

Road Construction and Traffic Signs – Green Public Procurement Product Sheet

Green Public Procurement (GPP) is a voluntary instrument. This Product Sheet provides a summary of the GPP procurement criteria developed for the road construction and traffic signs product group. The accompanying Background Report provides full details on the reasons for selecting these criteria and references for further information. **The Background report also explains the reason for devising the criteria in the form of guidelines rather than specific quantitative criteria:** although life cycle studies have been undertaken indicating the main areas of impact, to date there are no definitive answers in terms of benchmarking the environmental aspects of road construction, in particular with a view to using them as procurement criteria. Nonetheless, the environmental impact of road construction, maintenance and use is recognised and concomitantly there is a large amount of investment in researching the various issues. The following criteria (guidelines) have therefore been devised.

The format for the purchasing recommendations comes in the form of two sets of criteria:

- The **core criteria** are those suitable for use by any contracting authority across the Member States and address the key environmental impacts for the product in question. They are designed to be used with minimum additional verification effort or cost increases.
- The **comprehensive criteria** are for those procurers wishing to purchase the best products available on the market. These may require additional verification effort or a slight increase in cost compared to other products with the same functionality.

Within the core and comprehensive criteria, the guidance follows the various stages of a public procurement procedure and explains how best to integrate environmental criteria at each stage:

- Subject matter. It means the title of the tender, i.e. a short description of the product, works or service to be procured.
- Technical Specifications. Provide a clear, accurate and full description of the requirement and standard to which goods, works or services should conform. Description of the minimal technical specifications which all bids need to comply with. Set specific environmental criteria, including hurdles and levels that need to be met for specific products.
- Selection Criteria. It is based in the capacity / ability of the bidders to perform the contract. Assist in the identification of appropriate suppliers, for example to ensure adequately trained personnel or relevant environmental policies and procedures are in place.
- Award Criteria. The award criteria on the basis of which the contracting authority will compare the offers and base its award. Award criteria are not pass/fail criteria, meaning that offers of products that do not comply with the criteria may still be considered for the final decision, depending on their score on the other award criteria.
- Contract Performance Clause. Specify the conditions that must be met in the execution of the contract, for example as to how the goods or services are to be supplied, including information or instructions on the products to be provided by the supplier.

It should be noted that the contractor is bound by the existing legal framework.

Where the verification for the criteria states that other appropriate means of proof can be used, this could include a technical dossier from the manufacturer, a test report from a recognised body, or other relevant evidence. The contracting authority will have to satisfy itself on a case by case basis, from a technical/legal perspective, whether the submitted proof can be considered appropriate.

1. Definition and Scope

For the purpose of defining these green public procurement criteria (guidelines), this product group is split into two categories:

- Road construction.
- Traffic signs.

Road construction is defined as the preparation and building of a road using materials, including aggregate, bituminous binders and additives that are used for the sub-base, road-base and surfacing layers of the road.

Traffic signs have three elements: sign facings (containing the sign's message), substrates (the backing material onto which the facing is attached) and the fixing (the posts or frame onto which the sign is mounted).

The scope of this product group does not cover road marking materials, such as paints, other items of road furniture, such as pedestrian walkways, bollards, overhead gantries and central reservations or public street lighting or traffic signals. For information on the latter, please refer to the separate Product Sheet for Street Lighting and Traffic Signals. Similarly, the guidance within this document does not extend to cover the foundations or lighting of traffic signs.

2. Key Environmental Impacts

The greatest environmental impact from road construction is from the combustion of fossil fuels: the emission of carbon dioxide (CO₂) and nitrogen dioxides (NO₂), contributing to GHG emissions and global warming, atmospheric pollution (ground level ozone creation and acidification) as well as nutrient enrichment. These emissions are spread across the entire life of the road, with the production of materials and construction of the road contributing roughly half the emissions and 100 years of maintenance and operation contributing the other half of emissions.¹ Actual real-life impacts will be determined and affected by terrain, geography and climate.

