

INTERNATIONAL  
RECOMMENDATION

**OIML R 61-2**  
Edition 2004 (E)

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Automatic gravimetric filling instruments

Part 2: Test report format

Doseuses pondérales à fonctionnement automatique

Partie 2: Format du rapport d'essai

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## Foreword

The International Organization of Legal Metrology (OIML) is a worldwide, intergovernmental organization whose primary aim is to harmonize the regulations and metrological controls applied by the national metrological services, or related organizations, of its Member States.

The two main categories of OIML publications are:

- **International Recommendations (OIML R)**, which are model regulations that establish the metrological characteristics required of certain measuring instruments and which specify methods and equipment for checking their conformity; the OIML Member States shall implement these Recommendations to the greatest possible extent;
- **International Documents (OIML D)**, which are informative in nature and intended to improve the work of the metrological services.

OIML Draft Recommendations and Documents are developed by technical committees or subcommittees which are formed by the Member States. Certain international and regional institutions also participate on a consultation basis.

Cooperative agreements are established between OIML and certain institutions, such as ISO and IEC, with the

objective of avoiding contradictory requirements; consequently, manufacturers and users of measuring instruments, test laboratories, etc. may apply simultaneously OIML publications and those of other institutions.

International Recommendations and International Documents are published in French (F) and English (E) and are subject to periodic revision.

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## INTRODUCTION

This “Test Report Format” aims to present, in a standardized format, the results of the various tests and examinations to which a type of an automatic gravimetric filling instrument shall be submitted with a view to its approval.

The Test Report Format consists of two parts, a “Checklist” and the “Test Report Format” itself.

The Checklist is a summary of the examinations carried out on the instrument. It includes the conclusions of the results of the test performed, and experimental or visual checks based on the requirements of R 61-1. The words or condensed sentences aim to remind the examiner of the requirements in R 61-1 without reproducing them.

The Test Report is a record of the results of the tests carried out on the instrument. The “Test Report Format” forms have been produced based on the tests detailed in R 61-1.

All metrology services or laboratories evaluating types of automatic gravimetric filling instruments according to OIML R 61 or to national or regional regulations based on this OIML Recommendation are strongly advised to use this Test Report Format, directly or after translation into a language other than English or French. Its direct use in English or in French, or in both languages, is even more strongly recommended whenever test results may be transmitted by the country performing these tests to the approving authorities of another country, under bi- or multilateral cooperation agreements. In the framework of the *OIML Certificate System for Measuring Instruments*, use of this Test Report Format is mandatory.

The “information concerning the test equipment used for type evaluation” shall cover all test equipment which has been used in determining the test results given in a report. The information may be a short list containing only essential data (name, type, reference number for the purpose of traceability). For example:

- Verification standards (accuracy, or accuracy class, and number);
- Simulator for testing of modules (name, type, traceability and number);
- Climatic test and static temperature chamber (name, type and number);
- Electrical tests, bursts (name of the instrument, type and number);
- Description of the procedure of field calibration for the test of immunity to radiated electromagnetic fields.

*Note concerning the numbering of the following pages:*

In addition to a sequential numbering: “R 61-2 page .....” at the bottom of the pages of this publication, a special place is left at the top of each page (starting with the following page) for numbering the pages of reports established following this model. In particular, some tests (e.g. metrological performance tests) shall be repeated several times, each test being reported individually on a separate page following the relevant format; in the same way, a multiple range instrument shall be tested separately for each range and a separate form (including the general information form) shall be filled out for each range. For a given report, it is advisable to complete the sequential numbering of each page by the indication of the total number of pages of the report.

**IDENTIFICATION OF THE INSTRUMENT**

Application no.: .....  
Report date: .....  
Type designation: .....  
Manufacturer: .....  
Serial no.: .....

Manufacturing documentation:  
*(Record as necessary to identify the equipment under test)*

System or module name	Drawing number or software reference	Issue level	Serial no.
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

Simulator documentation:

System or module name	Drawing number or software reference	Issue level	Serial no.
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

Simulator function (summary):

Simulator description and drawings, block diagram, etc. should be attached to the report if available.

**IDENTIFICATION OF THE INSTRUMENT (continued)**

Application no.: .....

Report date: .....

Type designation: .....

Manufacturer: .....

Serial no.: .....

Description or other information pertaining to identification of the instrument:  
*(attach photograph here if available)*

**GENERAL INFORMATION CONCERNING THE TYPE**

Application no.: .....  
 Type designation: .....  
 Manufacturer: .....  
 Applicant: .....  
 Instrument category: .....

Testing on:  Complete instrument  Module<sup>(\*)</sup>

Reference accuracy class:  Accuracy class:

T = +  T = -  d =

$U_{nom}$  =  V  $U_{min}$  =  V  $U_{max}$  =  V f =  Hz Battery U =  V

Max =  d =  n =

Min =

Maximum operating speed =  Minimum operating speed =

$U_{nom}^{(**)}$  =  V  $U_{min}$  =  V  $U_{max}$  =  V f =  Hz Battery, U =  V

Zero-setting device:

Semi-automatic

Automatic zero-setting

Initial zero-setting

Zero-tracking

Initial zero-setting range  %

Temperature range  °C

Printer:  Built in  Connected  Not present but connectable  No connection

<sup>(\*)</sup> The test equipment (simulator or part of a complete instrument) connected to the module shall be defined in the test form(s) used.

<sup>(\*\*)</sup> The voltage  $U_{nom}$  shall be as defined at IEC 61000-4-11 (2001) section 5.

**GENERAL INFORMATION CONCERNING THE TYPE (continued)**

Instrument submitted:	.....	Load cell:	.....
Identification no.:	.....	Manufacturer:	.....
Connected equipment:	.....	Type:	.....
Remarks:		Capacity:	.....
		Number:	.....
Interfaces: (number, nature)	.....	Classification symbol:	.....

Remarks:           see following page

Date of report:	.....	Evaluation period:	.....
Observer:	.....		

Use this space to indicate additional remarks and/or information:

(other connected equipment, interfaces and load cells, choice of the manufacturer regarding protection against disturbances, etc.)





**CONFIGURATION FOR TEST**

Application no.: .....  
Report date: .....  
Type designation: .....  
Manufacturer: .....  
Serial no.: .....

Use this space for additional information relating to equipment configuration, interfaces, data rates, load cells, EMC protection options, etc. for the instrument and/or simulator:

**EXPLANATORY NOTES**

Meaning of symbols:

- $I$  = Indication
- $I_n$  =  $n^{\text{th}}$  indication
- $L$  = Load
- $\Delta L$  = Additional load to next changeover point
- $P$  =  $I + \frac{1}{2} d - \Delta L$  = Indication prior to rounding (digital indication)
- $E$  =  $I - L$  or  $P - L$  = Error
- $F$  = Mass of fill
- $F_p$  = Preset value of fill
- $P_i$  = Fraction of the  $MPE_{(1)}$  applicable to one part of the instrument which is examined separately
- (x) = Class designation factor
- MPE = Maximum permissible error (absolute value)
- EUT = Equipment under test
- $MPE_{(1)}$  = Maximum permissible error for influence factor tests for class X(1)
- se = Preset value error (setting error)
- $MPSE_{(1)}$  = Maximum permissible preset value error for class X(1)
- $md_{\text{max}}$  = Maximum of the actual deviations of each fill from the average of all fills
- $MPD_{(1)}$  = Maximum permissible deviation of each fill from the average for class X(1)
- $mp\Delta z_{(1)}$  = Maximum permissible zero change per 5 °C for class X(1)

**COMPLETION OF TYPE EVALUATION CHECKLIST**

The name(s) or symbol(s) of the unit(s) used to express test results shall be specified in each form.

For each test, the "SUMMARY OF TYPE EVALUATION" and the "CHECKLIST" shall be completed according to this example:

	P	F	P = Passed, F = Failed
when the instrument has passed the test:	X		
when the instrument has failed the test:		X	
when the test is not applicable:	/	/	

The white spaces in boxes in the headings of the report should always be filled in according to the following example:

	At start	At end	
Temp.:	20.5	21.1	°C
Rel. h.:			%
Date:	2004-11-29	2004-11-30	yyyy-mm-dd
Time:	16:00:05	16:30:25	hh:mm:ss

where:

- Temp. = temperature
- Rel. h. = relative humidity
- Date = date on which the test was performed

In the disturbance tests, faults greater than 0.25 MPD are acceptable provided that they are detected and acted upon, or that they result from circumstances such that these faults shall not be considered as significant; an appropriate explanation shall be given in the column "Yes (remarks)".

