



EUROPEAN COMMISSION

DIRECTORATE-GENERAL

TAXATION AND CUSTOMS UNION

Customs Policy, Legislation, Tariff

**Combined Nomenclature, Tariff Classification, TARIC and integration
of trade measures**

CUSTOMS2020 REPORT CLEN Action 2 Ring test on Ceramics and Pottery – Preparatory meeting –

15 October 2014 – Brussels, Belgium

Minutes reported by ^{CLEN}TAS, under contract TAXUD/2013/DE/325.

Final version, 19 January 2015.

Approved by the coordinator, the Action leader and the representative of DG TAXUD Unit A4

Approved by the meeting participants.

Approved by the Head of DG TAXUD Unit A4.

AGENDA

1. Welcome and adoption of the agenda.
2. Results of the first ring test carried out in 2010.
3. Results of a small ring test for ceramics recently organised by the Dutch Customs Laboratory.
4. Discussion and definition of the ring test: agreement on the objectives of the test, wishes in terms of samples, choice of parameters, choice of methods or recommendation, call for participation, test design and tentative time schedule.
5. Allotment of tasks for the ring test organisation.
6. Conclusions of this meeting of the preparatory group for definition of the ring test on ceramics and pottery.
7. Any other question.

ANNEXES

Annex I - List of participants

Annex II - Ring test on Ceramics & Pottery 2010, presentation by the chair (coordinator)

Annex III - Results of a small ring test for ceramics, presentation by the Dutch Customs Laboratory

I. Welcome and adoption of the agenda

The representative of DG TAXUD welcomed all the participants to this meeting. She suggested having a round table and the participants introduced themselves

The chair, coordinator of this ring test, welcomed the participants as well and presented the agenda, which was adopted without any modification.

II. Results of the first ring test on Ceramics and Pottery (2010)

The meeting started with a **presentation by the chair of the first ring test on Ceramics and Pottery**, which was carried out in 2010, as part of the Group of European Customs Laboratories (GCL, former name of the CLEN) Action 2 activities (*see Annex II*).

The chair presented the background of this test, which dealt with the different criteria used for the tariff classification of ceramics and pottery and more particularly the determination of the Coefficient of Water Absorption (CWA). This test was especially focused on the comparison between the official method of Regulation (EEC) No 679/72 for the determination of the CWA and an alternative method developed by the Dutch Customs Laboratory. The main advantages of this alternative method are that only small fragments of material are used and that glazing does not have to be removed. The chair presented the wishes made by the preparatory group of the first ring test regarding the samples and the final samples chosen. He explained that the delicate point of the test was to find appropriate samples, because producers do not provide the CWA of their material. The chair finally presented the main results of the test, the precision data which were obtained and the conclusions.

Regarding the different determinations which were carried out during this test, the chair explained that the “possibility to be scratched with iron” test was included in order to make a recommendation on whether or not this determination should be removed from the Combined Nomenclature Explanatory Notes (CNEN). He added that another determination could have been also included for the same purpose: **the “stickiness to the tongue” test**. The chair said that this test could also be **removed from the CNEN** and therefore suggested including it in this second ring test.

An expert explained that in his laboratory, the stickiness to the tongue was **used as a first step in the analysis of ceramics and pottery**: if the result to this test is clear (i.e. the piece clearly sticks to the tongue or the piece does not stick to the tongue at all), the determination of the CWA is not performed. It saves a lot of time, given that the Dutch Customs Laboratory receives many ceramics and pottery samples. In practice, thanks to this first step, the CWA is only determined on 10% of the samples. However, he acknowledged that this test was not very scientific and could be removed on this ground. He nevertheless stressed out that it would have some consequences in some laboratories’ daily work.

The chair explained that his laboratory stopped carrying out this test a few years ago, also for hygiene reasons. He declared that Berlin Laboratory receives a lot of samples too, but added that for many of them it was possible by a simple visual examination to assess if the CWA is smaller than 3. The previous expert agreed that for hygiene and health reasons, this method was not the best one, but said it was still very useful. He added that it could perfectly be removed from the CNEN, without stopping the laboratories that are keen on this method from using it. He declared that this point could be **discussed at the second meeting with the ring test participants**.

A second participant suggested **replacing the stickiness to the tongue test by an equivalent determination**. For example, a small drop of water could be put on a piece of sample and then it

could be observed under a microscope whether the drop stays on the surface or whether it is absorbed.

The action leader supported this suggestion. She added that it was only a qualitative test to provide some first information and it was not made compulsory by the CNEN. However, she stressed out the fact that it would be difficult to remove it as it is **mentioned in the Harmonised System Explanatory Notes (HSEN)**.

A third expert was also in favour of removing this method because his laboratory carries out **X-ray Fluorescence (XRF)** measurements on these samples and often sees that they contain heavy metals.

On a specific question, he explained that XRF was only used for information, not for classification purposes. A fourth expert declared XRF could be used to replace all the other methods. Indeed, all the laboratories should be equipped with XRF apparatus. She suggested **performing a study on this method and making a library of XRF data** on ceramics and pottery samples. The chair noted that lots of these methods were in fact regulated at HS level, which makes it difficult to modify. Moreover, all these methods are really simple, cheap and do not need special equipment, which made them fit for purpose. Another expert added that XRF alone could not give information on which kind of ceramics the sample belongs to.

III. Results of a small ring test organised by the Dutch Customs Laboratory

A participant then presented the results of a small ring test which was organised by the Dutch Customs Laboratory (*see Annex III*).

This test included only one sample, with a CWA of 4.3%. Four Customs laboratories took part (BE, DE, FR and NL) and determined several parameters (translucency, CWA by the official method and by the Dutch method, colour, sintering grade and homogeneity, and stickiness to the tongue).

Regarding the qualitative analyses, differences were only seen for the sintering grade. As for the quantitative analyses, there were important differences between the results of the official and Dutch methods: **a mean CWA of 4.5% was obtained by the official method, whereas the value was 5.6% by the Dutch method**. The difference in the CWA is all the more important here since it will change the classification of the sample.

The results also confirmed a fact that was already observed during the GCL ring test: **the standard deviation is smaller with the Dutch method**.

She explained that each year, the Dutch Customs Laboratory uses 3 to 4 samples in order to check the performance of their method compared to the official one. She presented the resulting graph with 27 samples, which shows that the results obtained by the two methods are quite similar and the Dutch method is robust. However, for two samples of the GCL ring test (bowl and flower pot) and for the sample of this small ring test, the results are significantly different.

