

## **Request for tender regarding the robustness validation of the draft methods for eluate and content analysis of organic substances**

For the robustness validation of the draft TSs 00351024 and 00351026, being the 'umbrella standards' for analysis and content of **organic substances** in and from construction products, the CEN/TC 351/WG 5 Evaluation Committee has prepared this request for tender.

The most recent drafts (as confirmed by the members of WG 5 in November 2016) of both documents are available as CEN/TC 351 documents:

- N 0685 Content of organic substances (work item 00351024) (CEN/TC 351/WG 5 N 0352)
- N 0686 Analysis of organic substances in eluates (work item 00351026) (CEN/TC 351/WG 5 N 0353)

The umbrella standards, by their nature, refer to existing and commonly used analysis methods which are assumed available with interested laboratories.

### **The work**

The work consists of two parts:

1. Examination of suitability of content analysis methods from other fields for organic substances in construction products, and
2. Examination of suitability of analysis methods from other fields for organic substances in eluates from construction products.

### **Replies**

Reply to the tender may be provided by one organization or one organization using subcontracts. Offers for the entire project as specified in Annex A are preferred, but offers for one of the parts may be submitted too.

Offers are welcomed by the CEN/TC 351 secretariat by **1 February 2017**.

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### **Annexes to this document**

Annex A to this document is the work programme for the robustness validation.

Annex B to this document describes the procedure of assessment of the offers.

### **Circulation**

This request is circulated in both the plenary CEN/TC 351 and its WG 5, and published on the websites of CEN and NEN.

# Annex A: Work programme for the robustness validation process for analysis of organic substances in eluates and content analysis of organic substances in construction products

## 1. Introduction

### 1.1 General

CEN/TC 351 'Construction products: Assessment of release of dangerous substances' was established in 2005 to execute the Mandate 366<sup>1</sup>.

The present robustness validation project aims at establishing the suitability of the following two 'umbrella' standards referring to existing methods of analysis:

1. Content of organic substances in construction products (WI 00351024);
2. Analysis of organic substances in eluates from construction products (WI 00351026).

The main aspect to be covered is to ensure that methods selected are sufficiently sensitive to allow regulatory limits to be assessed with sufficient precision to draw conclusions on acceptability.

The associated analytical methods need to be verified for suitability by carrying out repeatability measurements.

Regarding the **content** analysis, the robustness validation involves, besides existing established methods, the following newly developed draft standard of CEN/TC 351:

- N 0685 Content of organic substances (work item 00351024) (CEN/TC 351/WG 5 N 0352).

Regarding the analysis of **eluates**, the robustness validation involves, besides existing established methods, the newly developed draft standard of CEN/TC 351:

- N 0686 Analysis of organic substances in eluates (work item 00351026) (CEN/TC 351/WG 5 N 0353).

### 1.2 Eluate analysis for organic substances

In the draft umbrella standard for analysis of eluates (work item 00351026; CEN/TC 351 N 0686) no reference is made to the origin of the eluate. For the present robustness validation project eluates from leaching tests according to CEN/TS 16637-2:2014 and CEN/TS 16637-3:2016 shall be used.

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1 Mandate 366: Horizontal complement to the mandates to CEN/CENELEC concerning the execution of standardisation work for the development of horizontal standardised assessment methods for harmonised approaches relating to dangerous substances under the construction products directive (CPD) – Emission to indoor air, soil, surface water and ground water. Available from [www.cen351.org](http://www.cen351.org).

## 2. Part 1: Suitability of content analysis methods from other fields for construction products

### 2.1 Selection of materials for content analysis

For the robustness work sample material and a CRM will be supplied. The number and type of samples from construction products and the approximate quantities needed are given below:

Test	Number of samples	Number of tests to run	Quantity
Extraction and extract analysis	15	23	1 kg per granular sample or grinded monolithic product

The construction products, with the relevant product hENs and mandates, are in Table 2.1.

NOTE 1 The construction products in the table are selected as being representative for the various types of products covered by Mandate/366. Products have been selected based on relatively high and expected low concentrations of substances of interest. The sensitivity of the method for the various construction product matrices (mineral products; bituminous products; wood-based products; plastics and rubbers; organic sealants and adhesives) is based on one representative product selected from each category.