The materials used in the construction of the road have varying impacts. Asphalt was found in one study to have the largest contribution to the environmental impacts above even though it only constitutes up to 25 % of the material used in a road. This was due to the inherent or feedstock heating value of the bitumen. Other studies take a full lifecycle approach, as demonstrated in the Background Report. It should be noted that other sources highlight some cement-based materials as having a greater environmental impact than asphalt based products.² The use of natural aggregate and crushed rock was also highlighted due to their consumption of non-renewable materials, quarrying impacts and transportation for road construction. During road maintenance, the study also found that road salting could pollute large amounts of groundwater/surface water in the area near the road. However, the impact of resource consumption including energy use was found to account for at least ten times more impact than other impact categories, such as water pollution listed above.

For traffic signs the greatest environmental gains can be made by designing materials to be durable and recyclable and subsequently recycling them at their useful end of life. Other improvements can be made in maximising energy efficiency of the production process.

Therefore, the main areas for potential in reducing the environmental impact of road construction lie in:

- Energy consumption.
- Recycled content.
- Hazardous substances – volatile organic chemicals and heavy metals.

¹ Birgisdóttir, et al. (2006) Environmental Impact of roads constructed with and without bottom ash from municipal solid waste incineration. *Transportation Research Part D, Vol 11, pg 358-368*

² <http://www.thegreenguide.org.uk>

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Whilst the additional and more comprehensive green procurement criteria cover other environmental impacts related to:

- Drainage requirements.
- Noise pollution.
- Air pollutants.

For traffic signs green procurement criteria have been developed along the lines of reduced raw material use, energy efficiency in manufacture, and maximising product lifetime, durability and recyclability.

Some ecolabels and GPP guidance exist for road construction and traffic signs that describe the environmental impacts of these products in a largely qualitative way. There is a general agreement that this is a complex area in which a great deal of research and development is currently being undertaken. Although life cycle studies have been undertaken indicating the main areas of impact, to date there are no definitive answers in terms of benchmarking the environmental aspects of road construction, in particular with a view to using them as procurement criteria. Furthermore, there is a very wide range of road types depending on a variety of factors, not limited to terrain, climate, volume and type of traffic and choice of materials. As such, setting a set of standards or benchmarks might not be appropriate. Nonetheless, the environmental impact of road construction, maintenance and use is recognised and concomitantly there is a large amount of investment in researching the various issues.

The case is similar for traffic signs in that the available information states that there are no clearly preferable materials in terms of sustainability for traffic signs and that the main environmental benefits are through recycling of materials at the end of the product's life.

Therefore, due to the research currently being undertaken in this area it was felt that it would be more appropriate to provide the criteria in the form of guidelines to the environmental impacts related to road construction and traffic sign materials rather than specific quantitative criteria. This would be presented as a framework of environmental impacts that should be considered in any tendering exercise, largely as award criteria, and information sought from bidders and potential contractors. Local circumstances will dictate what is appropriate to request in terms of the profile and characteristics of a road and its effect on the surroundings, similarly for traffic signs.

Key Environmental Impacts	GPP Approach
<ul style="list-style-type: none"> • Extraction and use of raw materials. • Energy required to produce raw materials and subsequent products. • Energy consumption during the construction of the road. • Pollution of air, land and water due to the use of fossil fuels to power machinery. • Generation of waste material, including hazardous wastes. • Noise and visual impacts. 	<ul style="list-style-type: none"> • Reuse of road building material where possible. • Use secondary aggregate where possible. • Reduce energy use during production. • Reduce energy intensity of construction through the purchase of energy efficient machinery. • Use road surfacing materials that do not contain, or have low concentrations of, hazardous materials such as heavy metals. • Waste reduction through using recycled materials, recycling wastes where possible and extending product lifetimes. • Promoting materials and construction approaches that reduce noise and visual impacts. • Promoting design and materials facilitating the end-of-life recycling processes.

Please note that the order of impacts does not necessarily translate to the order of their importance.

3. GPP Procurement Criteria for Road Construction

3.1. Core GPP Procurement Criteria for Road Construction

SUBJECT MATTER
Construction of new roads, or renovation of existing roads, using environmentally sound construction methods and materials.