She also said that she investigated the possible reasons for this inconsistency. Her hypothesis was that the **unglazed surface** was responsible for this. Indeed, the Dutch method uses small fragments and it is easy to imagine that many small pieces are better than one big piece regarding the availability of the unglazed surface that is submerged in the water during the test. As this unglazed surface depends on the thickness of the sample, she calculated the evolution of the unglazed area as a function of the thickness when the official method is used and when the Dutch method is used. The graph obtained shows that **between 3.5 and 6 mm thickness, the two methods are equivalent**. Most of the samples lie within this range. However, when the piece of material is thicker than 6 mm, the

Dutch method is more sensitive to the thickness and there is more unglazed surface available. On the contrary, the Dutch method leads to an underestimation from 2 to 3.5 mm thickness.

The graph also displays the evolution when the official method is used but the sample is totally unglazed. In this case, the available unglazed area is much bigger. However, the experiments carried out on different samples with either one side or the entire surface unglazed showed that the effect on the CWA was not that important and was added that it could be easily undone by leaving the sample in water for another 20 hours.

It was concluded that **in this new CLEN ring test on Ceramics and Pottery a thick enamelled sample (thickness higher than 7 mm) could be included, together with a more common sample**, in order to perform comparisons between the Dutch method, the official method with one side unglazed and the official method with a totally unglazed sample.

The chair thanked the Dutch Customs Laboratory for their interesting work and agreed with the hypothesis presented by the previous speaker. He asked for the thickness of the bowl in the GCL ring test which was declared being 7 mm. The flower pot and the sample used in this small ring test were also thick, so the results are in line with her hypothesis.

An expert supported the conclusions raised but pointed out that **the flower pot does not fit in this hypothesis**: this sample was not glazed, so the CWA should have been higher by using the official method than by using the Dutch method. Even if it was a very thick sample, the graph presented showed that at 8 mm, the unglazed area for official method was still above the one obtained by the Dutch method. However, it was pointed out that this sample was out of the scope of the Dutch method as its CWA was at 17%, whereas the Dutch method was validated up to 10%. He said that it was possible that the surface obtained by breaking the sample was more porous than the unglazed surface itself. He suggested trying to also grind the surface.

The chair said that at the first ring test the question was on **whether the official method should be substituted by the Dutch method** and declared he was not sure this question was still relevant.

An expert said that the Customs Laboratories largely agreed on the fact that the Dutch method was easier. He added that it was more realistic and can be used even for very small fragments, whereas the official method cannot. In some cases there will be differences, which could result in different classification, but in most cases the methods are in agreement. It was stated that the official method is very old and should be replaced. For the chair, some participants felt on the contrary that the official method was easier to carry out and that the Dutch method could lead to additional error due to **material loss** in the preparation step. A second expert noted that the pieces should indeed not be too small otherwise they could be destroyed during the boiling stage. It was added that **problems arise only if the CWA is very high**, but in such cases, being precise would not be important for classification purposes as the value would be far above 5%. Moreover, the stickiness to the tongue test is enough in these cases. A third participant declared that the **Customs Laboratories which do not have many ceramics and pottery samples are enthusiastic about the Dutch method** because they cannot invest in the specific equipment necessary to clean the dust produced during the preparation by the official method. The Dutch method is therefore safer and more practical for these laboratories.

Regarding the equipment needed, it was explained that the Dutch Customs Laboratory simply uses a hammer to obtain the small pieces, which were then selected by hand. The chair said that his laboratory uses a kind of sieve/tea infuser for the boiling stage.

The chair concluded that **the possible substitution of the official method by the Dutch method will be discussed and settled during the second meeting.**

IV. Discussion and definition of the ring test

A. Samples

An expert repeated her wish to have a **sample with a thickness around 7-8 mm and preferably with at least one side glazed.** She however added that it could be possible to have an unglazed sample but it is important to inform the participants that they should grind it anyway. She did not have any requirements on the CWA, as long as it lies within the range of validity of the Dutch method (2 to 10%).

A second expert suggested having **two samples with CWA respectively at 3 and 5% and a thickness between 3 and 6 mm.** He added that **a sample at 8%** could also be added to cover the whole range of validity of the Dutch method.

A third participant said **a sample with a CWA between 3 and 5%** could also be included.

In order to highlight in the report one limitation of the official method, she also suggested having a very small material, as in this case only the Dutch method can be used. However, the chair said that it would have no added value as the official method and the Dutch method would already be applied on all the other samples.

As for the type of material, the group agreed on **kitchenware**, as it is the type of samples which is the most frequently analysed by the Customs Laboratories (important differences in the import duties). It was added that decoration articles were also quite common.

The chair warned that finding samples with the wished CWA would once again be difficult. As in the first test, he offered to **analyse at the German Customs Laboratory of Berlin the possible materials found by Bipea in order to identify the appropriate ones.**

Another participant wondered whether the Customs laboratories which analyse many of these samples could not provide names of importers which have materials that match the wishes of the group. **The action leader offered to have a look at the analyses performed in France and provide Bipea with a list of possible sourcing places.**

It was also wondered whether the samples could not be purchase directly from Chinese or European producers, as they have the most complete information on the material. It was underlined the fact that these factories were not interested in the CWA, which was an issue specific to the Customs Laboratories, so there would be no guarantee that it is constant. It was also suggested having samples made especially for the test by a local producer, but this proposition seemed more expensive and complicated to the preparatory group.

B. Methods and parameters

The following determinations were chosen by the group:

- CWA by the official method and by the Dutch method

For the official method, in order to avoid the issue encountered with the flower pot in the first test, an expert advised **telling the participants to polish one side of the sample even if both sides look not glazed.** This recommendation may help to clarify the reasons for the differences between the Dutch method and the official method. Indeed, it is quite doubtful that in the first test the participants unglazed the flower pot. The action leader agreed as the official method does not give any recommendations if the sample is not enamelled. It was suggested **performing a test on the**

flower pot sample of the previous ring test in order to decide whether this recommendation should be made or not. **Another participant declared that she had some leftover material and will perform this test.**

It was suggested asking the participants to **perform two determinations with the official method: one analysis where one side is polished and one where the two sides are polished.**

The chair asked the Dutch delegates whether modifications were made in the protocol of the Dutch method and this will be **checked and a new version will be send if necessary** (*post-meeting information: the Dutch Customs Laboratory checked the protocol and no changes were made in the practical parts, only to the precision data. Therefore no new version is necessary.*).

Regarding the expression of the result, the chair suggested **g/100g** instead of % as it may lead to some confusion. The other members of the group agreed. It was decided to keep the precision of the previous test: results expressed with **1 decimal**.

