

Rebec Environmental
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USA

Test of Amalgam separator according to ISO 11143:2008; ANSI ADA Specification No108, Amalgam Separators, Addendum 2011 (5 appendices)

Test object

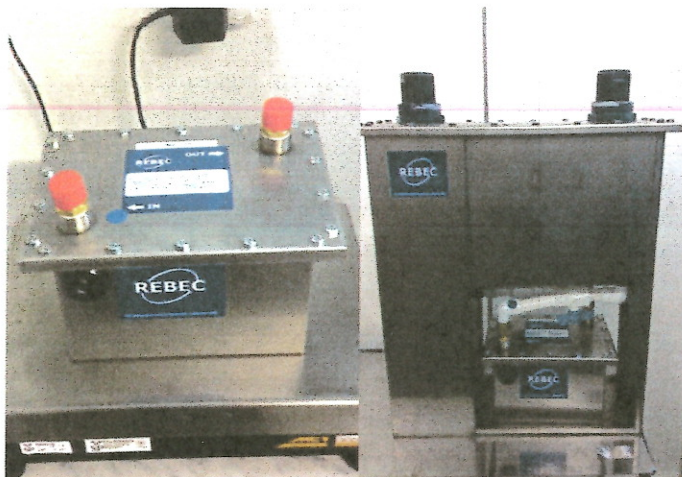
One amalgam separator CATCH^{HG} 1000 Series (Classification Type 2). The system consist of Air/water separation tank REB 1002 with serial number J1002575. Dimensions of the separations tank (Height x Width x Depth) 600x570x240 mm excluding connections and Collecting container REB 3001 with serial number J300121071-13 with two connection parts. Dimensions of the collecting container (Height x Width x Depth) 165x280x200 mm excluding connections. Included were the folder "Installation & Instructions and Warranty Information".

The client forwarded the Amalgam separator and the folder.

Marking: System CATCH^{HG} 1000 Series

Arrival date at SP: June 17, 2013

Date of testing: July 04-10, 2013



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Assignment

Tests of applicable requirements according to section 5 in EN ISO 11143:2008, test of separation efficiency with flow rate 1.0 L/min. Three tests with an empty amalgam separator (0%) and three tests with the separator filled to 95% of maximum filling level 1050 mL (100%).

Control of warning system for collecting container, alarm system for collecting container, removal of removable filled collecting container and maximum fillable volume of the removable collecting container.

Instructions for installation, use, maintenance and service according to section 11 in EN ISO 11143:2008 and marking according to section 12 in EN ISO 11143:2008 were also checked.

Method

ISO 11143:2008; ANSI/ADA Specification No.108; Amalgam Separators, Addendum 2011. The standard amalgam samples used were (10 g - ISO 11143 Charge 100416-11/12 November 2012) supplied by Becker Technologies GmbH. The membrane filters used during the test of separation efficiency were Millipore 8.0µm White SCWP, Millipore 3.0µm White SSWP and Millipore 1.2µm White RAWP in series with Millipore Woven Mesh Spacers as separating gauzes.

Results

Clause 5.1 Efficiency

Flow rate 1.0 L/min

Flow rate of 0.5 L/min water during the amalgam slurry addition + 0.5 L/min amalgam slurry (according to 9.3.2.3.2) and a flow rate of 1.0 L/min during the flushing period (according 9.3.2.6.1).

Test	Flow (L/min)	Filling level (%)	Samples weight (g)	Amount passing separator (g)	Efficiency of separation (%)
"1"	1.0	0	9.9945	0.0615	99.385
"2"	1.0	0	9.9966	0.0344	99.656
"3"	1.0	0	9.9912	0.0313	99.687
"4"	1.0	95*	9.9911	0.0734	99.265
"5"	1.0	95*	9.9931	0.0417	99.583
"6"	1.0	95*	10.0047	0.0304	99.696

The result mean value according to 9.6 (Determination of efficiency) is 99.515 %.

The testing shows that the amalgam separator fulfil the requirements in ISO 11143, clause 5.1, when tested with the max flow rate 1.0 L/min and maximum filling level of 1050 mL.

* The maximum filling level 95% of 1050 mL is 997.5 mL. The filling material consisted of 262,5 mL filling scrap (<0.3 mm) and 735 mL glass pellets with 1 mm diameter. The density of the filling scrap in the test was 6.27 g/mL.

Clause 5.2 Warning system for collecting container

The amalgam separator fulfils the requirements.

Clause 5.3 Alarm system for collecting container

The amalgam separator fulfils the requirements.

Clause 5.4 Alarm system function for malfunction of amalgam separator

This requirement is not applicable.

Clause 5.5 Removal of removable filled collecting container

The amalgam separator fulfils the requirements.

Clause 5.6 Maximum fillable volume of the removable collecting container

The amalgam separator fulfils the requirements. Maximum fillable volume of the removable collecting container is 3.75L

Clause 5.7 Electrical safety

This requirement is not applicable.