Numbers in brackets refer to the corresponding subclauses of R 61-1.

**SUMMARY OF TYPE EVALUATION**

Application no.: .....

Report date: .....

Type designation: .....

Manufacturer: .....

Serial no.: .....

Requirements	Passed	Failed	Remarks
Metrological requirements Part 1 clause 2			
Technical requirements Part 1 clause 3			
Requirements for electronic instruments Part 1 clause 4			
Metrological controls Part 1 clause 5			
Test Report			
Overall results			

Use this space to detail remarks from the summary of type evaluation.

**SUMMARY OF TEST REPORT**

	Test reference	R 76-2 reference (if used)	Tests	Report page	Passed	Failed	Place of test	Remarks
1	A.5.2		Warm-up time					
2	A.5.3		Zero-setting					
3	A.5.3		Tare setting					
4	A.6.2		<b>Influence factor tests</b>					
4.1	A.6.2.1		Prescribed (static) temperatures					
4.2	A.6.2.2		Temperature effect on no-load indication					
4.3	A.6.2.3		Damp heat, steady state					
4.4	A.6.2.4		Power voltage variation					
4.5	A.6.2.5		Tilting					
5	A.6.3		<b>Disturbance tests</b>					
5.1	A.6.3.1		Short time power reduction					
5.2	A.6.3.2		Electrical bursts					
5.3	A.6.3.3		Electrostatic discharge					
5.4.1	A.6.3.4.1		Radiated electromagnetic susceptibility					
5.4.2	A.6.3.4.2		Conducted electromagnetic susceptibility					
6.1.1	A.6.4.1		DC voltage variations					
6.1.2	A.6.4.1		Battery power supply					
7	A.7		Span stability test					
8	A.8.2.2		Load indicator performance test					
9	A.8.2		Material tests at initial verification					

Use this space to detail remarks from the Checklist.

**1 WARM-UP TIME (4.2.4, A.5.2)**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval,  $d$ : .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Resolution during test (smaller than  $d$ ): .....  
 Duration of disconnection before test: ..... hours

Automatic zero-setting device is:

Non-existent       Not in operation       Out of working range       In operation

- $E$  =  $I - L$  or  $P - L$  = error
- $P$  =  $I + \frac{1}{2} d - \Delta L$  = digital indication
- $E_{0i}$  = Initial zero-setting error
- $E_L$  = error calculated at load (loaded)
- $E_0$  = error calculated at zero or near zero (unloaded)

	Time*	Load $L$	Indication $I$	Add. load $\Delta L$	Error $E$	$E_L - E_0$
Unloaded	0 min				$E_{0i} =$	
Loaded					$E_L =$	
Unloaded	5 min				$E_0 =$	
Loaded					$E_L =$	
Unloaded	15 min				$E_0 =$	
Loaded					$E_L =$	
Unloaded	30 min				$E_0 =$	
Loaded					$E_L =$	

\* Counted from the moment an indication has first appeared

Error**	MPE
Initial zero-setting error, $E_{0i} =$	0.25 MPD(x) in service $\times$ Minfill =
Maximum value of error unloaded, $E_0 =$	<b>■</b>
Maximum value of zero variation, $E_0 - E_{0i} =$	0.25 MPD(x) in service $\times$ Minfill $\times P_1 =$
Maximum value of error loaded, $E_L - E_0 =$	0.25 MPD(x) in service $\times$ Max $\times P_1 =$

\*\* Check that the Error is  $\leq$  MPE

Remarks:

Passed       Failed

**2 ZERO-SETTING (3.8, A.5.3)**

**2.1 Range of zero setting (3.8.1, A.5.3.2)**

**2.1.1 Initial zero-setting (A.5.3.2.1)**

Application no.: .....

Type designation: .....

Observer: .....

Scale interval, *d*: .....

Resolution during test (smaller than *d*): .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Positive range <i>L<sub>p</sub></i>		Negative range <i>L<sub>n</sub></i>		Zero-setting range <i>L<sub>p</sub> + L<sub>n</sub></i>	% of maximum load
Weight added	Zero (yes/no)	Weight added	Zero (yes/no)		

Remarks:

Passed

Failed

**2.1 Range of zero-setting (continued)**

**2.1.2 Automatic zero-setting range (3.8.1, A.5.3.2.2)**

Application no.: .....

Type designation: .....

Observer: .....

Scale interval, *d*: .....

Resolution during test (smaller than *d*): .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Weight added	Zero (yes/no)	Zero-setting range	% of maximum load

Remarks:

Passed

Failed



**2.2 Accuracy of zero-setting (3.8.2, A.5.3.3)**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*: .....  
 Resolution during test (smaller than *d*): .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

$P = I + \frac{1}{2} d - \Delta L$  = digital indication  
 $E = I - L$  or  $P - L$  = error  
 $MPE_{(zero)} = 0.25 MPD(x) \text{ in-service} \times \text{Minfill}$

Zero-setting mode:						
Load <i>L</i>	Indication <i>I</i>	Add. load $\Delta L$	<i>P</i>	Error <i>E</i>	<i>E/d</i>	$MPE_{(zero)}$

Remarks:

Zero-setting mode:						
Load <i>L</i>	Indication <i>I</i>	Add. load $\Delta L$	<i>P</i>	Error <i>E</i>	<i>E/d</i>	$MPE_{(zero)}$

Remarks:

Zero-setting mode:						
Load <i>L</i>	Indication <i>I</i>	Add. load $\Delta L$	<i>P</i>	Error <i>E</i>	<i>E/d</i>	$MPE_{(zero)}$

Remarks:

Passed       Failed

**3 TARE DEVICE (3.8, A.5.3)**

**3.1 Accuracy of tare device (3.8.5.1, A.5.3.4)**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*: .....  
 Resolution during test (smaller than *d*): .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

$P = I + \frac{1}{2} d - \Delta L = \text{digital indication}$   
 $E = I - L \text{ or } P - L = \text{error}$   
 $MPE_{(tare)} = 0.25 \text{ MPD}(x) \text{ in-service} \times \text{Minfill}$

Tare balancing mode:						
Load <i>L</i>	Indication <i>I</i>	Add. load $\Delta L$	<i>P</i>	Error <i>E</i>	<i>E/d</i>	$MPE_{(tare)}$

Remarks:

Tare balancing mode:						
Load <i>L</i>	Indication <i>I</i>	Add. load $\Delta L$	<i>P</i>	Error <i>E</i>	<i>E/d</i>	$MPE_{(tare)}$

Remarks:

Tare balancing mode:						
Load <i>L</i>	Indication <i>I</i>	Add. load $\Delta L$	<i>P</i>	Error <i>E</i>	<i>E/d</i>	$MPE_{(tare)}$

Remarks:

Passed       Failed

**4 INFLUENCE FACTORS (2.8, A.6.2)**

**4.1 Prescribed temperatures for static tests (2.8.1.1, A.6.2.1)**

**4.1.1 Initial reference temperature of 20 °C**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*:  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Automatic zero-setting device is:

Non-existent       Not in operation       Out of working range       In operation

$$E = I + \frac{1}{2} d - \Delta L - L$$

$$E_c = E - E_0 \text{ with } E_0 = \text{error calculated at or near zero } (*)$$

$MPE_{(1)} = 0.25 MPD_{(1)}$  in-service for the mass of fill equal to the test load(s) × (*P<sub>i</sub>*, if applicable)

Load <i>L</i>	Indication <i>I</i>		Add. load $\Delta L$		Error <i>E</i>		Corrected error <i>E<sub>c</sub></i>		$MPE_{(1)}$	$E_c^{**}/MPE_{(1)}$
	↓	↑	↓	↑	↓	↑	↓	↑		
(*)					(*)					

\*\* Use the largest value of *E<sub>c</sub>* in each case.