The **number of replicates** was then discussed. The group agreed that there was no need to have double determinations. Indeed, the official method already requires performing the measurement on three pieces and the protocol of the Dutch method requires two measurements. The participants will provide these intermediary results and the mean. One representative warned the group members that for a ring test the analyses should normally be made in duplicates. The chair said the number of determinations had been a problem in the previous test, as there are three results by the official methods and two by the Dutch method. It was suggested **performing three measurements as well for the Dutch method** to solve this issue. It will be checked with the statistical team at Bipea what the best option is.

As the first test showed that the CWA was not influenced by the surface of the sample, a second expert noticed that the 30 cm² indicated in the official method do not have to be strictly followed. The chair suggested adding a comment to avoid further questions, such as **“it does not matter if the surface of the test piece is between 30 and 60 cm²”**.

Regarding the complementary questions, the chair declared he wanted to have some information on the grinding process as some laboratories use wet grinding (it is the case in Berlin since recently). A third participant suggested **asking simply if the participants used wet or dry grinding**. All sheets will have a field for comments so no other questions are necessary.

– Translucency

The chair declared that translucency should be determined as it is necessary for the classification of ceramics and pottery.

The action leader wondered whether the recommendations of the official method regarding the **characteristics of the lamp** were still appropriate (intensity between 1350 and 1500 lumens and changed every 50 hours' use). It was confirmed that they were old-fashioned and suggested recommending a modification at the discussion meeting. One participant offered to **send the criteria applied at the Dutch Customs Laboratory** to the chair (*post-meeting information: the Dutch Customs Laboratory uses a lamp of 1380 lumen, which is replaced every three years*).

– Stickiness to the tongue (or alternative method)

One participant suggested adding this determination as **optional**. The participants could also perform an alternative method, such as the one suggested earlier.

- Composition and homogeneity (visual examination)
- Thickness

It was observed that according to the presentation of the Dutch Customs Laboratory, the thickness of the sample affects the result. However, if the glaze is removed, the thickness will necessarily be different. It was therefore suggested asking to the participants the “**thickness after preparation of the sample**”. This proposal was agreed by all.

- Total surface area, both sides
- Colour
- Impurities

An expert asked whether the **classification of the samples** was also an objective of this test or whether it will be only focused on the test technics. She added that last time important discrepancies in the classification were noticed, mainly due to the distinction between glazed and unglazed. The chair said the focus was on the test technics but that the classification could also be asked. A second participant declared that if the samples are all kitchenware the classification will not be an issue this time, so it was **not necessary to include this parameter**. The other group members agreed.

C. Quantities of samples

The necessary amount of samples was discussed. It was declared that if the official method is applied two times (one side unglazed and both sides unglazed), higher quantities than in the first test would be necessary. Drying the sample between the two experiments will not do, as it may introduce some error. It was finally decided to have **at least 300-350 cm² per sample and per participant**.

The chair suggested having more samples than strictly needed in order to keep them as **reference material**. An expert wondered the added value of such reference material, as there was not apparatus to calibrate here. The chair explained it would rather be for Customs Laboratories that would wish to start performing these analyses and would thus need some reference to compare themselves to. This idea was supported by the entire group, but the problem of the storage was discussed. Bipea could store the extra samples, but not on a long-term basis. The representative of the Commission declared that sending the samples to all the Customs Laboratories would be difficult and therefore suggested to have instead **one set sent to each Member State**. She added that this possibility of sending reference material will also depend on the cost of the samples. If it is too expensive, only some of the samples could be sent and not the whole set of five.

It was thus decided to **settle this question once the final material is found and the price known**.

D. Homogeneity tests

The chair said that in the first ring test, the homogeneity was tested at the German Customs Laboratory of Berlin and asked whether Bipea could perform the analyses this time. It was explained that Bipea had no experience in such analyses but could however **perform the statistical evaluation of the results and draw the conclusions**. One expert therefore offered to have the **analyses carried out by his Customs Laboratory**.

The group members discussed about the right time to buy the raw materials. Indeed, if the whole lot is bought before the homogeneity test and the results of this test are unsatisfactory, it will be a waste. It was explained that **the homogeneity tests have to be done on the final batch, so the raw materials have to be bought first**, even if there is no guarantee that the batch will be homogeneous. The chair said that was already the bet made during the first ring test and it turned out all samples were homogeneous. A participant added that the big factories now have good quality systems which ensure in general the homogeneity. A second participant agreed and recommended to source the raw material from big European factories/importers.

A third participant asked if the ring test would still be carried out if only 3 out of 5 prove to be homogeneous. The chair said it will depend on the timeline set by the Commission. The representative of the Commission declared there was no precise timeline but added that the test could not be delayed for too long either. A fourth expert added it would also depend on which sample is heterogeneous, as some of these five samples are more crucial for the test than others. It was concluded that this question would be sorted out in due time, if the problem occurs.

V. Summary, schedule of the test and conclusion of the meeting

In summary, the main characteristics of the ring test, as defined by the preparatory group, are:

- **Five samples of kitchenware:**
 - A thick sample (7-8 mm) with at least one side glazed (CWA between 3 and 9 g/100g).
 - A sample with a CWA around 3 g/100g
 - A sample with a CWA around 5 g/100g
 - A sample with a CWA between 3 and 5 g/100g
 - A sample with a CWA around 8 g/100g
- **Nine parameters:**

Parameter	Expression of the result
CWA by the method of Regulation (EEC) No 679/72 <ul style="list-style-type: none"> ➤ With one side polished ➤ With both sides polished 	g/100g 1 decimal figure 3 intermediary results and the mean
CWA by the Dutch method	g/100g 1 decimal figure 3 intermediary results and the mean
Translucency	<i>No unit</i>
Stickiness to the tongue (or alternative method) Optional determination	<i>No unit</i>
Composition and homogeneity (visual examination)	<i>No unit</i>
Thickness: <ul style="list-style-type: none"> ➤ Of the material ➤ After preparation of the sample 	mm 1 decimal figure
Total surface area, both sides	cm ² No decimal figure
Colour	<i>No unit</i>
Impurities	<i>No unit</i>

- **Quantities:** at least 300-350 cm² per sample and per participant

- **Homogeneity tests:** homogeneity tested on the CWA by one Customs Laboratory on 10 samples per raw material. Bipea will perform the statistical evaluation.