**Table 2.1 – Construction products for content analysis, with hENs and mandates**

Granular product	hEN	Mandate
1. Asphalt aggregate	EN 13242	M/125
2. Recycled mixed aggregate	EN 13242	M/125
3. Rubber crumbs	EN 14904	M/119
Monolithic product	hEN	Mandate
4. Asphalt concrete	EN 13108-1	M/124
5. Insulation foam (PEF or FEF)	EN 14313	M/103
6. Plastic product (CRM; to be determined)	n/a	n/a
7. PVC flooring (old)	EN 14041	M/119
8. Render 1 (organic based; containing Diuron and other biocides)	EN 998-1	M/116
9. Render 2 (organic based; containing Terbutryn and other biocides)	EN 998-1	M/116
10. Roofing felt (Bitumen shingles)	EN 544	M/121, M/122
11. Sealant 1 (containing phthalates)	EN 15651-1 or EN 16561-3	M/474
12. Sealant 2 (containing biocides)	EN 15651-1 or EN 16561-3	M/474
13. Treated wood (piece)	EN 14229	M/112

*Table 2.1 (see next page)*

Table 2.1 (end)

Monolithic product	hEN	Mandate
14. Water proofing sheets	EN 13956	M/102
15. Wood powder (CRM)	n/a	n/a

All products will be supplied with size-reduced to 95 % < 0,25 mm.

The analysis methods to be used by substance or substance group are in Table 2.2.

NOTE 2 In the final robustness testing programme, there might be minor changes to the sample matrices to be assessed. However, the number of tests to run and the analysis methods will not change.

**Table 2.2 – Methods for content analysis to be used per substance or substance group and product**

Granular product	Specific substances	Methods to be used	#
1. Asphalt aggregate	PAH	NEN 7331 – PAH part	1.
	BTEX	NEN 7331 – BTEX part	2.
	Mineral oil	EN 14039	3.
2. Recycled mixed aggregate	PAH	CEN/TS 16181 (GC-MS part)	4.
	PCB	EN 16167	5.
	Mineral oil	EN 14039	6.
3. Rubber crumbs	PAH	NEN 7331 – PAH part	7.
	Dioxins, furans and dioxin-like PCBs	CEN/TS 16190	8.
Monolithic product	Specific substances	Method(s) to be used	#
4. Asphalt concrete	PAH	NEN 7331 – PAH part	9.
		CEN/TS 16181 (with cryogenic pre-treatment of NEN 7331)	10.
5. Insulation foam (PEF or FEF)	SCCP	EN ISO 18219	11.
6. Plastic product (CRM)	PBDE	EN ISO 22032	12.
7. PVC Flooring (old)	Phthalates	CEN/TS 16183	13.
8. Render 1	Nonylphenol (spiked)	CEN/TS 16182	14.
	Organotin (from biocides, spiked)	EN ISO 23161	15.
	Diuron, OIT, BIT, MIT	EN 15637	16.
9. Render 2	Terbutryn, OIT, BIT, MIT	EN 15637	17.
10. Roofing felt (Bitumen shingles)	PAH	NEN 7331 – PAH part	18.
11. Sealant 1	Phthalates	CEN/TS 16183	19.

Table 2.2 (see next page)

Table 2.2 (end)

Monolithic product	Specific substances	Method(s) to be used	#
12. Sealant 2	BIT, CIT, MIT	EN 15637	20.
13. Treated wood (piece)	Propiconazole, tebuconazole	EN 15637	21.
14. Water proofing sheets	Phenols	ISO 14154	22.
15. Wood powder (CRM)	Pentachlorophenol	CEN/TR 14823	23.

## 2.2 Robustness testing of extraction and subsequent content analysis

### 2.2.1 Extraction

Extraction of organic substances is an integral part of the standards referenced.

### 2.2.2 Analysis

All analyses per method, per substance (group) and per extraction method shall be done in 5 fold, as the combinations <extraction method – analytical method> need to be verified for suitability for construction products by carrying out repeatability measurements.