Maximum of the values of $E_c/MPE_{(1)}$ :	
--	--

Note: This value is to be inserted in the Checklist

Remarks:

Passed       Failed

**4.1 Prescribed temperatures for static tests (continued)**

**4.1.2 Specified high temperature**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*: .....  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Automatic zero-setting device is:

Non-existent       Not in operation       Out of working range       In operation

$$E = I + \frac{1}{2} d - \Delta L - L$$

$$E_c = E - E_0 \text{ with } E_0 = \text{error calculated at or near zero}^{(*)}$$

$$MPE_{(1)} = 0.25 MPD_{(1)} \text{ in-service for the mass of fill equal to the test load(s)} \times (P_i, \text{ if applicable})$$

Load <i>L</i>	Indication <i>I</i>		Add. load $\Delta L$		Error <i>E</i>		Corrected error <i>E<sub>c</sub></i>		MPE <sub>(1)</sub>	<i>E<sub>c</sub></i> <sup>**</sup> /MPE <sub>(1)</sub>
	↓	↑	↓	↑	↓	↑	↓	↑		
(*)					(*)					

\*\* Use the largest value of *E<sub>c</sub>* in each case.

Maximum of the values of <i>E<sub>c</sub></i> /MPE <sub>(1)</sub> :	
---	--

Note: This value is to be inserted in the Checklist

Remarks:

Passed       Failed

**4.1 Prescribed temperatures for static tests (continued)**

**4.1.3 Specified low temperature**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*: .....  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Automatic zero-setting device is:

Non-existent       Not in operation       Out of working range       In operation

$$E = I + \frac{1}{2} d - \Delta L - L$$

$$E_c = E - E_0 \text{ with } E_0 = \text{error calculated at or near zero}^{(*)}$$

$$MPE_{(1)} = 0.25 MPD_{(1)} \text{ in-service for the mass of fill equal to the test load(s)} \times (P_i, \text{ if applicable})$$

Load <i>L</i>	Indication <i>I</i>		Add. load $\Delta L$		Error <i>E</i>		Corrected error <i>E<sub>c</sub></i>		MPE <sub>(1)</sub>	<i>E<sub>c</sub></i> <sup>**</sup> /MPE <sub>(1)</sub>
	↓	↑	↓	↑	↓	↑	↓	↑		
(*)					(*)					

\*\* Use the largest value of *E<sub>c</sub>* in each case.

Maximum of the values of <i>E<sub>c</sub></i> /MPE <sub>(1)</sub> :	
---	--

Note: This value is to be inserted in the Checklist

Remarks:

Passed       Failed

**4.1 Prescribed temperatures for static tests (continued)**

**4.1.3 Temperature of 5 °C**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*: .....  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Automatic zero-setting device is:

Non-existent       Not in operation       Out of working range       In operation

$$E = I + \frac{1}{2} d - \Delta L - L$$

$$E_c = E - E_0 \text{ with } E_0 = \text{error calculated at or near zero}^{(*)}$$

$$MPE_{(1)} = 0.25 MPD_{(1)} \text{ in-service for the mass of fill equal to the test load(s)} \times (P_i, \text{ if applicable})$$

Load <i>L</i>	Indication <i>I</i>		Add. load $\Delta L$		Error <i>E</i>		Corrected error <i>E<sub>c</sub></i>		MPE <sub>(1)</sub>	<i>E<sub>c</sub></i> <sup>**</sup> /MPE <sub>(1)</sub>
	↓	↑	↓	↑	↓	↑	↓	↑		
(*)					(*)					

\*\* Use the largest value of *E<sub>c</sub>* in each case.

Maximum of the values of <i>E<sub>c</sub></i> /MPE <sub>(1)</sub> :	
---	--

Note: This value is to be inserted in the Checklist

Remarks:

Passed       Failed

**4.1 Prescribed temperatures for static tests (continued)**

**4.1.4 Reference temperature of 20 °C**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*:  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Automatic zero-setting device is:

Non-existent       Not in operation       Out of working range       In operation

$$E = I + \frac{1}{2} d - \Delta L - L$$

$$E_c = E - E_0 \text{ with } E_0 = \text{error calculated at or near zero}^{(*)}$$

$MPE_{(1)} = 0.25 MPD_{(1)}$  in-service for the mass of fill equal to the test load(s) × ( $P_i$ , if applicable)

Load <i>L</i>	Indication <i>I</i>		Add. load $\Delta L$		Error <i>E</i>		Corrected error <i>E<sub>c</sub></i>		$MPE_{(1)}$	$E_c^{**}/MPE_{(1)}$
	↓	↑	↓	↑	↓	↑	↓	↑		
(*)					(*)					

\*\* Use the largest value of  $E_c$  in each case.

Maximum of the values of $E_c/MPE_{(1)}$ :	
--	--

Note: This value is to be inserted in the Checklist

Remarks:

Passed       Failed

**4.2 Temperature effect on no-load indication (2.8.1.3, A.6.2.2)**

Application no.: .....  
 Type designation: .....  
 Date: .....  
 Observer: .....  
 Scale interval, *d*: .....

Automatic zero-setting device is:

Non-existent       Not in operation       Out of working range       In operation

$P = I + \frac{1}{2} d - \Delta L = \text{digital indication}$

Maximum permissible zero change per 5 °C for the Min ( $mp\Delta z_{(1)}$ ) = 0.25MPD in service × Min (×  $P_1$  if applicable)

$\Delta P$  = difference in *P* for two consecutive tests at different temperatures

$\Delta Temp$  = difference in Temp for two consecutive tests at different temperatures

Report page*	Date	Time	Temp (°C)	Zero indication <i>I</i>	Add. load $\Delta L$	<i>P</i>	$\Delta P$	$\Delta Temp$	Zero-change per 5 °C $\Delta z$	$mp\Delta z_{(1)}$	$\Delta z / mp\Delta z_{(1)}$

\* Give the report page of the relevant weighing tests where weighing tests and temperature effect on no-load indication test are conducted together.

Maximum of the values of  $\Delta z / mp\Delta z_{(1)}$ :

Note: This value is to be inserted in the Checklist

Remarks:  Passed       Failed



**4.3 Damp heat, steady state (4.2.1, A.6.2.3)**

**4.3.1 Initial test (at reference temperature and 50 % humidity)**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*: .....  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Automatic zero-setting device is:

Non-existent       Not in operation       Out of working range       In operation

$$E = I + \frac{1}{2} d - \Delta L - L$$

$$E_c = E - E_0 \text{ with } E_0 = \text{error calculated at or near zero }^{(*)}$$

$$MPE_{(1)} = 0.25 MPD_{(1)} \text{ in-service for the mass of fill equal to the test load(s)} \times (P_i, \text{ if applicable})$$

Load <i>L</i>	Indication <i>I</i>		Add. load $\Delta L$		Error <i>E</i>		Corrected error <i>E<sub>c</sub></i>		MPE <sub>(1)</sub>	<i>E<sub>c</sub><sup>**</sup></i> /MPE <sub>(1)</sub>
	↓	↑	↓	↑	↓	↑	↓	↑		
(*)					(*)					

\*\* Use the largest value of *E<sub>c</sub>* in each case.

Maximum of the values of <i>E<sub>c</sub></i> /MPE <sub>(1)</sub> :	
---	--

Note: This value is to be inserted in the Checklist

Remarks:

Passed       Failed

**4.3 Damp heat, steady state (continued)**

**4.3.2 Test at high temperature and 85 % relative humidity**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*: .....  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Automatic zero-setting device is:

Non-existent       Not in operation       Out of working range       In operation

$$E = I + \frac{1}{2} d - \Delta L - L$$

$$E_c = E - E_0 \text{ with } E_0 = \text{error calculated at or near zero}^{(*)}$$

$$MPE_{(1)} = 0.25 MPD_{(1)} \text{ in-service for the mass of fill equal to the test load(s)} \times (P_i, \text{ if applicable})$$

Load <i>L</i>	Indication <i>I</i>		Add. load $\Delta L$		Error <i>E</i>		Corrected error <i>E<sub>c</sub></i>		MPE <sub>(1)</sub>	<i>E<sub>c</sub></i> <sup>**</sup> /MPE <sub>(1)</sub>
	↓	↑	↓	↑	↓	↑	↓	↑		
(*)					(*)					

\*\* Use the largest value of *E<sub>c</sub>* in each case.