The **schedule of the ring test** was defined as follows:

- **In October 2014**, the coordinator will **look for potential samples** among the analysis carried out in the French Customs Laboratories.
- **In November 2014**, Bipea will **buy several samples which could be fit for purpose** and send them to the German Customs Laboratory of Berlin. In parallel, a **call for participation** to the ring test will be launched in the e-CLEN community under Sinapse.
- **In December 2014**, the German Customs Laboratory of Berlin will **analyse these samples** (4 weeks are necessary) in order to determine if their CWA are in the correct ranges. The **final list of participants** to the ring test will be established.
- **In January-February 2015**, Bipea will **buy the selected raw materials**. 10 samples of each raw material will be sent to the Dutch Customs Laboratory for the homogeneity tests.
- **In February-March 2015**, the Dutch Customs Laboratory will **carry out the CWA analyses by the Dutch method for the homogeneity tests** (4 weeks are necessary). Bipea will then perform the statistical evaluation.
- **At the end of March/beginning of April 2015**, Bipea will **send the samples to the participants**. The participants will have **2 months** to send back their results.
- **Until the end of May/beginning of June 2015**, the Customs Laboratories will **perform the analyses**. Bipea will collect and compile the results.
- **In July 2015**, Bipea will analyse the results and provide the **first draft report to the coordinator**.
- **In August 2015**, the first draft report will be **sent to the participants**.
- **At the end of September 2015**, the **discussion meeting** could take place.
- **The final report** would be available for the **end of 2015**.

In conclusion, one participant expressed his wish to see this ring test **repeated regularly** (every three years) within the CLEN. The chair declared that it should then become a proficiency test.

It was agreed by all that the main outcome of this ring test and the focus of the discussion of the second meeting would be a decision on the proposal regarding the **replacement of the official method of Regulation (EEC) No 679/72 by the Dutch method**.

It was offered to have this discussion meeting organised in the Netherlands, at the Dutch Customs Laboratory premises.

Finally, the chair thanked the DG TAXUD for the organisation of this meeting as well as all the participants for their contributions and closed this preparatory meeting.

Annex I - List of participants

Commission:

Ms S. Androni	EC-TAXUD
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Member States

Mr D. Meyer	Germany - <i>coordinator</i>
Ms N. Varra	France - <i>Action leader</i>
Ms I. Vinckier	Belgium
Ms L. Fasia	Greece
Mr G. Guastella	Italy
Mr W. Schipper	The Netherlands
Ms A. Schröder	The Netherlands

Contractors

Ms E. Messineo	BIPEA ^{CLEN} TAS
Ms A. Rebours	Eurofins ^{CLEN} TAS

Excused participants:

Mr H. Schepers	EC-TAXUD
Ms J. Vaitkevičiutė	Lithuania

Annex II: Ring test on Ceramics & Pottery 2010, presentation by the chair (coordinator)

Preparatory meeting for the definition of the 2nd ring test on Ceramics & Pottery

Ring test on Ceramics & Pottery 2010

Dirk Meyer
Coordinator, Germany
- Customs Laboratory Berlin -

Brussels, 15.10.2014

GCL Action 2: Ring-test on Ceramics & Pottery 2010



Contents:

1. Introduction:
 - Criteria for the tariff classification
 - Relation between the coefficient of water absorption (CWA) and the kind of ceramic material
2. Organisation
Decisions of the preparatory meeting
3. Essential results
- Final Report issued 15 July 2011
4. Conclusions



Dirk Meyer, BWZ BERLIN

CLEN Action 2 – Preparatory meeting

Brussels, 15.10.2014

1.1 Criteria for the tariff classification



Criteria for the tariff classification of ceramic goods, Chapter 69

- Requirements of the fragment, colour and composition
- Translucency*
- Porosity, coefficient of water absorption (CWA)*

**Regulation (EEC) No 679/72 of the Commission of 29 March 1972 and Explanatory Notes to the Combined Nomenclature of the European Communities, Chapter 69*

Dirk Meyer, BWZ BERLIN

CLEN Action 2 – Preparatory meeting

Brussels, 15.10.2014

1.1 CWA – Official method



	Official method -according to the Regulation (EEC) No 679/72-
Sample amount	3 test pieces (Minimum)
Surface area of a single fragment	≈ 30 cm ²
Fragment preparation	Grind one side, if both sides enamelled.
Dry weight, W _D	105 °C for 3 hours
Wet weight, W _W	Boil in distilled water for 2 hours, leave it in the water for 20 hours. Wipe off the surface.
Coefficient of water absorption (CWA)	$CWA = \frac{W_w - W_d}{W_d} \times 100$

Dirk Meyer, BWZ BERLIN

CLEN Action 2 – Preparatory meeting

Brussels, 15.10.2014

1.2 Relation between CWA and the kind of ceramic material



CWA < 3 % by weight

→ Porcelain or Stoneware

translucent?

YES, Porcelain

NO, Stoneware

3 % ≤ CWA < 5 % by weight → „other“ ceramic products

CWA = 5 % by weight or more

→ Earthenware, fine pottery or common pottery

Composition of the fragment?

Homogeneous

particles, inclusions, pores < 0,15 mm,
not visible to the naked eye

Earthenware or fine pottery

Heterogeneous

Common pottery

Dirk Meyer, BWZ BERLIN

CLEN Action 2 – Preparatory meeting

Brussels, 15.10.2014

2. Preparatory meeting - Decisions



Parameters

- Condition of fragments: thickness, total surface area, colour, composition and homogeneity, impurities
- Possibility to be scratched with iron

Methods

- Translucency according to the Regulation (EEC) No 679/72 and Explanatory Notes to the CN, Chapter 69
 - Determination of CWA with:
 - the official method
 - an alternative method performed by the Dutch Customs Laboratory
- **Comparison of both methods**

Dirk Meyer, BWZ BERLIN

CLEN Action 2 – Preparatory meeting

Brussels, 15.10.2014

2. CWA – Procedures of both methods



	Official method -Reg. (EEC) No 679/72-	Alternative method -Dutch method-
Sample amount	3 test pieces (Minimum)	2 x 20 g
Surface area of a single fragment	≈ 30 cm ²	< 1 cm ² (one side)
Fragment preparation	Grind one side, if both sides enamelled.	Removal of enamelled parts is not necessary!
Dry weight, W _D	105 °C for 3 hours	
Wet weight, W _W	Boil in distilled water for 2 hours, leave it in the water for 20 hours. Wipe off the surface.	
Coefficient of water absorption (CWA)	$CWA = \frac{W_w - W_d}{W_d} \times 100$	

Dirk Meyer, BWZ BERLIN

CLEN Action 2 – Preparatory meeting

Brussels, 15.10.2014

2. Preparatory meeting - Decisions



Samples

A large variety of different ceramic materials were proposed, a total of 5 different materials should be included in the ring-test (200 cm² ea).

