

Test weights

Weights yesterday and today

Weights have always been used to carry out weighing procedures. This original purpose has almost disappeared. Today, weights are used almost exclusively for adjusting and testing = calibration of electronic balances. We therefore call them "Test weights" as this is their purpose of use.

Adjustment or calibration?

► **Adjusting** a balance means that you are intervening in the weighing system, to make sure that the display is set to show the correct nominal value. With ► **calibration** on the other hand, there is no intervention, you are testing whether the display is correct and documenting any deviation.

Testing, the right way!

The internationally valid OIML norm R111:2004 classifies test weights hierarchically in accuracy classes, where E1 is the most accurate and M3 is the least accurate weight class. With KERN you get the whole test weight range in all OIML accuracy classes E1, E2, F1, F2, M1, M2, M3.







As the appropriate test weight is only classed as checking equipment according to ► **ISO 9000ff** if it has the relevant proof of accuracy, all KERN test weights come with an appropriate ► **DAkKS-calibration certificate**. For further details, see the calibration service section on page 182.

KERN offers you the appropriate test weight package for your balance, consisting of the test weight, box and DAkKS-calibration certificate, as proof of its accuracy. The best pre-requisite for proper balance calibration.

► **See the glossary on page 191-193**

Test weights: classes of accuracy E, F, M and their general relation to the types of balances:

- E1 Test weights for customers who require a high degree of accuracy for the most demanding applications. For high-resolution balances with $d > 1,000,000$ Use recommended with DAkKS calibration certificate only.
- E2 Most accurate test weights for high resolution analytical balances of verification class I $\geq 100,000$ e
- F1 Test weights for analytical balances/precision balances for verification class I/II $\leq 100,000$ e
- F2 Test weights for precision balances of verification class II $\leq 30,000$ e
- M1 Test weights for industrial and commercial scales of verification class III $\leq 10,000$ e

KERN DAkKS delivery times & shipping type	Total weight ≤ 40 kg (gross weight, incl. packaging)	Total weight > 40 kg (gross weight, incl. packaging)
DAkKS standard service Class E2 - M3	 4 DAYS	 4 DAYS
DAkKS standard service Class E1, 1 mg - 500 mg and recalibration 1 g - 10 kg with a known volume	 10 DAYS	 10 DAYS
Class E1, ≥ 1 g, incl. volume determination (new weights)	 15 DAYS	 15 DAYS
Special weights, Newton weights, heavy duty weights, weight carriers, wooden boxes for individual weight sets etc. (e.g. 334-14 1ff, 347-14 1ff, 346-8 1ff, 315-040-100ff, 335-040-200ff)	on request	



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Selection of the appropriate test weight for your balance

Correctly selected test weights with DAkkS calibration certificate are the pre-requisite for ensuring that your balances are not only correctly adjusted, but also correctly calibrated. Scheduled testing of your balances with such test weights helps to guarantee your quality requirements and to maintain your quality targets.

Here's how you find the right test weight for your balance:

A balance can never be more accurate than the test weight used to adjust it, it all depends on its tolerance.

Accuracy of the test weight: Should correspond to the readout [d] of the balance, or rather be better.

Nominal weight value: This is shown in adjust mode "CAL" in the balance display. Given a choice, the heaviest weight is the most suitable for accurate measurement.

Once accuracy and nominal weight value are specified, the suitable test weight is selected according to the tolerances "Tol" of the individual accuracy classes E2 - M3, see column "Tol ± mg" at the respective weight and table at page 164.

Example:

Balance with weighing range [Max] 2000 g = 2 kg and readout [d] = 0,01 g = 10 mg

- The accuracy of the required test weight is determined by readout [d]: max. tolerance ± 10 mg.
- Displayed weight size on "CAL" mode: 1000 g or 2000 g. The required test weight has a 2 kg weight size.
- Suitable test weights with ± 10 mg tolerance and 2 kg weight size, can be found in accuracy class F1. KERN-No 327-72, see page 169.

Exception, analytical balances (readout [d] ≤ 0,1 mg):

E1 test weights are recommended. Depending on the safety requirements, E2 test weights with a DAkkS calibration certificate will also be sufficient.