The repeatability of the measurements shall be presented in tabular form as well as in graphical form (percentage standard deviation on y-axis as a function of concentration in solution on x-axis). Comprehensive raw data shall be presented in an annex and made available in electronic form.

The main topic for this study on robustness will be to demonstrate if the repeatability is good and the sensitivity of the methods proposed is adequate for the existing regulatory requirements in Europe.

## 2.3 Deliverables and reports

*REMARK: As the actual analysis can only start when the samples are with the testing laboratory, the schedule for the deliverables is set in relation to the date of receipt of the samples. The preparation of the samples is a process parallel to this call for tender, and assumed to be finalised at the date of assignment.*

The expected results and deliverables of the project are as follows:

- At least one progress report on the details of the action's implementation and its presentation in WG 5 (deadline for submission: 2 months after receipt of the samples);
- One final technical implementation report for the adaptation of the examined methods (work item 00351024 including precise proposals for adjustment of this draft TS on the basis of the results of the robustness validation, including advice on possible further integration of analysis methods for organics (deadline for submission: 5 months after receipt of the samples).

This final technical implementation report shall, in draft form, consist of a statistical evaluation of all data generated (e.g. informative annexes, tables of results, test reports, outlines and flowcharts of the procedures followed), conclusions on suitability of the methods and recommendations for improvement of the harmonised method considered necessary, which can support the standardisation of the examined umbrella document and its publication as TS.

- One comprehensive final report consisting, in their final form, of a series of all necessary data elaborated and analysed (e.g. informative annexes, tables of results, test reports, outlines and flowcharts of the procedures followed, conclusions and definitions to the pass/fail criteria of the methods, final drafts and design of any adjustments on the harmonised method considered necessary), which can support the standardisation of the examined umbrella document and its publication as TS (deadline for submission: 8 months after receipt of the samples).

## 2.4 Budget

Offers for this part (as described in clause 2) shall include reporting and attending two meetings of CEN/TC 351/WG 5, in Brussels or in a location to be agreed on in WG 5.

## 3. Part 2: Analysis of organic substances in eluates

### 3.1 Selection of materials for eluate generation

For the robustness work the eluates and the CRM solution will be supplied. The number and type of eluates from construction products and the approximate quantities needed are given below:

Test	Number of eluates	Number of tests to run	Quantity for producing eluates
Eluate analysis	13	24 for 2 L/S ratios or 2 fractions = 48 tests	1 kg per granular sample or grinded monolithic product

The construction products, with the relevant product hENs and mandates, are in Table 3.1.

NOTE 1 The construction products in the table are selected as being representative for the various types of products covered by Mandate/366. Products have been selected based on relatively high and expected low concentrations of substances of interest. The sensitivity of the method for the various construction product matrices (mineral products; bituminous products; wood-based products; plastics and rubbers; organic sealants and adhesives) is based on one representative product selected from each category.

**Table 3.1 – Construction products for eluate generation, with hENs and mandates**

<b>Granular product</b>	<b>hEN</b>	<b>Mandate</b>
1. Asphalt aggregate	EN 13242	M/125
2. Recycled mixed aggregate	EN 13242	M/125
3. Rubber crumbs	EN 14904	M/119
<b>Monolithic product</b>	<b>hEN</b>	<b>Mandate</b>
4. Asphalt concrete	EN 13108-1	M/124
5. Plastic product (CRM, to be determined)	n/a	n/a
6. PVC flooring (old)	EN 14041	M/119
7. Render 1 (organic based; containing Diuron and other biocides)	EN 998-1	M/116
8. Render 2 (organic based; containing Terbutryn and other biocides)	EN 998-1	M/116
9. Sealant 1 (containing phthalates)	EN 15651-1 or EN 16561-3	M/474
10. Sealant 2 (containing biocides)	EN 15651-1 or EN 16561-3	M/474
11. Treated wood (piece)	EN 14229	M/112
12. Water proofing sheets	EN 13956	M/102
13. Wood powder (CRM)	n/a	n/a

The analysis methods to be used by substance or substance group are in Table 3.2.