- Porcelain = mostly glazed on both sides
- Stoneware = with a CWA inferior to 3 g/100 g but not translucent
- Other ceramic products = with a CWA between 3 and 5 g/100 g
- Earthenware, fine pottery = 5 g/100 g or more
- Common pottery = sometimes not glazed at all, if possible with CWA between 5 and 8 g/100g

Dirk Meyer, BWZ BERLIN

CLEN Action 2 – Preparatory meeting

Brussels, 15.10.2014

2. Preparatory meeting - Decisions



Search for suitable samples by Eurofins-TAS

- The 5 different sample materials should be bought from a provider of ceramic goods, if possible each sample material should be from one charge of production.

Homogeneity

- Before starting the ring-test the homogeneity of every chosen material should be tested.



Dirk Meyer, BWZ BERLIN

CLEN Action 2 – Preparatory meeting

Brussels, 15.10.2014

3. Results – Overview of samples



Plate



0,6 / 0,7

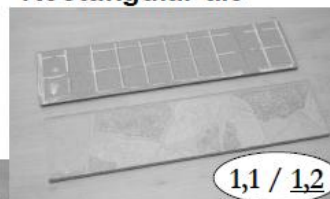
CWA

Bowl



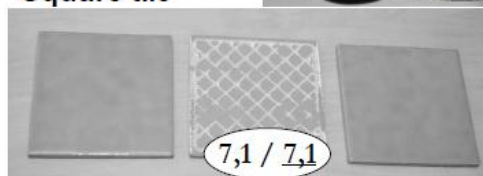
5,2 / 5,9

Rectangular tile



1,1 / 1,2

Square tile



7,1 / 7,1

Pot



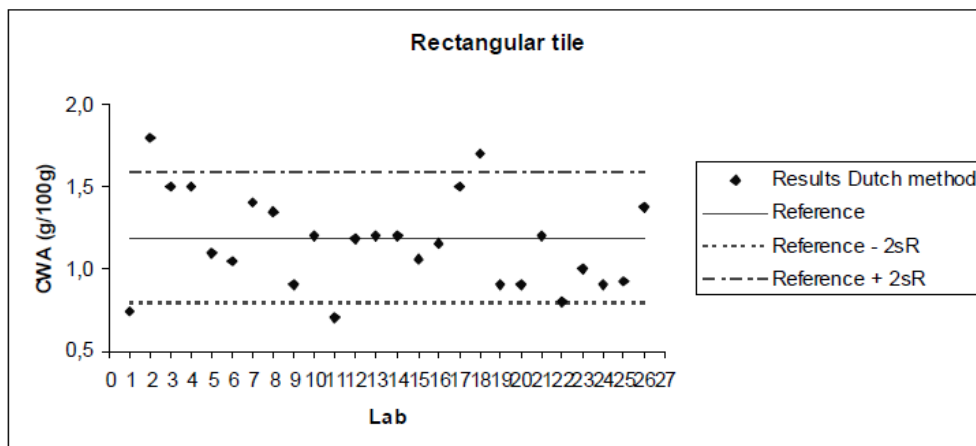
15,9 / 17,4

Dirk Meyer, BWZ BERLIN

CLEN Action 2 – Preparatory meeting

Brussels, 15.10.2014

3. Results – comparison of both CWA-methods

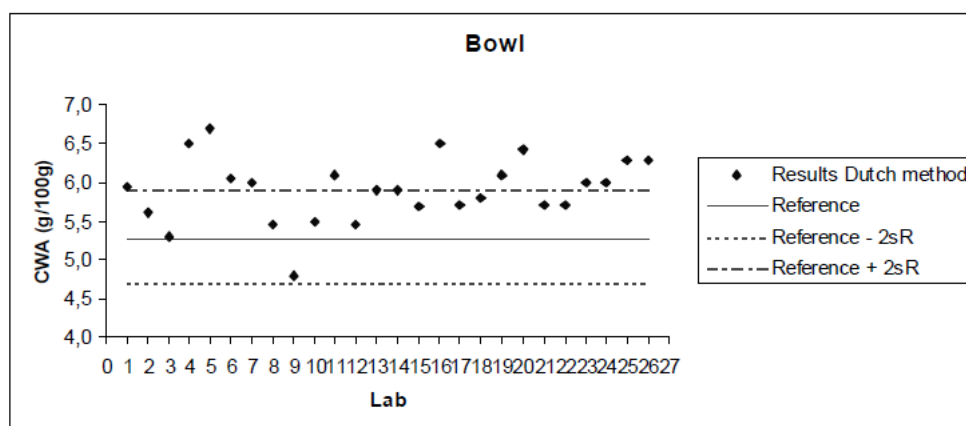


Dirk Meyer, BWZ BERLIN

CLEN Action 2 – Preparatory meeting

Brussels, 15.10.2014

3. Results – comparison of both CWA-methods

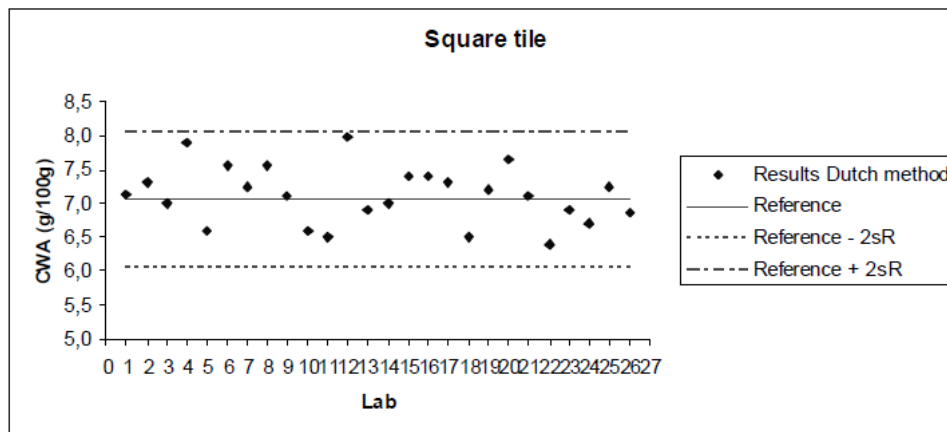


Dirk Meyer, BWZ BERLIN

CLEN Action 2 – Preparatory meeting

Brussels, 15.10.2014

3. Results – comparison of both CWA-methods

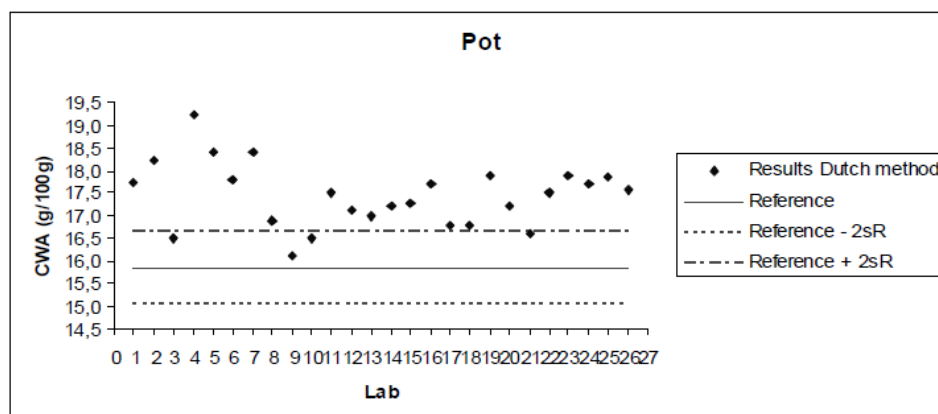


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3. Results – comparison of both CWA-methods