SELECTION CRITERIA
<p>1. The bidder must demonstrate a technical capacity to take the necessary environmental management measures in order to ensure that the construction works are executed in an environmental sound way.</p> <p>The bidder must demonstrate its technical capacity to put into place certain environmental management measures that meet the following requirements:</p> <ul style="list-style-type: none">• Ensuring effective protection of fauna and flora in the building area and its surroundings (where construction takes place in an environmentally sensitive area).• Measures to prevent any harmful waste and hazardous substances flows that may adversely impact on the area.• Environmental management measures aimed at minimising waste production on the site, respecting noise regulations, avoiding traffic congestion. <p>Verification: Possible means of proof include EMAS and ISO 14001 certificates or equivalent certificates issued by bodies conforming to Community law or the relevant European or international standards concerning certification based on environmental management standards. Other means of evidence provided by the bidder that can prove the required technical capacity will also be accepted.</p>

AWARD CRITERIA
<p>1. Secondary aggregate and recycled materials should be used when laying or re-laying road surfaces, provided it complies with the relevant national standards for road quality and durability and where the environmentally preferable solution does not negatively impact on the safety of the road. The contractor shall provide data on the content of the materials it is proposing to use.</p> <p>Verification: The bidder must provide information and data as necessary on the type and amount of secondary and recycled material it is proposing to use.</p>
<p>2. The durability and performance characteristics (such as resistance to fragmentation, freezing and thawing) and resistance to chemical degradation (such as sulphate-induced heave) should be considered when selecting materials.</p> <p>Verification: The bidder must provide appropriate proof that this criterion is met.</p>
<p>3. Energy consumption throughout the lifecycle (from raw material production to paving) should be evaluated and reduced.</p> <p>Verification: The bidder must provide appropriate proof that this criterion is met. The contracting authority should state in the tender document what format the information should be presented in.</p>

CONTRACT PERFORMANCE CLAUSES

1. During both construction and maintenance phases, materials and design of roads and surrounding infrastructure should adhere to the principles of Sustainable Urban Drainage Systems (SUDS) to reduce the impact of rainwater run-off on surrounding surface and ground waters.

Verification: Bidders must provide a signed declaration indicating that their product satisfies this criterion.

3.2. Comprehensive GPP Procurement Criteria for Road Construction

SUBJECT MATTER

Construction of new roads, or renovation of existing roads, using environmentally sound construction methods and materials.

SELECTION CRITERIA

1. The bidder must demonstrate a technical capacity to take the necessary environmental management measures in order to ensure that the construction works are executed in an environmental sound way.

The bidder must demonstrate its technical capacity to put into place certain environmental management measures that meet the following requirements:

- Ensuring effective protection of fauna and flora in the building area and its surroundings (where construction takes place in an environmentally sensitive area),
- Measures to prevent any harmful waste and hazardous substances flows that may adversely impact on the area;
- Environmental management measures aimed at minimising waste production on the site, respecting noise regulations, avoiding traffic congestion.

Verification: Possible means of proof include EMAS and ISO 14001 certificates or equivalent certificates issued by bodies conforming to Community law or the relevant European or international standards concerning certification based on environmental management standards. Other means of evidence provided by the bidder that can prove the required technical capacity will also be accepted.

AWARD CRITERIA

1. Secondary aggregate and recycled materials should be used when laying or re-laying road surfaces, provided it complies with the relevant national standards for road quality and durability and where the environmentally preferable solution does not negatively impact on the safety of the road. The contractor shall provide data on the content of the materials it is proposing to use.

Verification: The bidder must provide information and data as necessary on the type and amount of secondary and recycled material it is proposing to use.

2. The durability and performance characteristics (such as resistance to fragmentation, freezing and thawing) and resistance to chemical degradation (such as sulphate-induced heave) should be considered when selecting materials.

Verification: The bidder must provide appropriate proof that this criterion is met.