From brass to stainless steel - the right test weight for every situation



Test weight	Cylindrical shape with lifting knob, polished stainless steel	Compact shape with carrying grip, polished stainless steel	Cylindrical shape with lifting knob, polished stainless steel or nickelplated and polished brass	Compact shape with carrying grip, finely turned stainless steel	Cylindrical shape with lifting knob, finely turned stainless steel	Cylindrical shape with lifting knob, finely turned brass
Features						
Conforms to OIML:R111	yes	yes	yes	no	yes	yes
Available classes	E1, E2	E2, F1	F1	adjusted to F1 error limit class	F2, M1	M1, M2, M3
Upper surface	polished	polished	polished	finely turned	finely turned	finely turned
Material	Stainless steel	Stainless steel	Stainless steel or nickel-plated brass	Stainless steel	Stainless steel	Brass
Adjusting cavity	no	no	yes	yes, from 20 g	yes, from 20 g	yes, from 20 g
Marking (Milligram weights, generally none)	no	E2: None F1: Nominal value, etched	Nominal value, etched	Nominal value, etched	F2: Class + nominal value, etched; M1: Class + nominal value, adopted	Class + nominal value, adopted
Verification possible	yes	yes	yes	no	yes	yes, M1 only
Checking equipment for verification purposes	approved	approved	approved	not approved	approved	approved, M1 only
Ideal as checking equipment in QM systems (e.g. ISO 9000 ff)	yes	yes	yes	yes	yes	yes
Benefits	<ul style="list-style-type: none"> • High-quality test weight for analytical and precision balances • Highly-refined surface • Ideal shape of the top for good grip 	<ul style="list-style-type: none"> • Affordable test weight for analytical and precision balances • Highly refined surface 	<ul style="list-style-type: none"> • Ideal, high-quality test weight for precision balances • Ideal shape of the top for good grip 	<ul style="list-style-type: none"> • Affordable test weight for in-house checking of precision balances 	<ul style="list-style-type: none"> • Ideal test weight for commercial and industrial scales • Ideal shape of the top for good grip 	<ul style="list-style-type: none"> • Affordable test weight for commercial and industrial scales • Ideal shape of the top for good grip

The key points from the OIML norm R111:2004

OIML (Organisation Internationale de Metrologie Legale) has established the exact metrological requirements for weights in verified applications in approx. 100 states all over the world. The OIML recommendation R111 (2004 Edition) for weights relates to sizes 1 mg – 5000 kg. Statements are made on the accuracy, materials, geometric shape, marking and storage of the weights.

Error limits for weights of classes E1 to M3

The error limit classes are in fixed hierarchical levels in the proportion of 1:3, where E1 is the most accurate and M3 is the least accurate weight class. When testing weights with other weights, the correct test class is the next highest class.

Error limit classes (= tolerances)

The values given in the table below (tolerances ± ... mg) are the respective permitted fabrication tolerances. They are to be equal to the ► **measuring uncertainty** of the weight, if no ► **DAkkS calibration certificate** is available.

Conventional mass

The problem is the air buoyancy, which makes the weight appear lighter. In order to avoid this “distortion” in daily use, all weights are adjusted to the unit specifications as given in R111, e.g. it is accepted that: material density of the weights is 8000 kg/m³, air density is 1.2 kg/m³ and measuring temperature is 20 °C.

KERN test weights: Unless otherwise specified, they conform to OIML R111:2004 in every detail.