Maximum of the values of *E<sub>c</sub>*/MPE<sub>(1)</sub>:

Note: This value is to be inserted in the Checklist

Remarks:

Passed       Failed

**4.3 Damp heat, steady state (continued)**

**4.3.3 Final test (at reference temperature and 50 % relative humidity)**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*: .....  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Automatic zero-setting device is:

Non-existent       Not in operation       Out of working range       In operation

$$E = I + \frac{1}{2} d - \Delta L - L$$

$$E_c = E - E_0 \text{ with } E_0 = \text{error calculated at or near zero}^{(*)}$$

$$MPE_{(1)} = 0.25 MPD_{(1)} \text{ in-service for the mass of fill equal to the test load(s)} \times (P_i, \text{ if applicable})$$

Load <i>L</i>	Indication <i>I</i>		Add. load $\Delta L$		Error <i>E</i>		Corrected error <i>E<sub>c</sub></i>		MPE <sub>(1)</sub>	<i>E<sub>c</sub></i> <sup>**</sup> /MPE <sub>(1)</sub>
	↓	↑	↓	↑	↓	↑	↓	↑		
(*)					(*)					

\*\* Use the largest value of *E<sub>c</sub>* in each case.

Maximum of the values of <i>E<sub>c</sub></i> /MPE <sub>(1)</sub> :	
---	--

Note: This value is to be inserted in the Checklist

Remarks:

Passed       Failed

**4.4 AC power voltage variation (2.8.2, A.6.2.4)**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*: .....  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Automatic zero-setting device is:

Non-existent       Not in operation       Out of working range       In operation

Marked nominal voltage  $U_{nom}$  or voltage range ( $U_{min}$  to  $U_{max}$ ):  V

Test supply voltage:  V      Test supply frequency:  Hz

$E = I + \frac{1}{2}d - \Delta L - L$   
 $E_c = E - E_0$  with  $E_0$  = error calculated at or near zero\*  
 $MPE_{(1)} = 0.25 MPD_{(1)}$  in-service for the mass of fill equal to the test load(s) × ( $P_i$ , if applicable)

Voltage**	$U$ (V)	Load $L$	Indication $I$	Add. load $\Delta L$	Error $E$	Corrected error, $E_c$	$MPE_{(1)}$	$E_c/MPE_{(1)}$
Reference value					(*)			
Reference value – 15 %								
Reference value + 10 %								
Reference value								

\*\* The reference voltage shall be as defined in IEC 61000-4-11 (2001) section 5 or the most recent issue of the publication valid at the time of testing the instrument.

Maximum of the values of  $E_c/MPE_{(1)}$ :

Note: This value is to be inserted in the Checklist

Remarks:

Passed       Failed

**4.5 Tilting (2.8.4, A.6.2.5)**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*: .....  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Automatic zero-setting device is:

- Non-existent     
  Not in operation     
  Out of working range     
  In operation  
 Tilting by 5 % not required for fixed installation     
  Tilting by 5 % not required, can be adjusted to 1 % or less     
  Tilting by 5 % if no level indicator on instrument liable to be tilted

$E = I + \frac{1}{2}d - \Delta L - L$   
 $E_c = E - E_0$  with  $E_0 =$  error calculated at or near zero<sup>(\*)</sup>  
 $MPE_{(1)} = 0.25 MPD_{(1)}$  in-service for the mass of fill equal to the test load(s)  $\times (P_i, \text{ if applicable})$

Tilting position	Load <i>L</i>	Indication <i>I</i>	Add. load $\Delta L$	Error <i>E</i>	Corrected error, $E_c$	$MPE_{(1)}$	$E_c/MPE_{(1)}$
Reference				(*)			
5 % → longitudinally forwards							
5 % ← longitudinally backwards							
5 % ↑ transversely forwards							
5 % ↓ transversely backwards							
Reference							

Maximum of the values of  $E_c/MPE_{(1)}$ :

Note: This value is to be inserted in the Checklist

Remarks:

- Passed     
  Failed

**5 DISTURBANCES (4.1.2, A.6.3)**

**5.1 Short time power reduction (A.6.3.1)**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval,  $d$ :  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Marked nominal voltage  $U_{nom}$  or voltage range ( $U_{min}$  to  $U_{max}$ ):  V

Load	Disturbance				Result		
	Amplitude (% of $U_{nom}$ )	Duration (Cycles)	Number of disturbances	Repetition interval (s)	Indication $I$	Significant fault	
						No	Yes (remarks)
	without disturbance						
	0	0.5	10				
	50	1	10				

Remarks:  Passed  Failed

**5.2 Electrical bursts (fast transient tests) (A.6.3.2)**

**5.2.1 Power supply lines**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*:  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Power supply lines: test voltage 1 kV, duration of the test 1 min at each polarity

Load	Connection			Polarity	Indication /	Result	
	L ↓ ground	N ↓ ground	PE ↓ ground			Significant fault	
	without disturbance					No	Yes (remarks)
	without disturbance						
				pos			
				neg			
	without disturbance						
				pos			
				neg			
	without disturbance						
				pos			
				neg			

L = phase, N = neutral, PE = protective earth

Remarks:

Passed

Failed

**5.2 Electrical bursts (continued)**

**5.2.2 I/O circuits and communication lines**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*:  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

I/O signals, data and control lines: test voltage 0.5 kV; duration of the test: 1 min at each polarity.

Load	Cable / interface	Polarity	Result		
			Indication /	Significant fault	
				No	Yes (remarks)
	without disturbance				
		pos			
		neg			
	without disturbance				
		pos			
		neg			
	without disturbance				
		pos			
		neg			
	without disturbance				
		pos			
		neg			
	without disturbance				
		pos			
		neg			

Explain or make a sketch indicating where the clamp is located on the cable; if necessary, add additional page

Remarks:

Passed

Failed



**5.3 Electrostatic discharge (A.6.3.3)**

**5.3.1 Direct application**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*:  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Contact discharges

Paint penetration

Air discharges

Polarity\*:

pos

neg

Load	Discharges			Result		
	Test voltage (kV)	Number of discharges $\geq 10$	Repetition interval (s)	Indication <i>I</i>	Significant fault	
					No	Yes (remarks, test points)
	without disturbance					
	2					
	4					
	6					
	8 (air discharges)					

\* IEC 61000-4-2 (2001) specifies that the test shall be conducted with the most sensitive polarity.

Remarks:

Passed

Failed

**5.3 Electrostatic discharge (continued)**

**5.3.2 Indirect application (contact discharges only)**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*:  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Polarity\*:  pos  neg

Horizontal coupling plane

Load	Discharges			Result		
	Test voltage (kV)	Number of discharges ≥ 10	Repetition interval (s)	Indication <i>I</i>	Significant fault	
					No	Yes (remarks, test points)
	without disturbance					
	2					
	4					
	6					

Vertical coupling plane

Load	Discharges			Result		
	Test voltage (kV)	Number of discharges ≥ 10	Repetition interval (s)	Indication <i>I</i>	Significant fault	
					No	Yes (remarks, test points)
	without disturbance					
	2					
	4					
	6					

\* IEC 61000-4-2 (2001) specifies that the test shall be conducted with the most sensitive polarity.

Remarks:  Passed  Failed

### **5.3 Electrostatic discharge (continued)**

Specification of test points of EUT (direct application), e.g. by photos or sketches

a) Direct application

Contact discharges:

Air discharges:

b) Indirect application

**5.4 Electromagnetic susceptibility (A.6.3.4)**

**5.4.1 Radiated (A.6.3.4.1)**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*:  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Rate of sweep:

Load:  Material load:

Disturbances				Result		
Antenna	Frequency range (MHz)	Polarization	Facing EUT	Indication /	Significant fault	
					No	Yes (remarks)
without disturbance						
		Vertical	Front			
			Right			
			Left			
			Rear			
		Horizontal	Front			
			Right			
			Left			
			Rear			
		Vertical	Front			
			Right			
			Left			
			Rear			
		Horizontal	Front			
			Right			
			Left			
			Rear			

Frequency range: 80 MHz – 2 GHz  
 Field strength: 6 V/m on one face or 3 V/m on all four faces if fails  
 Modulation: 80 % AM, 1 kHz sine wave

Remarks:

Passed

Failed

**5.4 Electromagnetic susceptibility (continued)**

**5.4.2 Conducted (A.6.3.4.2)**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*:  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Rate of sweep:

Load:  Material load:

Frequency Range (MHz)	Cable / interface	Level (Volts RMS)	Result	
			Indication /	Significant fault
				No
without disturbance				
without disturbance				
without disturbance				
without disturbance				
without disturbance				
without disturbance				

Frequency range: 150 kHz – 80 MHz  
 Voltage level: 3 V RMS  
 Modulation: 80 % AM, 1 kHz sine wave

*Note:* If the EUT fails, the frequency and field strength at which this occurs must be recorded.