NOTE 2 In the final robustness testing programme, there might be minor changes to the sample matrices to be assessed. However, the number of tests to run and the analysis methods will not change.

**Table 3.2 – Methods for eluate analysis to be used per substance or substance group and product**

<b>Granular product</b>	<b>Specific substances/(groups)</b>	<b>Methods to be used</b>	<b>#</b>
1. Asphalt aggregate	PAH	ISO 28540	1.
	BTEX	ISO 11423-1	2.
		EN ISO 15680	3.
		EN ISO 17943	4.
2. Recycled mixed aggregate	PAH	ISO 28540	5.
	Dioxins and furans	ISO 17858 or ISO 18073	6.
	PCB	ISO 17858	7.
	Mineral oil	EN ISO 9377-2	8.
3. Rubber crumbs	PAH	ISO 28540	9.
	Dioxins and furans	ISO 17858 or ISO 18073	10.
	Dioxin-like PCBs	ISO 17858	11.

*Table 3.2 (see next page)*

Table 3.2 (end)

Monolithic product	Specific substances	Method(s) to be used	
4. Asphalt concrete	PAH	ISO 28540	12.
5. Plastic product (CRM)	PBDE	EN 16694	13.
6. PVC Flooring (old)	Phthalates	EN ISO 18856	14.
7. Render 1	Nonylphenol	EN ISO 18857-2	15.
	Organotin (from biocides)	EN ISO 17353	16.
	Diuron, OIT, BIT, MIT	EN 15637	17.
8. Render 2	Terbutryn, OIT, BIT, MIT	EN 15637	18.
9. Sealant 1	Phthalates	EN ISO 18856	19.
10. Sealant 2	BIT, CIT, MIT	EN 15637	20.
11. Treated wood (piece)	Propiconazole, tebuconazole	EN 15637	21.
12. Water proofing sheets	Phenols	EN ISO 14402	22.
	Bisphenol-A	EN ISO 18857-2	23.
13. Wood powder (CRM)	Pentachlorophenol	EN 12673	24.

### 3.2 Provision of eluates

For every sample, two eluates will be provided on behalf of the CEN/TC 351 secretariat. The selected materials will be leached according to

- CEN/TS 16637-2, for monolithic products (analysis of fractions 1 and 3); and to
- CEN/TS 16637-3, in case of granular material (using fractions obtained at L/S=2 and L/S=10).

These ratios are chosen to have two concentration levels for analysis, and these are the most used L/S ratios.

### 3.3 Robustness testing of analysis of eluates

All analyses per method, per substance (group) and per eluate shall be done in 5 fold.

The repeatability of the measurements shall be presented in tabular form as well as in graphical form (percentage standard deviation on y-axis as a function of concentration in solution on x-axis). Comprehensive raw data shall be presented in an annex and in electronic form.

The main topic for this study on robustness will be to demonstrate if the repeatability is good and the sensitivity of the methods proposed is adequate for the existing regulatory requirements in Europe.



### 3.4 Deliverables and reports

*REMARK: As the actual analysis can only start when the samples are with the testing laboratory, the schedule for the deliverables is set in relation to the date of receipt of the samples. The preparation of the samples is a process parallel to this call for tender, and assumed to be finalised at the date of assignment.*

The expected results and deliverables of the project are as follows:

- At least one progress report on the details of the action's implementation and its presentation in WG 5 (deadline for submission: 2 months after receipt of the samples).
- One final technical implementation report for the adaptation of the examined methods (work item 00351026) including precise proposals for adjustment of this draft TS on the basis of the results of the robustness validation, including advice on possible further integration of analysis methods for organics (deadline for submission: 5 months after receipt of the samples).  
This final technical implementation report shall, in draft form, consist of a statistical evaluation of all data generated (e.g. informative annexes, tables of results, test reports, outlines and flowcharts of the procedures followed, conclusions on suitability of the methods and recommendations for improvement of the harmonised method considered necessary), which can support the standardisation of the examined umbrella document and its publication as TS.
- One comprehensive final report consisting, in their final form, of a series of all necessary data elaborated and analysed (e.g. informative annexes, tables of results, test reports, outlines and flowcharts of the procedures followed, conclusions and definitions to the pass/fail criteria of the methods, final drafts and design of any adjustments on the harmonised methods considered necessary), which can support the standardisation of the examined umbrella document and its publication as TS (deadline for submission: 8 months after receipt of the samples).