► *See the glossary, page 191–193*

Nominal value ↓	OIML R111:2004 Maximum permissible errors for weights = permissible tolerances “Tol ± mg”						
	E1	E2	F1	F2	M1	M2	M3
1 mg	± 0,003 mg	± 0,006 mg	± 0,020 mg	± 0,06 mg	± 0,20 mg	-	-
2 mg	± 0,003 mg	± 0,006 mg	± 0,020 mg	± 0,06 mg	± 0,20 mg	-	-
5 mg	± 0,003 mg	± 0,006 mg	± 0,020 mg	± 0,06 mg	± 0,20 mg	-	-
10 mg	± 0,003 mg	± 0,008 mg	± 0,025 mg	± 0,08 mg	± 0,25 mg	-	-
20 mg	± 0,003 mg	± 0,010 mg	± 0,03 mg	± 0,10 mg	± 0,3 mg	-	-
50 mg	± 0,004 mg	± 0,012 mg	± 0,04 mg	± 0,12 mg	± 0,4 mg	-	-
100 mg	± 0,005 mg	± 0,016 mg	± 0,05 mg	± 0,16 mg	± 0,5 mg	± 1,6 mg	-
200 mg	± 0,006 mg	± 0,020 mg	± 0,06 mg	± 0,20 mg	± 0,6 mg	± 2,0 mg	-
500 mg	± 0,008 mg	± 0,025 mg	± 0,08 mg	± 0,25 mg	± 0,8 mg	± 2,5 mg	-
1 g	± 0,010 mg	± 0,03 mg	± 0,10 mg	± 0,3 mg	± 1,0 mg	± 3,0 mg	± 10 mg
2 g	± 0,012 mg	± 0,04 mg	± 0,12 mg	± 0,4 mg	± 1,2 mg	± 4,0 mg	± 12 mg
5 g	± 0,016 mg	± 0,05 mg	± 0,16 mg	± 0,5 mg	± 1,6 mg	± 5,0 mg	± 16 mg
10 g	± 0,020 mg	± 0,06 mg	± 0,20 mg	± 0,6 mg	± 2,0 mg	± 6,0 mg	± 20 mg
20 g	± 0,025 mg	± 0,08 mg	± 0,25 mg	± 0,8 mg	± 2,5 mg	± 8,0 mg	± 25 mg
50 g	± 0,03 mg	± 0,10 mg	± 0,3 mg	± 1,0 mg	± 3,0 mg	± 10 mg	± 30 mg
100 g	± 0,05 mg	± 0,16 mg	± 0,5 mg	± 1,6 mg	± 5,0 mg	± 16 mg	± 50 mg
200 g	± 0,10 mg	± 0,3 mg	± 1,0 mg	± 3,0 mg	± 10 mg	± 30 mg	± 100 mg
500 g	± 0,25 mg	± 0,8 mg	± 2,5 mg	± 8,0 mg	± 25 mg	± 80 mg	± 250 mg
1 kg	± 0,5 mg	± 1,6 mg	± 5,0 mg	± 16 mg	± 50 mg	± 160 mg	± 500 mg
2 kg	± 1,0 mg	± 3,0 mg	± 10 mg	± 30 mg	± 100 mg	± 300 mg	± 1 000 mg
5 kg	± 2,5 mg	± 8,0 mg	± 25 mg	± 80 mg	± 250 mg	± 800 mg	± 2 500 mg
10 kg	± 5,0 mg	± 16 mg	± 50 mg	± 160 mg	± 500 mg	± 1 600 mg	± 5 000 mg
20 kg	± 10 mg	± 30 mg	± 100 mg	± 300 mg	± 1 000 mg	± 3 000 mg	± 10 g
50 kg	± 25 mg	± 80 mg	± 250 mg	± 800 mg	± 2 500 mg	± 8 000 mg	± 25 g
100 kg	-	± 160 mg	± 500 mg	± 1 600 mg	± 5 000 mg	± 16 g	± 50 g
200 kg	-	± 300 mg	± 1 000 mg	± 3 000 mg	± 10 g	± 30 g	± 100 g
500 kg	-	± 800 mg	± 2 500 mg	± 8 000 mg	± 25 g	± 80 g	± 250 g
1 000 kg	-	± 1 600 mg	± 5 000 mg	± 16 g	± 50 g	± 160 g	± 500 g
2 000 kg	-	-	± 10 g	± 30 g	± 100 g	± 300 g	± 1 000 g
5 000 kg	-	-	± 25 g	± 80 g	± 250 g	± 800 g	± 2 500 g

Composition table, valid for all KERN weight sets from 1 mg

Individual weights per set →	1	2	2	5	10	20	20	50	100	200	200	500	1	2	2	5	10	
Weight set ↓	mg	mg	mg	mg	mg	mg	mg	mg	mg	mg	mg	mg	g	g	g	g	g	g
1 mg – 500 mg	Total weight												1,11 g					
1 mg – 50 g													111,11 g					
1 mg – 100 g													211,11 g					
1 mg – 200 g													611,11 g					
1 mg – 500 g													1.111,11 g					
1 mg – 1 kg													2.111,11 g					
1 mg – 2 kg													6.111,11 g					
1 mg – 5 kg													11.111,11 g					
1 mg – 10 kg													21.111,11 g					