Remarks:

Passed  Failed

#### **5.4 Electromagnetic susceptibility (continued)**

Include a description of the set-up of EUT, e.g. by photos or sketches.

**6 DISTURBANCES ON DC POWERED INSTRUMENTS (2.8.3, A.6.4)**

**6.1.1 DC voltage variations (4.2.6, A.6.4.1)**

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*:  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Marked nominal voltage or voltage range:  V

$E = I + \frac{1}{2} d - \Delta L - L$

$E_c = E - E_0$  with  $E_0$  = error calculated at or near zero

$MPE_{(1)} = 0.25 MPD_{(1)}$  in-service for the mass of fill equal to the test load(s)  $\times (P_1, \text{ if applicable})$

Voltage	<i>U</i> (DC Volts)	Load <i>L</i>	Indication <i>I</i>	Error <i>E</i>	Corrected error, <i>E<sub>c</sub></i>	$MPE_{(1)}$	$E_c / MPE_{(1)}$
Reference Voltage							
Under-voltage							
Over-voltage							
Reference Voltage							

Maximum of the values of  $E_c / MPE_{(1)}$ :

Note: This value is to be inserted in the Checklist

Remarks:

Passed

Failed

**6 DISTURBANCES ON DC POWERED INSTRUMENTS (continued)**

**6.1.2 Battery power supply (4.2.6)**

For battery powered instruments only:

Manufacturer's specified minimum voltage value:  V

When the voltage drops below the manufacturer's specified minimum value, the instrument (please tick):

Continues to function

Automatically goes out of service

Functions with errors

N/A as instrument is not battery powered

Remarks:

Passed

Failed



**7 SPAN STABILITY TEST (4.3.3, A.7)**

Application no.: .....  
 Type designation: .....  
 Scale interval *d*: .....  
 (Control indicating device)  
 Resolution during test: .....  
 (smaller than *d*)

Automatic zero-setting device is:

Non-existent       Not in operation       Out of working range

Test load:

**Measurement no. 1:**      Initial measurement

Observer: .....  
 Location: .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

$$E_0 = I_0 + \frac{1}{2} d - \Delta L_0 - L_0$$

$$E_L = I_L + \frac{1}{2} d - \Delta L - L$$

	Indication of zero, $I_0$	Add. load $\Delta L_0$	$E_0$	Indication of load, $I_L$	Add. load $\Delta L$	$E_L$	$E_L - E_0$	Corrected value*
1								
2								
3								
4								
5								

\* When applicable, necessary corrections resulting from variations of temperature, pressure, etc. See remarks.

Average error = average ( $E_L - E_0$ ) =

$(E_L - E_0)_{\max} - (E_L - E_0)_{\min} =$

$0.1 d =$

If  $|(E_L - E_0)_{\max} - (E_L - E_0)_{\min}| \leq 0.1 d$ , the loading and reading will be sufficient for each of the subsequent measurements. If not, five loadings and readings shall be performed at each measurement.

Remarks:

**7 SPAN STABILITY TEST (continued)**

Subsequent measurements

For each of the subsequent measurements (at least 7), indicate on the line "conditions of the measurement", as appropriate, if the measurement has been performed:

- after the temperature test, the EUT having been stabilized for at least 16 h;
- after the humidity test, the EUT having been stabilized for at least 16 h;
- after the EUT has been disconnected from the mains for at least 8 h and then stabilized for at least 5 h;
- after any change in the test location;
- under any other specific condition.

**Measurement no. 2:**

	At start	At end	
Observer: .....			°C
Location: .....			%
			yyyy-mm-dd
			hh:mm:ss

$$E_0 = I_0 + \frac{1}{2} d - \Delta L_0 - L_0$$

$$E_L = I_L + \frac{1}{2} d - \Delta L - L$$

	Indication of zero, $I_0$	Add. load $\Delta L_0$	E <sub>0</sub>	Indication of load, $I_L$	Add. load $\Delta L$	E <sub>L</sub>	E <sub>L</sub> - E <sub>0</sub>	Corrected value*
1								
2								
3								
4								
5								

\* When applicable, necessary corrections resulting from variations of temperature, pressure, etc. See remarks.

If five loadings and readings have been performed: Average error = average (E<sub>L</sub> - E<sub>0</sub>) =

Remarks:

**7 SPAN STABILITY TEST (continued)**

**Measurement no. 3:**

Observer: .....  
 Location: .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

$$E_0 = I_0 + \frac{1}{2} d - \Delta L_0 - L_0$$

$$E_L = I_L + \frac{1}{2} d - \Delta L - L$$

	Indication of zero, $I_0$	Add. load $\Delta L_0$	$E_0$	Indication of load, $I_L$	Add. load $\Delta L$	$E_L$	$E_L - E_0$	Corrected value*
1								
2								
3								
4								
5								

\* When applicable, necessary corrections resulting from variations of temperature, pressure, etc. See remarks.

If five loadings and readings have been performed: Average error = average ( $E_L - E_0$ ) =

Remarks:

**Measurement no. 4:**

Observer: .....  
 Location: .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

$$E_0 = I_0 + \frac{1}{2} d - \Delta L_0 - L_0$$

$$E_L = I_L + \frac{1}{2} d - \Delta L - L$$

	Indication of zero, $I_0$	Add. load $\Delta L_0$	$E_0$	Indication of load, $I_L$	Add. load $\Delta L$	$E_L$	$E_L - E_0$	Corrected value*
1								
2								
3								
4								
5								

\* When applicable, necessary corrections resulting from variations of temperature, pressure, etc. See remarks.

If five loadings and readings have been performed: Average error = average ( $E_L - E_0$ ) =

Remarks:

**7 SPAN STABILITY TEST (continued)**

**Measurement no. 5:**

Observer: .....  
 Location: .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

$$E_0 = I_0 + \frac{1}{2} d - \Delta L_0 - L_0$$

$$E_L = I_L + \frac{1}{2} d - \Delta L - L$$

	Indication of zero, $I_0$	Add. load $\Delta L_0$	$E_0$	Indication of load, $I_L$	Add. load $\Delta L$	$E_L$	$E_L - E_0$	Corrected value*
1								
2								
3								
4								
5								

\* When applicable, necessary corrections resulting from variations of temperature, pressure, etc. See remarks.

If five loadings and readings have been performed: Average error = average ( $E_L - E_0$ ) =

Remarks:

**Measurement no. 6:**

Observer: .....  
 Location: .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

$$E_0 = I_0 + \frac{1}{2} d - \Delta L_0 - L_0$$

$$E_L = I_L + \frac{1}{2} d - \Delta L - L$$

	Indication of zero, $I_0$	Add. load $\Delta L_0$	$E_0$	Indication of load, $I_L$	Add. load $\Delta L$	$E_L$	$E_L - E_0$	Corrected value*
1								
2								
3								
4								
5								

\* When applicable, necessary corrections resulting from variations of temperature, pressure, etc. See remarks.

If five loadings and readings have been performed: Average error = average ( $E_L - E_0$ ) =

Remarks:

**7 SPAN STABILITY TEST (continued)**

**Measurement no. 7:**

Observer: .....  
 Location: .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

$$E_0 = I_0 + \frac{1}{2} d - \Delta L_0 - L_0$$

$$E_L = I_L + \frac{1}{2} d - \Delta L - L$$

	Indication of zero, $I_0$	Add. load $\Delta L_0$	$E_0$	Indication of load, $I_L$	Add. load $\Delta L$	$E_L$	$E_L - E_0$	Corrected value*
1								
2								
3								
4								
5								

\* When applicable, necessary corrections resulting from variations of temperature, pressure, etc. See remarks.