### 3.5 Budget

Offers for this part (as described in clause 3) shall include reporting and attending two meetings of CEN/TC 351/WG 5, in Brussels or in a location to be agreed on in WG 5.

## 4. Sampling requirements

The samples needed for the robustness study will be provided by producers/suppliers on behalf of a product TC, or prepared as results of separate sub-projects. CEN/TC 351/WG 5 is responsible for contacting the proper organizations to provide the names of producers willing to supply their products for testing in the robustness validation.

Sampling requirements are prepared under the responsibility of the evaluation team established at the WG 5 meeting of 27-28 June 2016. This implies that testing material shall be ready by the time the tender process and contract negotiations are completed.

#### 4.1 Content analysis

For content analysis of construction products size reduction is required to 95 % < 250 micrometres. PrEN 17087 (WI 00351027) on sample pre-treatment shall be applied. The materials as listed in the table in 2.1 shall be used for the robustness validation. Size reduced materials will be supplied.

#### 4.2 Eluate analysis

Eluates from construction products are generally clean, hence very limited sample pre-treatment is expected. Eluates for testing shall be generated according to the methods in CEN/TS 16637-2 and CEN/TS 16637-3. Eluates obtained by the specified methods will be supplied.

## 5. References

NOTE For easy finding, the documents are ordered according to their number, independent of their origin and status.

EN 544, *Bitumen shingles with mineral and/or synthetic reinforcements – Product specification and test methods*

EN 998-1, *Specification for mortar for masonry – Part 1: Rendering and plastering mortar*

NEN 7331, *Bitumen and bitumen containing materials – Determination of the content of polycyclic aromatic hydrocarbons (PAH), benzene, toluene, ethylbenzene and xylene (BTEX) – Gaschromatografic method with mass-spectrometric detection (in English)*

EN ISO 9377-2, *Water quality – Determination of hydrocarbon oil index – Part 2: Method using solvent extraction and gas chromatography (ISO 9377-2)*

ISO 11423-1, *Water quality – Determination of benzene and some derivatives – Part 1: Head-space gas chromatographic method*

EN 12673, *Water quality – Gas chromatographic determination of some selected chlorophenols in water*

EN 13108-1, *Bituminous mixtures – Material specifications – Part 1: Asphalt concrete*

EN 13242, *Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction*

EN 13956, *Flexible sheets for waterproofing – Plastic and rubber sheets for roof waterproofing – Definitions and characteristics*

EN 14039, *Characterization of waste – Determination of hydrocarbon content in the range of C10 to C40 by gas-chromatography*

EN 14041, *Resilient, textile and laminate floor coverings – Essential characteristics*

ISO 14154, *Soil quality – Determination of some selected chlorophenols – Gas-chromatographic method with electron-capture detection*

EN 14229, *Structural timber – Wood poles for overhead lines*

EN 14313, *Thermal insulation products for building equipment and industrial installations – Factory made polyethylene foam (PEF) products – Specification*

EN ISO 14402, *Water quality – Determination of phenol index by flow analysis (FIA and CFA)*

CEN/TR 14823, *Durability of wood and wood-based products – Quantitative determination of pentachlorophenol in wood – Gas-chromatographic method*

EN 14904, *Surfaces for sports areas – Indoor surfaces for multi-sports use – Specification*

EN 15637, *Foods of plant origin – Determination of pesticide residues using LC-MS/MS following methanol extraction and clean-up using diatomaceous earth*

EN 15651-1, *Sealants for non-structural use in joints in buildings and pedestrian walkways – Part 1: Sealants for facade elements*

EN 15651-3, *Sealants for non-structural use in joints in buildings and pedestrian walkways – Part 3: Sealants for sanitary joints*