Class E1 • Milligram weights, wire shape, stainless steel



Test weight material: stainless steel
Box material: Wood

Milligram weight				+	Box		+	DAkkS certificate		=	Package price	
KERN		Tol ± mg	€		KERN	€		KERN	€		KERN	€
308-31	1 mg	0,003	58,-		338-090-200	14,-		962-251	52,-			124,-
308-32	2 mg	0,003	58,-		338-090-200	14,-		962-252	52,-			124,-
308-33	5 mg	0,003	58,-		338-090-200	14,-		962-253	52,-			124,-
308-34	10 mg	0,003	58,-		338-090-200	14,-		962-254	52,-			124,-
308-35	20 mg	0,003	58,-		338-090-200	14,-		962-255	52,-			124,-
308-36	50 mg	0,004	58,-		338-090-200	14,-		962-256	52,-			124,-
308-37	100 mg	0,005	58,-		338-090-200	14,-		962-257	52,-			124,-
308-38	200 mg	0,006	58,-		338-090-200	14,-		962-258	52,-			124,-
308-39	500 mg	0,008	58,-		338-090-200	14,-		962-259	52,-			124,-

Class E1 • Individual weights, cylindrical shape, polished stainless steel

Test weight material: Polished stainless steel
Box material: Lined wood



For weights ≤ 500 g

For weights ≥ 1 kg

Individual weight				+	Box		+	DAkkS certificate Initial calibration*		=	Package price	DAkkS certificate Recalibration	
KERN		Tol ± mg	€		KERN	€		KERN	€		€	KERN	€
307-01	1 g	0,010	83,-		317-010-100	28,-		963-231	193,-		304,-	962-231R	52,-
307-02	2 g	0,012	89,-		317-020-100	28,-		963-232	193,-		310,-	962-232R	52,-
307-03	5 g	0,016	96,-		317-030-100	28,-		963-233	193,-		317,-	962-233R	52,-
307-04	10 g	0,020	104,-		317-040-100	28,-		963-234	193,-		325,-	962-234R	52,-
307-05	20 g	0,025	113,-		317-050-100	28,-		963-235	193,-		334,-	962-235R	52,-
307-06	50 g	0,03	135,-		317-060-100	28,-		963-236	193,-		356,-	962-236R	52,-
307-07	100 g	0,05	162,-		317-070-100	28,-		963-237	193,-		383,-	962-237R	52,-
307-08	200 g	0,10	194,-		317-080-100	28,-		963-238	193,-		415,-	962-238R	52,-
307-09	500 g	0,25	280,-		317-090-100	31,-		963-239	193,-		504,-	962-239R	52,-
307-11	1 kg	0,5	425,-		317-110-100	35,-		963-241	193,-		653,-	962-241R	52,-
307-12	2 kg	1,0	630,-		317-120-100	44,-		963-242	465,-		1139,-	962-242R	64,-
307-13	5 kg	2,5	1060,-		317-130-100	66,-		963-243	465,-		1591,-	962-243R	64,-
307-14	10 kg	5,0	1530,-		317-140-100	89,-		963-244	465,-		2084,-	962-244R	64,-
307-15	20 kg	10,0	3100,-		317-150-100	340,-		963-245	1160,-		4600,-	962-245R	590,-
307-16	50 kg	25,0	5900,-		317-160-100	415,-		963-246	1360,-		7675,-	962-246R	660,-

* For E1 weights > 1g at the point of initial calibration, a volume determination will be carried out in accordance with OIML:R111. When recalibrating, this is not required.

Class E1 • Weight sets, cylindrical shape, polished stainless steel

Test weight material: Polished stainless steel
Case material: Lined wood. Milligram weights 1 mg – 500 mg in plastic box