If five loadings and readings have been performed: Average error = average ( $E_L - E_0$ ) =

Remarks:

**Measurement no. 8:**

Observer: .....  
 Location: .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

$$E_0 = I_0 + \frac{1}{2} d - \Delta L_0 - L_0$$

$$E_L = I_L + \frac{1}{2} d - \Delta L - L$$

	Indication of zero, $I_0$	Add. load $\Delta L_0$	$E_0$	Indication of load, $I_L$	Add. load $\Delta L$	$E_L$	$E_L - E_0$	Corrected value*
1								
2								
3								
4								
5								

\* When applicable, necessary corrections resulting from variations of temperature, pressure, etc. See remarks.

If five loadings and readings have been performed: Average error = average ( $E_L - E_0$ ) =

Remarks:



**8 MATERIAL TESTING (6, A.8)**

**8.1 Load indicator performance (6.5.2, A.8.2.2)**

This form may be used to record static weighing performance of the load indicator if necessary for the integral verification method for material tests.

Application no.: .....  
 Type designation: .....  
 Observer: .....  
 Scale interval, *d*:  
 (Control indicating device) .....

	At start	At end	
Temp.:			°C
Rel. h.:			%
Date:			yyyy-mm-dd
Time:			hh:mm:ss

Resolution during test (smaller than *d*) .....

Automatic zero-setting device is:

Non-existent       Not in operation       Out of working range       In operation

$$E = I + \frac{1}{2} d - \Delta L - L$$

Load <i>L</i>	Indication <i>I</i>		Additional load $\Delta L$		Error <i>E</i>	
	↓	↑	↓	↑	↓	↑
(*)					*	

\* At or near zero

Remarks:

**8 MATERIAL TESTING (continued)**

**8.2 Separate verification method (6.5.1, A.8.2.2)**

Test no.: .....

Maximum capacity (6.2.1(a))  g/kg

Load value close to\*: Minfill (6.2.1 (a))  g/kg

Mid-range critical value (6.2.1 (c))  g/kg

Application no.: .....

Type designation: .....

Observer: .....

Scale interval, *d*:  
(Control indicating device) .....

Material: .....

Condition of material: .....

Nominal load: .....

	At start	At end	
Temp.:	<input type="text"/>	<input type="text"/>	°C
Rel. h.:	<input type="text"/>	<input type="text"/>	%
Date:	<input type="text"/>	<input type="text"/>	yyyy-mm-dd
Time:	<input type="text"/>	<input type="text"/>	hh:mm:ss

Correction devices	
Type	Settings

Preset value of fill, $F_P$	<input type="text"/>
Number of loads per fill	<input type="text"/>
Average value of the fills' container tare (if applicable)	<input type="text"/>
Error of the control instrument (if applicable)	<input type="text"/>

Fill no.	Container tare g or kg	Indication of control instrument, <i>I</i> g or kg	Additional load, $\Delta L$ g	Mass of fill, <i>F</i> g or kg	Deviation from the average of all fills, <i>md</i> g
1					
2					
3					
4					
5					
6					
7					
8					
9					



Fill no.	Container tare g or kg	Indication of control instrument, / g or kg	Additional load, $\Delta L$ g	Mass of fill, $F$ g or kg	Deviation from the average of all fills, $md$ g
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					

Fill no.	Container tare g or kg	Indication of control instrument, / g or kg	Additional load, $\Delta L$ g	Mass of fill, $F$ g or kg	Deviation from the average of all fills, $md$ g
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					

Results of material test no.:

Load value close to:

Preset value of fill, $F_P$	
Average mass of all fills $\Sigma F / n$	
Preset value error $se = \Sigma F / n - F_P$	
Maximum permissible preset value error for class X(1): ( $MPSE_{(1)} = 0.25 MPD_{(1)}$ in-service for the fill value equal to $F_P$ )	
$se / MPSE_{(1)}$	

Maximum of the absolute values of the actual deviation from the average, $md_{max}$	
Maximum permissible deviation from average for class X(1): ( $MPD_{(1)} =$ initial verification for the fill value equal to $F_P$ )	
$md_{max} / MPD_{(1)}$	

Remarks:

**8 MATERIAL TESTING (continued)**

**8.3 Integral verification method (6.5.2, A.8.2.2)**

Test no.: .....

Maximum capacity (6.2.1(a))  g/kg

Load value close to\*: Minfill (6.2.1 (a))  g/kg

Mid-range critical value (6.2.1 (c))  g/kg

Application no.: .....

Type designation: .....

Observer: .....

Scale interval, *d*:  
(Control indicating device) .....

Material: .....

Condition of material: .....

Nominal load: .....

	At start	At end	
Temp.:	<input type="text"/>	<input type="text"/>	°C
Rel. h.:	<input type="text"/>	<input type="text"/>	%
Date:	<input type="text"/>	<input type="text"/>	yyyy-mm-dd
Time:	<input type="text"/>	<input type="text"/>	hh:mm:ss

Correction devices	
Type	Settings

Preset value of fill, $F_P$	
Number of loads per fill	
Average value of the fills' container tare (if applicable)	
Error of the control instrument (if applicable)	

Fill no.	Container tare g or kg	Indication of control instrument, <i>I</i> g or kg	Add. load, $\Delta L$ g	Mass of load, <i>L</i> g or kg	Mass of fill, <i>F</i> g or kg	Deviation from the average of all fills, <i>md</i> g
1	Full					
	Empty					
2	Full					
	Empty					
3	Full					
	Empty					
4	Full					
	Empty					

Fill no.	Container tare g or kg	Indication of control instrument, / g or kg	Add. load, $\Delta L$ g	Mass of load, $L$ g or kg	Mass of fill, $F$ g or kg	Deviation from the average of all fills, $md$ g
5	Full					
	Empty					
6	Full					
	Empty					
7	Full					
	Empty					
8	Full					
	Empty					
9	Full					
	Empty					
10	Full					
	Empty					
11	Full					
	Empty					
12	Full					
	Empty					
13	Full					
	Empty					
14	Full					
	Empty					
15	Full					
	Empty					
16	Full					
	Empty					
17	Full					
	Empty					
18	Full					
	Empty					
19	Full					
	Empty					
20	Full					
	Empty					
21	Full					
	Empty					
22	Full					
	Empty					

Fill no.	Container tare g or kg	Indication of control instrument, / g or kg	Add. load, $\Delta L$ g	Mass of load, $L$ g or kg	Mass of fill, $F$ g or kg	Deviation from the average of all fills, $md$ g
23	Full					
	Empty					
24	Full					
	Empty					
25	Full					
	Empty					
26	Full					
	Empty					
27	Full					
	Empty					
28	Full					
	Empty					
29	Full					
	Empty					
30	Full					
	Empty					
31	Full					
	Empty					
32	Full					
	Empty					
33	Full					
	Empty					
34	Full					
	Empty					
35	Full					
	Empty					
36	Full					
	Empty					
37	Full					
	Empty					
38	Full					
	Empty					
39	Full					
	Empty					
40	Full					
	Empty					

Fill no.	Container tare g or kg	Indication of control instrument, / g or kg	Add. load, $\Delta L$ g	Mass of load, $L$ g or kg	Mass of fill, $F$ g or kg	Deviation from the average of all fills, $md$ g
41	Full					
	Empty					
42	Full					
	Empty					
43	Full					
	Empty					
44	Full					
	Empty					
45	Full					
	Empty					
46	Full					
	Empty					
47	Full					
	Empty					
48	Full					
	Empty					
49	Full					
	Empty					
50	Full					
	Empty					
51	Full					
	Empty					
52	Full					
	Empty					
53	Full					
	Empty					
54	Full					
	Empty					
55	Full					
	Empty					
56	Full					
	Empty					
57	Full					
	Empty					
58	Full					
	Empty					

Fill no.	Container tare g or kg	Indication of control instrument, / g or kg	Add. load, $\Delta L$ g	Mass of load, $L$ g or kg	Mass of fill, $F$ g or kg	Deviation from the average of all fills, $md$ g
59	Full					
	Empty					
60	Full					
	Empty					

Results of material test no.:

Load value close to:

Preset value of fill, $F_P$	
Average mass of all fills $\Sigma F / n$	
Preset value error $se = \Sigma F / n - F_P$	
Maximum permissible preset value error for class X(1): ( $MPSE_{(1)} = 0.25 MPD_{(1)}$ in-service for the fill value equal to $F_P$ )	
$se / MPSE_{(1)}$	

Maximum of the absolute values of the actual deviation from the average, $md_{max}$	
Maximum permissible deviation from average for class X(1): ( $MPD_{(1)} =$ initial verification for the fill value equal to $F_P$ )	
$md_{max} / MPD_{(1)}$	

Remarks:

**CHECKLIST**

Application no.: .....