3. The use of materials that reduce fuel consumption of vehicles travelling on the road

<p>and hence reduce emissions to the environment during the use phase of the road should be considered over poorer performing materials where the environmentally preferable solution does not negatively impact on the safety of the road.</p> <p>Verification: The bidder must provide appropriate proof that this criterion is met.</p>
<p>4. The use of materials that reduce the noise impact of vehicles travelling on the road should be considered over poorer performing materials where the environmentally preferable solution does not negatively impact on the safety of the road.</p> <p>Verification: The bidder must provide appropriate proof that this criterion is met.</p>
<p>5. The use of materials that reduce the abrasion of surface material should be considered over poorer performing materials where the environmentally preferable solution does not negatively impact on the safety of the road.</p> <p>Verification: The bidder must provide appropriate proof that this criterion is met.</p>
<p>6. Energy consumption throughout the lifecycle (from raw material production to paving) should be evaluated and reduced.</p> <p>Verification: The bidder must provide appropriate proof that this criterion is met. The contracting authority should state in the tender document what format the information should be presented in.</p>
<p>7. The bidder shall provide details of actions to mitigate emissions of volatile organic compounds (VOC), dust, SO₂, NO_x and polycyclic aromatic hydrocarbons (PAH) during the road construction process.</p> <p>Verification: The bidder must provide appropriate proof that this criterion is met.</p>

CONTRACT PERFORMANCE CLAUSES

<p>1. During both construction and maintenance phases, materials and design of roads and surrounding infrastructure should adhere to the principles of Sustainable Urban Drainage Systems (SUDS) to reduce the impact of rainwater run-off on surrounding surface and ground waters.</p> <p>Verification: Bidders must provide a signed declaration indicating that their product satisfies this criterion.</p>
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3.3. Explanatory Notes

1. Award Criteria: Contracting authorities will have to indicate in the contract notice and tender documents how many additional points will be awarded for each award criterion. Environmental award criteria should, altogether, account for at least 10 to 15 % of the total points.
2. Contracting authorities should conduct an environmental impact assessment of the proposed construction during the planning phase of the road. This should consider the geography (e.g. flora and fauna, proximity to houses – impact of noise, light and emissions), climate and drainage requirements of the proposed site so that the correct materials and machinery are used. The environmental impacts of the proposed project should be prioritised and be used to prioritise the weighting given to the criteria used in the tender contract.

3. Early inclusion of sustainable urban drainage systems (SUDS) in construction plans can protect and enhance water quality and protect biodiversity in the area around the road. There are many SUDS designs, each with benefits for different sites, e.g. source control techniques to reduce the quantity of runoff from the site, permeable conveyance systems to slow the velocity of runoff to allow settlement filtering and infiltration, and end of pipe systems to provide passive treatment of collected surface water before discharge into groundwater or to a watercourse.³
4. Additional points can be awarded to any bidder who provides a solution with higher specifications than those laid down as basic requirements by the contracting authority.

³ Environment Agency, Sustainable Drainage Systems (SUDS): An Introduction.
<http://publications.environment-agency.gov.uk/pdf/GEHO0308BNSS-e-e.pdf>

4. GPP Procurement Criteria for Traffic Signs

4.1. Core GPP Procurement Criteria for Traffic Signs

SUBJECT MATTER
Purchase of environmentally sound traffic signs.

AWARD CRITERIA
<p>1. Recycled materials should be used when manufacturing the traffic sign, provided they comply with the relevant national standards for traffic signs. The bidder shall provide data on the content of the materials used.</p> <p>Verification: The bidder must provide information and data as necessary on the type and amount of recycled material used.</p>
<p>2. The traffic sign product shall be durable and recyclable at the end of its useful life.</p> <p>Verification: The bidder must provide information and data as necessary on the predicted lifetime of the traffic sign as well as information on how it can be recycled at the its end of life.</p>

4.2. Comprehensive GPP Procurement Criteria for Traffic Signs

SUBJECT MATTER
Purchase of environmentally sound traffic signs.