Clause 11 Instructions for installation, use, maintenance and service

The amalgam separator fulfils the requirements.

Clause 12 Marking

The amalgam separator fulfils the requirements.

Conclusion of the test results

The test results shows that the tested amalgam separator fulfils all applicable requirements of the ANSI /ADA Specification No 108, with Addendum 2011.



REPORT

Date	Reference	Page
2013-07-10	KMk 3P04860 Rev1	5 (5)
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Test of amalgam separator according to SS-EN ISO 11143

Test object

One amalgam separator (Classification Type 2) in Styrofoam packaging. The system consist of Air/water separation tank and Collecting container. Included were the folder "Installation Instructions & Warranty Information".

The client forwarded the Amalgam separator and the folder.

Marking:

The Amalgam Collector
System CATCH^{HG} 1000
-Air/water separation tank, J1001245
- Collecting container, J30016698 08

Arrival at SP:

February 20, 2008

Date of testing:

March 7-25, 2008

Project

Tests of applicable requirements according to clause 5 in EN ISO 11143:1999.

Test of separation efficiency. Three tests with an empty amalgam separator (0%) and three tests with the separator filled to the maximum solids filling level 1050 mL (100%).

Control of warning system, alarm system for collecting container, removal of filled collecting container or filter and check of maximum mass of filled collecting container.

Instructions for installation, use, maintenance and service according to clause 11 in EN ISO 11143:1999 and marking according to clause 12 in EN ISO 11143:1999 was also checked.

Method

SS-EN ISO 11143:1999. The standard amalgam samples were used (10 g - ISO 11143 February 2008) supplied by bm becker messtechnik gmbh. The membrane filters used during the test of separation efficiency was Millipore 8.0µm White SCWP, Millipore 3,0µm White SSWP and Millipore 1,2µm White RAWP in series with Millipore Woven Mesh Spacers as separating gauzes.

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Results

5.1 Efficiency

The amalgam slurry and then the filtered water were put into the separator at a flow rate of 1.0 L/min for a total period of 10 minutes. Due to the presence of a flow restrictor in the separator, water was retained in the upper tank. Therefore, it took an additional 25 minutes for the remaining water to drain through the separator and the collecting container. The treated water passing the system was collected and filtered.

Test	Flow (L/min)	Filling level (%)	Amount passing separator (g)	Degree of separation (%)
"1"	1	0	0.0143	99.9
"2"	1	0	0.0205	99.8
"3"	1	0	0.0153	99.8
"4"	1	100*	0.0210	99.8
"5"	1	100*	0.0204	99.8
"6"	1	100*	0.0223	99.8

The result according to 9.6 (Determination of efficiency) is 99.8 %.

The testing shows that the amalgam separator fulfil the requirements in ISO 11143, clause 5.1, when tested with the described procedure above and maximum filling level of 1050 mL.

* The maximum filling level of 100% is 1050 mL. The filling material consisted of 314 mL amalgam scrap (<0.3 mm) supplied by the client, and glass pellets 733 mL with 1 mm diameter. The density of the amalgam scrap in the test was 6.7 g/ml.

5.2 Warning system

The amalgam separator fulfils the requirements.

5.3 Alarm system for collecting container

The amalgam separator fulfils the requirements.

5.4 Alarm system function

This requirement is not applicable.

5.5 Removal of filled collecting container or filter

The system was not connected to a vacuum pump in the lab. The test could therefore not be done.

5.6 Maximum mass of filled collecting container

The amalgam separator fulfils the requirements.

5.7 Electrical safety

This requirement is not applicable.

11 Instructions for installation, use, maintenance and service

The amalgam separator fulfils the requirements.

12 Marking

The amalgam separator fulfils the requirements except:

12.2 c) Information on the system regarding model or type reference is missing.

12.4 b) Information on the collecting container regarding model or type is missing.

Conclusion of the test results

The testing shows that the tested amalgam separator fulfils all applicable requirements in Clause 5, Clause 11 and most of Clause 12. The only deficiency to passing ISO 11143 is:

12.2 c) Information on the system regarding model or type reference is missing and

12.4 b) Information on the collecting container regarding model or type is missing.

The Metropolitan Council Environmental Services (MCES) requirements is that the overall average of the six tests (empty & full) on an amalgam separator must remove at least 99% when tested according to ISO 11143 (Clause 9.3-9.5).

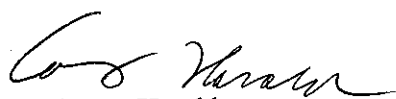
The tested amalgam separator fulfil the MCES requirements when tested according to method described above.

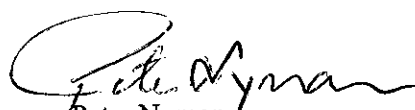
Note 1: Instructions in the installation manual recommend to use protection (gloves and mask) when handling dental waste. People on pictures working with the system in the manual do not wear gloves.

Note 2: According the installation manual there should be a colour coded dot system on the Rebec system for easy installation and use. Some of the dots on the tested system was missing.

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