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3. Results – comparison of both CWA-methods



Precision data of the Official method

	Plate	Rect. tile	Bowl	Square tile	Pot
nb labs	23	22	23	22	23
Mean	0,6	1,1	5,2	7,1	15,9
sr	0,06	0,10	0,24	0,27	0,21
sR	0,31	0,31	0,41	0,53	0,42
r	0,2	0,3	0,7	0,8	0,6
R	0,9	0,9	1,2	1,5	1,2

Measurement uncertainty: $U = 2 \text{ sR}$ → $U = 0,6 \dots 1,0 \text{ GHT}$

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3. Results – comparison of both CWA-methods



Precision data of the Official method / Dutch method

	Plate	Rect. tile	Bowl	Square tile	Pot
nb labs	23 / <u>26</u>	22 / <u>26</u>	23 / <u>26</u>	22 / <u>26</u>	23 / <u>26</u>
Mean	0,6 / <u>0,7</u>	1,1 / <u>1,2</u>	5,2 / <u>5,9</u>	7,1 / <u>7,1</u>	15,9 / <u>17,4</u>
sr	0,06 / <u>0,08</u>	0,10 / <u>0,08</u>	0,24 / <u>0,13</u>	0,27 / <u>0,17</u>	0,21 / <u>0,14</u>
sR	0,31 / <u>0,25</u>	0,31 / <u>0,29</u>	0,41 / <u>0,43</u>	0,53 / <u>0,44</u>	0,42 / <u>0,70</u>
r	0,2 / <u>0,2</u>	0,3 / <u>0,2</u>	0,7 / <u>0,4</u>	0,8 / <u>0,5</u>	0,6 / <u>0,4</u>
R	0,9 / <u>0,7</u>	0,9 / <u>0,8</u>	1,2 / <u>1,2</u>	1,5 / <u>1,2</u>	1,2 / <u>2,0</u>

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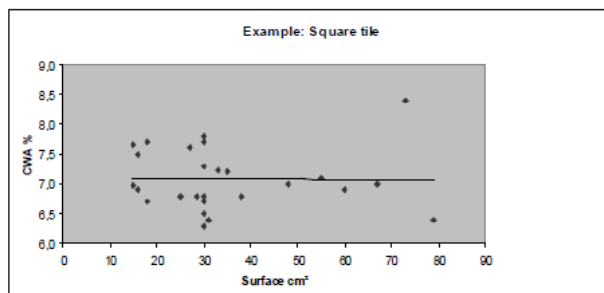
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3. Results – influence of surface area



To check the influence of the surface on the CWA, a linear correlation had been tested for each sample.



It was shown that there is no correlation between the surface area of the used fragments and the determined coefficient of water absorption.

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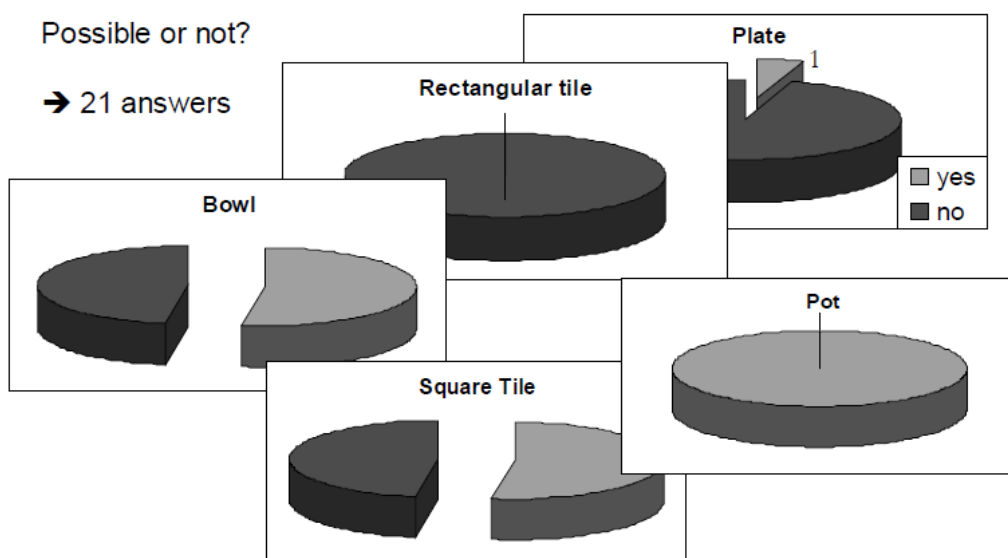
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3. Results – scratched with iron



Possible or not?

→ 21 answers



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4. Conclusions



- The determination of CWA is an important method for the tariff classification of ceramics and pottery.
- The results of this first ring-test for ceramics and pottery were a good basis for the determination of the precision data for both CWA methods.
- Regarding the advantages of the Dutch method in the sample preparation, the participants recommend repeating the ring-test with 2 samples with CWA-values of 3 and 5 % to find out if the Dutch method could be suitable for a substitution of the official method. This ring-test will be another project, starting earliest next year.
- Recommendation for regular proficiency tests.
- In this study the total area of fragments unglazed varied between 15 and more than 100 cm². It was shown that there is no correlation between the surface area of the used fragments and the determined coefficient of water absorption.

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4. Conclusions



Revision of the Explanatory Notes of the Combined Nomenclature of the European Union:

- The participants noticed that the “scratched with iron test” gives no relevant information for the classification. This test should be deleted.
- The participants also recommend that the determined precision data of the official method should be added into the Explanatory Notes.

It would give more information about the measurement uncertainty of this method and this would ensure a uniform tariff classification in the European Union.

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Annex III: Results of a small ring test for ceramics, presentation by the Dutch Customs Laboratory





Results of a small ring test for ceramics



Wim Schipper
Anke Schröder-Wolthoorn

Dutch Customs Laboratory
The Netherlands

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Results of a small ring test for ceramics

Contents:

- Set up of the small ring test
- Results of the ring test
- Comparison with ring test 2010
- Results of additional research
- Conclusions

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Set up of the small ring test

- One sample (vase) was selected from our sample storage , CWA 4.3% w/w (original sample, Dutch method)
- Sample was divided into four equal pieces...
- ... and sent to the participants:
 1. Laboratory of Customs & Excises, Belgium (Mrs Inge Vinckier)
 2. Bildungs- und Wissenschaftszentrum der Bundesfinanzverwaltung, Germany (Mr Dirk Meyer)
 3. Service Commun des Laboratoires, France (Mrs Au-Yu-Line Fock Hiou Loye)
 4. Dutch Customs Laboratory, The Netherlands

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Set up of the small ring test

The participants were requested to analyse the following aspects:

- Translucency (according to the EEC Regulation 679/72)
- CWA
 - the official method i.e. according to EEC Regulation 679/72 and
 - according to the "Dutch method"
- Colour of the fragment
- Sintering grade and homogeneity of the fragment
- Stickiness of the fragment



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Results of the small ring test (1)

Analysis of	Lab A	Lab B	Lab C	Lab D
Translucency	no	not	no	no
Colour	white	cream coloured	cream coloured	White
Stickiness	sticks to the tongue	sticks to the tongue	not determined	not reported
Sintering	some sintering	not sintered	fine grain	not reported
homogeneity	homogeneous	homogeneous	homogeneous	homogeneous

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Results of the small ring test (2)

CWA according to the official method (EEC Regulation 679/72)

Laboratory	CWA (% w/w)	Z-score
A	4.5	0.05
B	4.2	-0.90
C	4.3	-0.54
D	4.9	1.38
Average	4.5	
Stdev	0.34	

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Results of the small ring test (3)

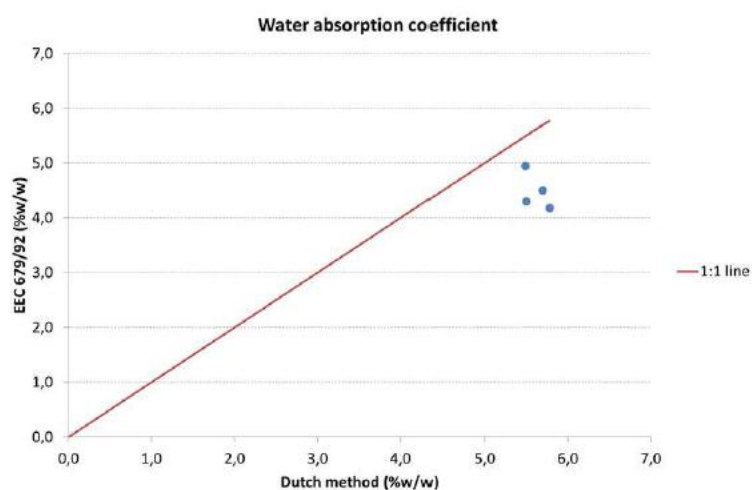
CWA according to the "Dutch method"

Laboratory	CWA (% w/w)	Z-score
A	5.7	0.57
B	5.8	1.12
C	5.5	-0.80
D	5.5	-0.89
Average	5.6	
Stdev	0.15	

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Results of the small ring test (4)



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Conclusions of the small ring test

- Sintering grade: some differences between the observations
As can be expected considering the sample type (other ceramic than porcelain, stoneware or pottery)
- No outliers (no z-scores higher than |3|)
- CWA: The stdev of the official method is higher than the stdev of the Dutch method
This is in line with the ring test of 2010
- But... the CWA according to the "Dutch method" is significant higher than the CWA according to the official method
This was also the case for 2 of the 5 samples used in the ring test in 2010

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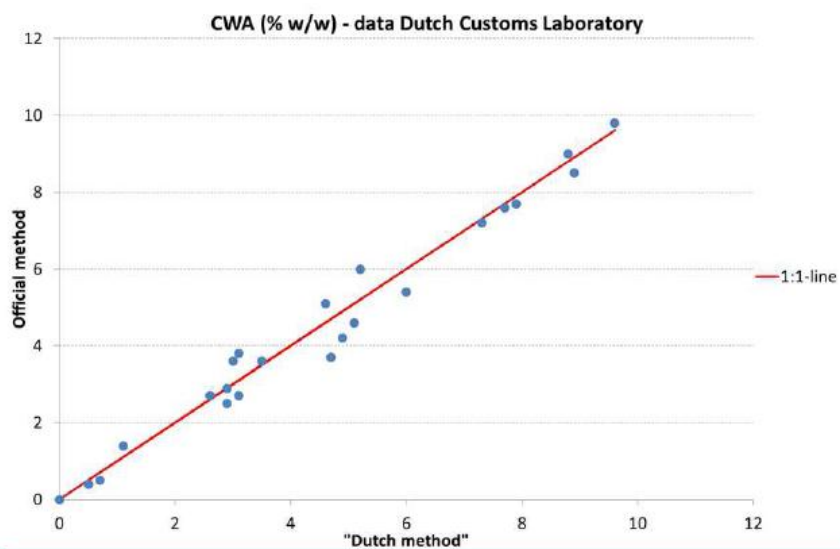
There is a new challenge (1)

Sample	Average CWA official method EEC 769/72 (% w/w)	Average CWA "Dutch method" (% w/w)
Ring test 2010 plate	0.6 ± 0.06	0.7 ± 0.08
Ring test 2010 rectangular tile	1.1 ± 0.10	1.2 ± 0.08
Ring test 2010 bowl	5.2 ± 0.24	5.9 ± 0.13
Ring test 2010 square tile	7.1 ± 0.27	7.1 ± 0.17
Ring test 2010 pot	15.9 ± 0.21	17.4 ± 0.14
Small ring test 2014	4.5 ± 0.22	5.6 ± 0.15

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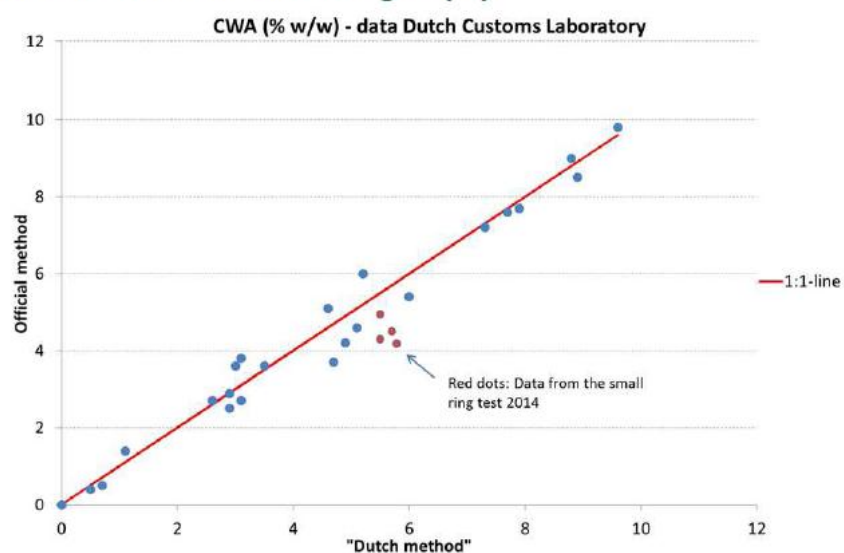
There is a new challenge (2)



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There is a new challenge (2)



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There is a new challenge (3)

Data Dutch Customs Laboratory:

- Paired t-test with 27 samples, official method vs. "Dutch method", no significant difference ($\alpha = 0.05$)
- "Dutch method" is robust

CWA (% w/w)	Dutch method
0 – 0.1%	2.0
>0.1 – 4%	2.1
>4%	1.5

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There is a new challenge (4)

There is a contradiction! Question:

Why is that within the Dutch Customs Laboratory the methods can be considered as equal

whereas

the results of the ring tests show significant higher CWA's when using the "Dutch method" for 3 out of 6 samples?



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Additional research, looking for an answer (1)

Step in analysis	Official method EEC 679/72	"Dutch method"
Amount	3 pieces Each $30 \text{ cm}^2 \pm 5 \text{ cm}^2$	2X 20 to 25 pieces of $0.75 - 1 \text{ cm}^2$ each i.e. $2x \approx 20 \text{ g}$
Sample preparation	Removal of enamelled side(s), cut 3 pieces of \approx 30 cm^2 each	Fragment sample and select 2x 20 – 25 pieces of $0.75 - 1 \text{ cm}^2$
"Open" surface area in the experiment 3.5 – 6 mm	One side glazed: $30 - 43 \text{ cm}^2$ per piece Unglazed: $57 - 73 \text{ cm}^2$ per piece	$30 - 51 \text{ cm}^2$ per 20 g
Dry weight	105°C for 3 hours	
Wet weight	Boil in distilled water for 2 hours, keep the sample in the water for another 20 hours. Wipe the surface	

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Additional research, looking for an answer (2)

By the way: *why use an alternative method?*

It is a method suitable for a wide range of ceramic samples

- No $3x 30 \text{ cm}^2$ available in case of small samples (cups, soccers etc.)
- Grinding one or even two sides is time consuming
- With some samples grinding can result in a rather polished (but) unglazed surface i.e. the surface is less suitable to absorb the water
- Fragmenting the samples results in rough, unglazed surface areas



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Additional research, looking for an answer (3)

Hypothesis:

*The CWA depends strongly on the available **unglazed** surface that is submerged in the water during the boiling and additional 20 hours of standing of the sample.*

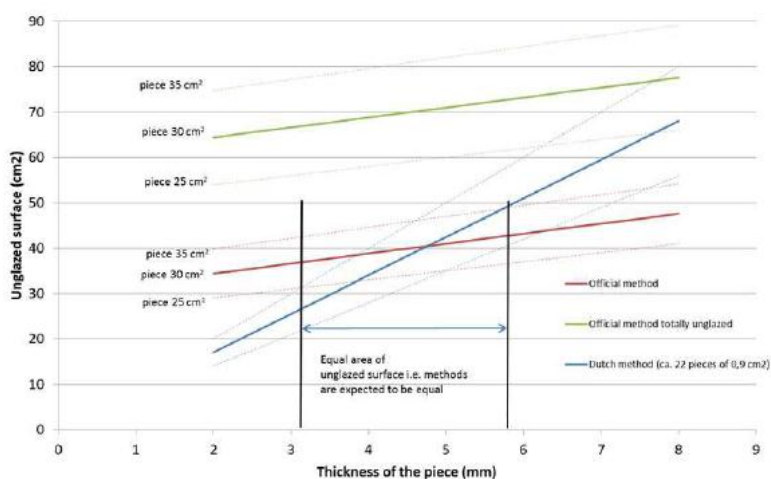
In turn, the unglazed surface depends on the thickness of the sample.



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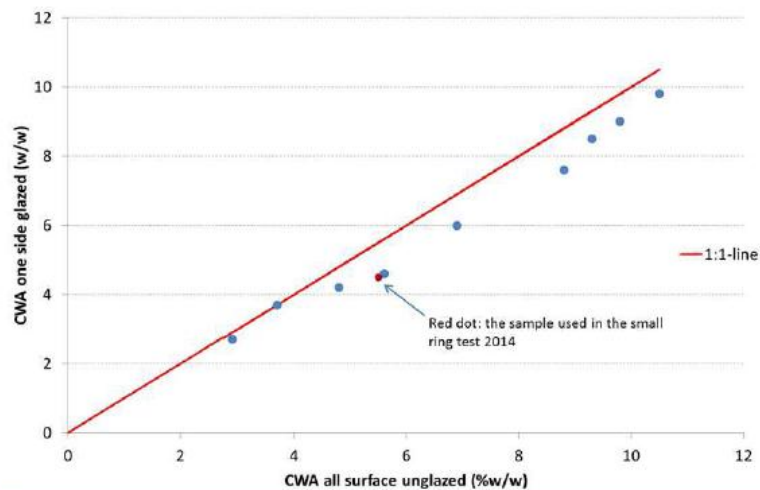


Additional research, looking for an answer (4)



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Additional research, looking for an answer (5)



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Conclusions

- Thickness of 2 – 3.5 mm:
"Dutch method": more likely to underestimate the CWA
- Thickness of 6 – 8 mm:
Official method, one side enamelled: more likely to underestimate the CWA
N.B. This is not the case when all the surface is unglazed.
- Thickness of 3.5 – 6 mm (i.e. most samples):
It can be expected that both methods result in comparable CWA's
The unglazed surface area submerged is comparable for both methods

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Suggestions for the coming ring test

- Select a thick ($> 7\text{mm}$) and enamelled sample for the ring test of 2015.

In addition to a sample with "normal" thickness and a CWA of about 3 resp. 5 % w/w.

- Ask participants to determine the CWA using
 - The official method (EEC 679/72) with 1 side enamelled (i.e. one side of glazing removed)
 - The official method, no sides enamelled (all glazing removed)
 - The "Dutch method"

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Any questions?



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