AWARD CRITERIA
<p>1. Recycled materials should be used when manufacturing the traffic sign, provided they comply with the relevant national standards for traffic signs. The bidder shall provide data on the content of the materials used.</p> <p>Verification: The bidder must provide information and data as necessary on the type and amount of recycled material used</p>
<p>2. The traffic sign product shall be durable and recyclable at the end of its useful life.</p> <p>Verification: The bidder must provide information and data as necessary on the predicted lifetime of the traffic sign as well as information on how it can be recycled at the its end of life.</p>
<p>3. The use of materials that reduce the visual impact of the road construction should be considered over visually intrusive materials; for example, the material used may negate the need for additional street lighting thus reducing the night-time visual impact.</p> <p>Verification: The bidder must provide information and data as necessary on the benefits of the material in terms of reducing visual impact.</p>
<p>4. Energy consumption and CO2 emissions should be evaluated and reduced, particularly in the manufacture phase.</p>

Verification: The bidder must provide information on the energy consumption of manufacturing and installing their product and a written guarantee that this criterion will be met.

4.3. Explanatory notes:

1. Award Criteria: Contracting authorities will have to indicate in the contract notice and tender documents how many additional points will be awarded for each award criterion. Environmental award criteria should, altogether, account for at least 10 to 15 % of the total points.
2. Contracting authorities should conduct an environmental impact assessment (EIA) of the proposed construction during the planning phase of the road. This should consider the geography (e.g. flora and fauna, proximity to houses – impact of noise, light and emissions), climate and drainage requirements of the proposed site so that the correct materials and machinery are used. The environmental impacts of the proposed project should be prioritised and be used to prioritise the weighting given to the criteria used in the tender contract.

5. Cost Considerations

The cost of a road will be split across the construction and maintenance phases. The proportion of the costs falling in each segment will be determined by the design of the road, its intended lifespan and the materials and machinery used for construction and maintenance. The environmental impact of the road is directly influenced by the same factors.

A study conducted by the European Investment Bank in 2006 found that road construction projects funded through public-private partnerships (PPP) exhibit higher up-front costs than traditional non-PPP projects. This occurs because PPP contracts combine the costs of construction, operation and maintenance, creating an incentive for the private sector partner to invest in materials and equipment at the construction stage that will ensure lower lifecycle operation and maintenance costs across the life of the road.⁴ This higher initial cost may therefore lead to lower overall costs across the life of the road and less disruption for traffic due to less frequent repairs. This demonstrates the need to take decisions based on the life cycle cost of the project/construction works.

The use of recycled aggregate is being encouraged to eliminate the environmental impact of road construction; however in countries where natural aggregate is abundant the economic benefits of using secondary aggregates are not significant. With fuel prices rising globally this could change, for example, by using locally available recycled and secondary aggregates over 300,000 km of lorry movements, which would have consumed 128,000 litres of fuel, were saved in the construction of the a town bypass in the UK.⁵ Consideration must also be given to the avoidance of waste disposal charges if recycled or secondary aggregate is used.

In terms of the cost of traffic signs the first stage is to decide how many and of what size and quality are required. There is a body of evidence that suggests overuse of signs can cause confusion and accidents. The visual content of the signs should also be kept to a minimum, for example UK road guidance recommends that the total number of destinations on a directional sign should not exceed six.⁶

As discussed in Section 4.2.2 of the Technical Background Report, the Belgian Road Research Centre has undertaken research into the impacts of manufacturing and using cold asphalt as opposed to the more conventional hot asphalt. The findings showed that whilst it might save energy and therefore cost of production it has the trade off in that it has to be replaced more frequently, thus incurring maintenance and capital costs.

Similarly there is a Dutch example, described in Section 6.17.1 of the Technical Background Report, which shows that whilst you can re-use older tar-containing road aggregate materials you still have to undertake certain restorative procedures to extract the useful aggregate material and reduce the environmental impact of the tar; the consequence is whilst there is lower raw material consumption (aggregate) there could be an increase in the energy consumed in this process.

Ideally therefore when two or more such options are available comparative life cycle analyses of the environmental effects and concomitant cost-benefit analysis of the whole life costs should be undertaken to understand where the balance of impacts lies and thus which option is the most suitable for the intended purpose. Care should be taken at all times to ensure the environmentally preferable solution does not negatively impact on the safety of the road.

⁴ European Investment Bank (2006) Ex Ante Construction Costs in the European Road Sector: A Comparison of Public-Private Partnerships and Traditional Public Procurement (Economic and Financial Report 2006/01)

⁵ <http://www.contractjournal.com/Articles/2007/08/22/55985/recycled-aggregates-are-the-future-specialist-focus-quarrying.html>

⁶ Design manual for roads and bridges. Volume 8: Traffic Signs and Lighting. (Feb 2004)

6. Relevant EU legislation and information sources

6.1 EU legislation

- The Construction Products Directive (CPD) 89/106/EEC
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31989L0106:en:HTML>
- Council Directive 93/68/EEC amending many Directives including 89/106/EEC (construction products)
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31993L0068:EN:HTML>
- The REACH Regulation 1907/2006
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:396:0001:0849:EN:PDF>
- The Hazardous Waste Directive (HWD) 91/689/EC
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31991L0689:EN:HTML>
- The Waste Framework Directive 2008/98/EC
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0003:EN:PDF>
- The European Waste Catalogue (EWC)
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32000D0532:EN:HTML>
- The Landfill Directive 1999/31/EC
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31999L0031:EN:HTML>
- The Integrated Pollution Prevention and Control Directive 2008/1/EC
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:024:0008:0029:EN:PDF>
- The Water Framework Directive (WFD) 2000/60/EC
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:327:0001:0072:EN:PDF>
- The Chromium (VI) Directive 2003/53/EC
http://eur-lex.europa.eu/pri/en/oj/dat/2003/l_178/l_17820030717en00240027.pdf
- Directive 2006/38/EC of the European Parliament and of the Council of 17 May 2006 amending Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures
http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexplus!prod!CELEXnumdoc&lg=EN&numdoc=32006L0038
- The Classification, Packaging and Labelling of Dangerous Substances Directive 67/548/EEC
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31967L0548:EN:HTML>
- The CLP Regulation (EC) No 1272/2008
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:353:0001:1355:en:PDF>
- The EU Climate-energy Package
- UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP)
<http://www.unece.org/env/lrtap/>

- Environmental Impact Assessment Directive 85/337/EEC
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31985L0337:EN:NOT>
- Soil Framework Directive
http://ec.europa.eu/environment/soil/index_en.htm

6.1. Ecolabels and other criteria sources

- Hungarian Eco-label: Bituminous road pavements and road surface coats for maintenance
<http://www.kornyezetbarat-termek.hu/afr311.htm>
- Netherlands Ecolabel, Milieukeur, *Betonbanden, betonstraatstenen en betontegels*
<http://www.milieukeur.nl/nl-NL/Content.aspx?type=criteria&id=8>
- German Blue Angel Label: Low-Solvent Bitumen Coatings and Adhesives.
http://www.blauer-engel.de/downloads/vergabegrundlagen_en/e-UZ-115.pdf
- Czech Republic Ecologically Friendly Product label: Abrasive light aggregate spreading material for winter maintenance of roadways
[http://www.env.cz/osv/edice.nsf/dc5eea7884f86f6ac12570110041b047/\\$file/d5.htm](http://www.env.cz/osv/edice.nsf/dc5eea7884f86f6ac12570110041b047/$file/d5.htm)
- Good Environmental Choice Australia (GECA) Standard: Recycled Rubber Products
<http://www.aela.org.au/StandardsRegister.htm>
- Environment Canada's Environmental Choice Program: Asphalt and Concrete Release Agents
<http://www.ecologo.org/>
- Japanese Eco Mark: Products for "Civil Engineering Version 1.8"
<http://www.ecomark.jp/english/pdf/131eC18.pdf>
- Korea Ecolabel:
 - Water-permeable Concrete Pavements.
 - Recycled Construction Material.
 - Recycled Slag Products.http://www.koeco.or.kr/eng/business/business01_03.asp?search=1_3
- Enrobé à Module Elevé (EME2)
http://www.trl.co.uk/store/report_detail.asp?srid=2781&pid=174