EN ISO 15680, *Water quality – Gas-chromatographic determination of a number of monocyclic aromatic hydrocarbons, naphthalene and several chlorinated compounds using purge-and-trap and thermal desorption (ISO 15680)*

EN 16167, *Sludge, treated biowaste and soil – Determination of polychlorinated biphenyls (PCB) by gas-chromatography with mass selective detection (GC-MS) and gas-chromatography with electron-capture detection (GC-ECD)*

CEN/TS 16181, *Sludge, treated biowaste and soil – Determination of polycyclic aromatic hydrocarbons (PAH) by gas-chromatography (GC) and high performance liquid chromatography (HPLC)*

CEN/TS 16182, *Sludge treated biowaste and soil – Determination of nonylphenols (NP) and nonylphenol-mono- and diethoxylates using gas chromatography with mass selective detection (GC-MS)*

CEN/TS 16183, *Sludge, treated biowaste and soil – Determination of selected phthalates using capillary gas-chromatography with mass-spectrometric detection*

CEN/TS 16190, *Sludge, treated biowaste and soil – Determination of dioxins and furans and dioxin-like polychlorinated biphenyls by gas-chromatography with high resolution mass selective detection (HR GC-MS)*

CEN/TS 16637-2, *Construction products: Assessment of release of dangerous substances – Part 2: Horizontal dynamic surface leaching test*

CEN/TS 16637-3, *Construction products: Assessment of release of dangerous substances – Part 3: Horizontal up-flow percolation test*

EN 16694, *Water quality – Determination of selected polybrominated diphenyl ether (PBDE) in whole water samples – Method using solid phase extraction (SPE) with SPE-disks combined with gas chromatography – mass spectrometry (GC-MS)*

prEN 17087 (WI 00351027), *Construction products – Assessment of release of dangerous substances – Preparation of test portions from the laboratory sample for testing of release and analysis of content (under development in CEN/TC 351/WG 5) (CEN/TC 351/WG 5 N 0348)*

NOTE: This is the version as uploaded for CEN enquiry in November 2016.

EN ISO 17353, *Water quality – Determination of selected organotin compounds – Gas-chromatographic method (ISO 17353)*

ISO 17858, *Water quality – Determination of dioxin-like polychlorinated biphenyls – Method using gas chromatography/mass spectrometry*

EN ISO 17943, *Water quality – Determination of volatile organic compounds in water – Method using headspace solid-phase micro-extraction (HS-SPME) followed by gas chromatography-mass spectrometry (GC-MS) (ISO 17943)*

ISO 18073, *Water quality – Determination of tetra- to octa-chlorinated dioxins and furans – Method using isotope dilution HRGC/HRMS*

EN ISO 18219, *Leather – Determination of chlorinated hydrocarbons in leather – Chromatographic method for short-chain chlorinated paraffins (SCCP)*

EN ISO 18856, *Water quality – Determination of selected phthalates using gas chromatography/mass spectrometry (ISO 18856)*

EN ISO 18857-2, *Water quality – Determination of selected alkylphenols – Part 2: Gas chromatographic-mass spectrometric determination of alkylphenols,*

*their ethoxylates and bisphenol A in non-filtered samples following solid-phase extraction and derivatisation (ISO 18857-2)*

*EN ISO 22032, Water quality – Determination of selected polybrominated diphenyl ethers in sediment and sewage sludge – Method using extraction and gas-chromatography/mass spectrometry (ISO 22032)*

*EN ISO 23161, Soil quality – Determination of selected organotin compounds – Gas-chromatographic method (ISO 23161)*

*ISO 28540, Water quality – Determination of 16 polycyclic aromatic hydrocarbons (PAH) in water – Method using gas-chromatography with mass spectrometric detection (GC-MS)*

*WI 00351024, Construction products: Assessment of release of dangerous substances – Content of organic substances – Methods for extraction and analysis (under development in CEN/TC 351/WG 5) (CEN/TC 351 N 0685)*

*WI 00351026, Construction products: Assessment of release of dangerous substances — Analysis of organic substances in eluates (under development in CEN/TC 351/WG 5) (CEN/TC 351 N 0686)*