Type designation: .....

References		Automatic gravimetric filling instruments	Enter value	Remarks
Requirement (R 61-1)	Test procedure			
2.2.1	A.5.5	Influence factor tests and determination of reference value for accuracy class Ref(x):		
2.8.1	A.6.2.1	Prescribed temperatures for static tests: Maximum of the values of $E_c / MPE_{(1)}$	Reference	
			High	
			Low	
			+ 5 °C	
			Reference	
2.8.1.3	A.6.2.2	Temperature effect on no-load indication ( $mp\Delta z_{(1)} = MPE_{(1)}$ for Minfill): Maximum of the values of $\Delta z / mp\Delta z_{(1)}$		
4.2.1	A.6.2.3	Damp heat: Maximum of the values of $E_c / MPE_{(1)}$	Reference + 50 % humidity	
			High + 85 % humidity	
			Reference + 50 % humidity	
2.8.2	A.6.2.4	Power voltage variation: Maximum of the values of $E_c / MPE_{(1)}$	- 15 %	
			+ 10 %	
2.8.3	A.6.4	DC voltage variations: Maximum of the values of $E_c / MPE_{(1)}$	Under-voltage	
			Over-voltage	
2.8.4	A.6.2.5	Tilting by up to 5 %:		
		Maximum of the values of $E_c / MPE_{(1)}$ :		
		or level indicator enables tilt of 1 % or less	Note in Remarks	
	A.5.5	Maximum value of Error / $MPE_{(1)}$ $[Error / MPE_{(1)}]_{max}$ :		
5.2.5		Reference accuracy class Ref(x) $\geq [E_c / MPE_{(1)}]_{max}$ and Ref(x) = (x) = $1 \times 10^k$ , $2 \times 10^k$ , $5 \times 10^k$ , k being a positive or negative whole number or zero.		
T.4.2.6 2.5	A.6.1.3.1	Significant fault		

**Note:** The above portion of the Checklist enables the reference value for the accuracy class and the value of the significant fault to be determined. The results column should indicate the maximum value from the report for each test (it is not sufficient just to tick the box).



Use this page to detail remarks from the Checklist:

**Determination of accuracy class, X(x) (5.2.5, A.8.2.4)**

Requirement (R61-1)	Mass of the fill g/kg	se / MPSE <sub>(1)</sub>	[md / MPD <sub>(1)</sub> ] <sub>max</sub>	Remarks
6.2.1 (a)	Close to Max capacity			
6.2.1 (a)	Close to Minfill			
6.2.1 (c)	Close to Mid-range critical value			
	Maximum value of the above			
Reference accuracy class is Ref(.....) – from Checklist.				
Accuracy class of the instrument is X(.....)				

$X(x) \geq [se / MPSE_{(1)}]_{max}$ ,  $X(x) \geq [md / MPD_{(1)}]_{max}$ ,  $(x) = 1 \times 10^k, 2 \times 10^k, 5 \times 10^k$  (k being a positive or negative whole number or zero) and  $X(x) \geq Ref(x)$ , so the accuracy class of the instrument is X(.....).

Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments	Passed	Failed	Remarks
<b>2</b>	<b>A.1.3</b>	<b>METROLOGICAL REQUIREMENTS</b>			
2.1		<b>Accuracy classes</b>	Note in remarks		
2.2		<b>Limits of error</b>			
2.2.1	A.5.5	Static testing only, MPE for influence factor tests	Note in remarks Ref(x)		
2.2.2		Specified accuracy class X(x) MPD	Note in remarks		
2.4		MPSE	Note in remarks		
2.5		MPE for influence factor tests	Note in remarks		
2.6		Minimum capacity (Min)	Note in remarks		
2.7		Rated minimum fill (Minfill)	Note in remarks		
<b>2.8</b>	<b>A.6.2</b>	<b>Influence factors</b>			
2.8.1.1	A.6.2.1	Prescribed temperatures for static tests			
2.8.1.2		Special temperature limits	Note in remarks		
2.8.1.3	A.6.2.2	Temperature effect on no-load indication			
2.8.2	A.6.2.4	Power supply (AC power voltage variations)			
2.8.3	A.6.4	Power supply (DC power voltage variations)			
2.8.4	A.6.2.5	<b>Tilting:</b> Instrument permanently installed Instrument not permanently installed, no level indicator Instrument not permanently installed with level indicator, can be set to 1 % or less	Yes [.....]	No [.....]	
2.8.5	A.1.3	<b>Units of measurement:</b> Metric carat (ct) Milligram (mg) Gram (g) Kilogram (kg) Tonne (t)	[.....] [.....] [.....] [.....] [.....]	[.....] [.....] [.....] [.....] [.....]	
<b>3</b>	<b>A.1.4</b>	<b>TECHNICAL REQUIREMENTS</b>			
3.1		<b>Suitability for use:</b> Instrument suits method of operation and products for which it is intended			
3.2		<b>Security of operation:</b>			
3.2.1		No characteristics likely to facilitate fraudulent use			
3.2.2		Effect of accidental breakdown or maladjustment is evident			
3.2.3		<b>Security of components, software and pre-set controls</b>			
		Function secured	Means of securing		
		Audit trail facility or similar			
3.2.4		Modifications do not affect correct operation and are identifiable			

Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments	Passed	Failed	Remarks
3.3.1	A.1.4	<b>Indication of weighing results:</b> Quality of reading is reliable, bright and easy			
3.3.2		<b>Form of the indication:</b> Results contain names and symbols of the units of mass Scale interval is the same for all indicating devices within any one weighing range			
3.3.3		<b>Printing device:</b> Clear and permanent Name or symbol of unit is to the right of the value or above a column of values	Yes [.....]	No [.....]	
3.3.4		All scale intervals are the same			
3.4		<b>Fill setting:</b> Scale graduated in units of mass Or, fill setting weights, In accordance with OIML requirements Or, purpose-designed and identified with instrument		Note in remarks	
3.5		<b>Final feed cut-off device</b> Clearly differentiated Direction of movement is shown			
3.6		<b>Feeding device:</b> Sufficient and regular flowrate(s) Indication of the direction of movement resulting from adjustment			
3.7		<b>Load receptor:</b> Load receptor, feed and discharge devices are designed to ensure negligible retention of residual material Has facilities for test weights up to max capacity Manual discharge is not possible during automatic operation			
3.8	A.5.3 A.5.3.1	<b>Zero-setting and tare devices</b> <b>Zero-setting mode:</b> Initial zero-setting Automatic zero-setting Semi-automatic zero-setting Non-automatic zero-setting Zero-tracking	Yes [.....] [.....] [.....] [.....] [.....]	No [.....] [.....] [.....] [.....] [.....]	
3.8.1	A.5.3.2	<b>Range of zero-setting:</b> Zero-setting does not alter maximum weighing capacity Overall effect of zero-setting = ..... % Overall effect of zero-tracking = ..... % Initial zero-setting = ..... %			
3.8.2	A.5.3.3	<b>Accuracy of zero-setting device ≤ 0.25 MPD in service</b>			
3.8.3		<b>Control of zero-setting devices:</b>			

Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments	Passed	Failed	Remarks
3.8.3.1		<b>Non-automatic and semi-automatic devices:</b>			
		Not operable during automatic zero-setting			
		In stable equilibrium			
3.8.3.2		<b>Automatic zero-setting device:</b>			
		Operates only when stable equilibrium			
		Sufficiently often to maintain zero within 0.5 MPD in service			
		When operating as part of every weighing cycle, it is not possible to disable or set at time intervals			
		When operating after a programmable time interval the maximum time interval is within the value in A.5.3.4, or	Note in remarks		
3.8.4		<b>Zero-tracking device:</b>			
		Operates only when indication is at zero, or			
		At negative net zero value equivalent to gross zero, and			
		Corrections are $\leq 0.25$ MPD in service			
		When operates after tare, the overall effect may be within 4 % of Max			
3.8	A.5.3	<b>Tare device mode:</b>	Yes	No	
		Preset tare	[.....]	[.....]	
		Tare balancing	[.....]	[.....]	
		Additive <input type="text"/> % of Max	[.....]	[.....]	
		Subtractive <input type="text"/> % of Max	[.....]	[.....]	
		Combined zero-setting and tare balancing	[.....]	[.....]	
3.8.5.1	A.5.3.4	<b>Accuracy of tare device <math>\leq 0.25</math> MPD in service</b>			
		Non-automatic or semi-automatic tare inoperable during automatic operation			
		Semi-automatic or automatic tare operates only when at stable equilibrium			
3.8.5.2		<b>Subtractive tare device:</b> Prevention of use above Max or indication that capacity has been reached			
3.8.5.3		<b>Combined zero-setting and tare balancing:</b> Capable of setting to within specified limits for in 3.8.2 and 3.8.4			
3.8.6 3.8.6.1 3.8.6.2		<b>Preset tare device scale interval:</b> Equal to or rounded to the scale interval of the instrument			
		<b>Modes of operation:</b> Cannot be modified or cancelled if tare operated after the preset tare is still in use			
3.9	A.1.4	Equilibrium mechanism - uses weights	Yes [.....]	No [.....]	
3.10 3.10.1	A.2.2	<b>Descriptive markings</b>			
		<b>Markings shown in full:</b>			
		Name or identification mark of the manufacturer			
		Name or identification mark of the importer			
		Date of manufacture of the instrument			
		Serial number and type designation of the instrument			

Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments	Passed	Failed	Remarks
		Temperature range	°C	°C	
		Supply voltage	V		
		Supply frequency	Hz		
		Pneumatic and/or hydraulic pressure	kPa		
		Average number of loads/fill			
		Maximum fill (Maxfill)			
		Rated minimum fill (Minfill)			
		Maximum rate of operation (loads per minute)			
3.10.2		<b>Markings shown in code:</b>			
		Type approval sign			
		Reference accuracy class, Ref(x)			
		Class of accuracy, X(x)			
		Scale interval, <i>d</i>			
		Maximum capacity			
		Minimum capacity			
		Maximum additive tare +			
		Maximum subtractive tare -			
3.10.3		<b>Supplementary markings:</b> As required		Note in remarks	
3.10.4		<b>Presentation of descriptive markings:</b>			
		Indelible			
		Size, shape and clarity enables legibility			
		Grouped together in clearly visible place			
		Possible to seal the plate bearing the markings			
		Programmable display is used for markings	Yes [.....]	No [.....]	
		If programmable display is used, instrument has means for any access to be automatically and non-erasably recorded and made evident			
		Plate contains type and designation of instrument			
		Name or mark of manufacturer			
		Type approval number			
		Electrical supply voltage			
		Pneumatic and/or hydraulic pressure			
		Other markings		Note in remarks	
3.11	A.2.2	<b>Verification marks</b>			
3.11.1		<b>Position:</b>			
		Place where verification marks are located cannot be removed without damaging the marks			
		Allows easy application of the mark			
		Visible without instrument or its protective covers having to be removed			

Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments	Passed	Failed	Remarks
3.11.2		<b>Mounting</b>			
		Verification mark support ensures conservation of the marks			
3.12	A.3.6	<b>Control Instrument is:</b>	Yes	No	
		Separate part	[.....]	[.....]	
		Integral part	[.....]	[.....]	
		Metrological functions not influenced when control instrument is coupled with other devices	Note in remarks		
<b>4</b>		<b>REQUIREMENTS FOR ELECTRONIC INSTRUMENTS</b>			
4.2	A.1.5	<b>Functional requirements</b>			
4.2.1		<b>Switch on procedure / indicator test:</b> Relevant signs of indicator are active and non-active for sufficient time to be checked by operator			
		<b>Upon a significant fault:</b> The instrument is made inoperative automatically, or A visual or audible indication is provided automatically and continues until the user takes action or the fault disappears			
4.2.3	A.5.2	<b>During warm-up time:</b> No indication or transmission of weighing results			
		<b>During first 30 minutes of operation:</b>			
		Zero error complies with specified requirements			
		Span error complies with specified requirements			
4.2.5		<b>When interfaces are used:</b>			
		Instrument continues to function correctly			
		Metrological functions are not influenced			
		Functions performed or initiated through the interface meet relevant requirements of clause 3			
		The display of unclear data is not possible			
		Falsification of weighing results is not possible			
		Unauthorized adjustments of the instrument is not possible			
4.2.6		<b>Battery power supply:</b>			
		Continues to function correctly whenever the voltage drops below the manufacturer's specified minimum value, or			
		Is automatically put out of service			
<b>5</b>	<b>A.1.3</b>	<b>METROLOGICAL CONTROLS</b>			
5.2	A.1.1	<b>Type approval</b>			
5.2.1		<b>Documentation includes:</b>			
		Metrological characteristics of the instrument			
		Set of specifications			
		Functional description of the components and devices			
		Drawings, diagrams and general software information as applicable, to explain construction and operation			
		Documentary evidence that the design and construction of the instrument complies with the requirements of R 61-1	Note in remarks		
5.2.3		<b>Examination of:</b>			
		Documents			

Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments	Passed	Failed	Remarks
		Functional checks			
		Test reports from other authorities			
5.2.3.1	A.8.1	Material tests			
		Material used as the test load representative of a product for which the instrument is designed			
5.2.3.2	A.5	Influence factor tests applied during simulation tests in a manner that reveals corruption of weighing results of any weighing process			
<b>5.3</b>	<b>A.2</b>	<b>Initial verification</b>			
5.3.1		Instruments examined for conformity with the approved type			
		Tested for compliance with clause 2 (excluding 2.2.1 and 2.5) for intended products and corresponding accuracy classes under normal conditions of use			
		Tests carried out by metrological authority, in situ, with instrument fully assembled and fixed in position in which it is intended to be used. The installation so designed that automatic weighing operation is the same whether for testing or used for transaction			
5.3.2	A.8.2	The in-situ material tests conducted in accordance with the procedure in A.8.2 and the descriptive markings in 3.10, under normal conditions for which the filling instrument is intended			
5.3.3		<b>Conduct of the tests</b>			
		Where appropriate and to avoid duplicating tests previously done for type evaluation under 5.2.3.1 and 5.2.3.2, use the results from these tests	Note in remarks		
5.4		<b>Subsequent verification</b>			
		Conducted as the same as the initial verification test			
5.5		<b>In-service inspection tests</b>			
		Conducted as the same as the initial verification test			
6		<b>TEST METHODS</b>			
6.1	A.8.2.2	Mass of individual fills is determined using either:	Yes	No	
6.5.1		Separate verification method, or	[.....]	[.....]	
6.5.2		Integral verification method:	[.....]	[.....]	
		Using either an appropriately designed indicating device, or	Note in remarks		
		Indicating device with standard weights to assess rounding error	Note in remarks		
		Total uncertainty (separate or integral verification) not greater than 1/3 of MPE for the instrument			
6.2	A.8.2.3	<b>Conduct of material tests</b>			
		(a) Tests carried out on fills using loads at or near: - Max, - Minfill, - With products instrument is intended to be used for			
		(b) Cumulative weighers tested as above with: - Maximum practical number of loads per fill, - Minimum number of loads per fill, and - Associated weighers as above with average (or optimum) number of loads per fill			



Requirement (R 61-1)	Test procedure	Automatic gravimetric filling instruments	Passed	Failed	Remarks
		(c) If $\text{Min} \leq 1/3$ of Max, tests carried out at near center of load weighing range, at value close to, but not above, 100 g, 300 g, 1000 g, or 1500 g as appropriate			
6.2.3		<b>Condition of material tests</b>			
		All tests conducted with adjustable parameters critical to metrological integrity set to most onerous condition allowed			
		Prior to test, filling instrument operated to achieve stability as per manufacturer's written instructions, and fills discharged in this period not included in test			
		<b>Instrument fitted with correction device</b>	Yes [.....]	No [.....]	
		Any correction device shall be operated during tests	Note in remarks		
6.3		Number of test fills as indicated in Table 2 in R 61-1	Note in remarks		

Use this space to detail remarks from the Checklist: