natural stone, agglomerated stone, ceramic/fired clay or precast concrete. To avoid this, the subject matter should be clearly defined for these materials, or the criteria should be used exclusively as award criteria instead of technical specifications.

Compliance with the criteria recommended here can be assured by relevant hard covering products carrying the EU Ecolabel. In some cases, other labels may be considered as proof of compliance too, but this can change over time as criteria for other ecolabels are updated. In all cases, allowance must be made for equivalent means of proof for products with no label.

Procurers can require the above-mentioned and recommended ecolabels as means of proof that the works, services or supplies comply with the proposed formulation of EU GPP criteria. Pursuant to Article 43 of Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC procurers remain free to further assess and/or use any other Ecolabels as means of proof.

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