### **Background documents**

*CEN/TR 16045, Construction Products: Assessment of release of dangerous substances – Content of regulated dangerous substances – Selection of analytical methods*

*CEN/TR 16220 Construction products: Assessment of release of dangerous substances – Complement to sampling*

*CEN/TS 16637-1, Construction products: Assessment of release of dangerous substances – Part 1: Guidance for the determination of leaching tests and additional testing steps*

*EN 16687, Construction products: Assessment of release of dangerous substances – Terminology*

*EN ISO/IEC 17025, General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025)*

Available from [www.centc351.org](http://www.centc351.org):

*Reports on the Robustness validation of TS-2 and TS-3 (CEN/TC 351/WG 1)*

## Annex B: Assessment procedure

### 1. Selection Criteria for the tendering process

(1) Only projects that are strictly non-profit-making and/or whose immediate objective is non-commercial shall be eligible. Selection will be based on the following criteria:

#### 1) Documented experience

(maximum 45 points):

- number of years working in the field of eluate and content analysis from construction products;
- number of years working in the field of analysis and data processing and/or number of completed projects/publications confirming related technical experience and activities;
- number of years participating in European and/or international standardisation work in the field of release or content of dangerous substances from or in construction products into soil and groundwater and/or list of completed and running standardisation projects confirming related experience;
- description of actual experience in running European and/or international programs;
- list of publications in the field of eluate and content from construction products and related materials in peer reviewed journals;
- description of the quality assurance procedures for the required analyses.

#### 2) Organisation – demonstration of ability and understanding of the project

(maximum 35 points):

- proof of stable and sufficient sources of finance to ensure the continuity of the organisation throughout the project;
- description of infrastructure;
- submission of curriculum vitae of every person to be performing work in connection with the robustness project;
- delineation of organisation of the measurements;
- proof of an established quality system.

#### 3) Quotation price

(maximum 20 points):

- Only offers that pass the selection criteria of scoring minimum 30 points under 1) and 20 points under 2) will be further evaluated.

(2) The criteria shall be assessed on the basis of the documents supplied by the tender providers. The selection committee reserves the right to approach bidders' previous customers for reference. The sum of points acquired under 1) and 2) is divided by the number of points scored for the quotation price for the lot under 3). The offer with the highest ratio will be selected. However, in case the ratio of  $\{(1) + 2\}/3$  of the two best offers differs less than 10 %, the evaluation committee may decide to choose the offer with the best value (i.e. the highest sum of 1) + 2)).

(3) The selected offer is sent to the EC and to CEN/TC 351/WG 5 for confirmation. After confirmation, the work is assigned.

## 2 Replies to tender

(1) **Tenders** can be sent (by mail or e-mail) to the secretary of CEN/TC 351 as soon as possible, at **the latest by 1 February 2017**. Late delivery will lead to exclusion of the applicant from the award procedure. The tender shall contain a specified breakdown of tasks, costs and travel expenses and a planning for the execution of the tasks, for both parts or for part 1 or part 2.

(2) If necessary, additional information can be obtained by the secretary of CEN/TC 351, Ms Annemieke Venemans (Tel.: +31 15 269 02 80, e-mail [annemieke.venemans@nen.nl](mailto:annemieke.venemans@nen.nl)), or by the secretary of CEN/TC 351/WG 5, Mr Johan van 't Bosch (Tel. +31 15 269 03 74, e-mail [johan.vantbosch@nen.nl](mailto:johan.vantbosch@nen.nl)).

(3) NEN as holder of the secretariat of CEN/TC 351 is responsible for execution of the order vouchers for mandate M/366. In order to control the process, project management is held by NEN. The secretariat of CEN/TC 351/WG 5 “Eluate and content analysis of construction products” will be responsible for monitoring the technical progress.

(4) This means that contract and financial matters as well as monitoring of the general progress of the project and the communication with CCMC and CEN/TC 351 are under responsibility of NEN. The technical work (robustness studies) is conducted by a consortium or individual subcontracted parties appointed by the tender procedure specified in the present document.