Weight set			+	DAkkS certificate Initial calibration		=	Package price		DAkkS certificate Recalibration	
KERN		€		KERN	€		KERN	€	KERN	€
308-42	1 mg – 500 mg	780,-		962-250	350,-			1130,-	962-250R	350,-
303-02	1 mg – 50 g	1540,-		963-201	1070,-			2610,-	962-201R	560,-
303-03	1 mg – 100 g	1700,-		963-202	1170,-			2870,-	962-202R	580,-
303-04	1 mg – 200 g	2090,-		963-203	1350,-			3440,-	962-203R	630,-
303-05	1 mg – 500 g	2420,-		963-204	1440,-			3860,-	962-204R	660,-
303-06	1 mg – 1 kg	2840,-		963-205	1530,-			4370,-	962-205R	700,-
303-07	1 mg – 2 kg	4150,-		963-206	2000,-			6150,-	962-206R	750,-
303-08	1 mg – 5 kg	5300,-		963-207	2450,-			7750,-	962-207R	770,-
303-09	1 mg – 10 kg	6890,-		963-208	2900,-			9790,-	962-208R	800,-
304-02	1 g – 50 g	910,-		963-215	770,-			1680,-	962-215R	245,-
304-03	1 g – 100 g	1070,-		963-216	860,-			1930,-	962-216R	270,-
304-04	1 g – 200 g	1460,-		963-217	1040,-			2500,-	962-217R	320,-
304-05	1 g – 500 g	1790,-		963-218	1130,-			2920,-	962-218R	350,-
304-06	1 g – 1 kg	2210,-		963-219	1230,-			3440,-	962-219R	375,-
304-07	1 g – 2 kg	3520,-		963-220	1780,-			5300,-	962-220R	425,-
304-08	1 g – 5 kg	4670,-		963-221	2230,-			6900,-	962-221R	450,-
304-09	1 g – 10 kg	6260,-		963-222	2690,-			8950,-	962-222R	485,-

Class E2 • Milligram weights, flat polygonal sheet, aluminium/German silver

Test weight material: Aluminium 1 mg – 5 mg / German silver 10 mg – 500 mg
 Container material: Lined plastic



Milligram weight			+ Container		+ DAkkS certificate		= Package price		
KERN		Tol ± mg	€	KERN	€	KERN	€	KERN	€
318-01	1 mg	0,006	24,-	347-009-400	2,-	962-351	26,-		52,-
318-02	2 mg	0,006	24,-	347-009-400	2,-	962-352	26,-		52,-
318-03	5 mg	0,006	24,-	347-009-400	2,-	962-353	26,-		52,-
318-04	10 mg	0,008	24,-	347-009-400	2,-	962-354	26,-		52,-
318-05	20 mg	0,010	24,-	347-009-400	2,-	962-355	26,-		52,-
318-06	50 mg	0,012	24,-	347-009-400	2,-	962-356	26,-		52,-
318-07	100 mg	0,016	24,-	347-009-400	2,-	962-357	26,-		52,-
318-08	200 mg	0,020	24,-	347-009-400	2,-	962-358	26,-		52,-
318-09	500 mg	0,025	24,-	347-009-400	2,-	962-359	26,-		52,-

Class E2 • Individual weights, compact shape, polished stainless steel

Test weight material: Polished stainless steel
 Container material: Lined plastic



Individual weight			+ Container		+ DAkkS certificate		= Package price		
KERN		Tol ± mg	€	KERN	€	KERN	€	KERN	€
316-01	1 g	0,03	33,-	317-020-400	6,-	962-331	26,-		65,-
316-02	2 g	0,04	35,-	317-020-400	6,-	962-332	26,-		67,-
316-03	5 g	0,05	37,-	317-030-400	6,-	962-333	26,-		69,-
316-04	10 g	0,06	39,-	317-040-400	6,-	962-334	26,-		71,-
316-05	20 g	0,08	45,-	317-050-400	6,-	962-335	26,-		77,-
316-06	50 g	0,10	48,-	317-060-400	6,-	962-336	26,-		80,-
316-07	100 g	0,16	52,-	317-070-400	6,-	962-337	33,-		91,-
316-08	200 g	0,3	66,-	317-080-400	6,-	962-338	33,-		105,-
316-09	500 g	0,8	111,-	317-090-400	9,-	962-339	33,-		153,-
316-11	1 kg	1,6	161,-	317-110-400	9,-	962-341	33,-		203,-
316-12	2 kg	3,0	260,-	317-120-400	9,-	962-342	41,-		310,-
316-13	5 kg	8,0	375,-	317-130-400	15,-	962-343	41,-		431,-
316-14	10 kg	16,0	530,-	317-140-400	20,-	962-344	41,-		591,-

Class E2 • Individual weights, cylindrical shape, polished stainless steel

Test weight material: Polished stainless steel
 Container material: Lined plastic or wooden box (317-150-100 and 317-160-100)



Individual weight			+ Container		+ DAkkS certificate		= Package price		
KERN		Tol ± mg	€	KERN	€	KERN	€	KERN	€
317-01	1 g	0,03	47,-	317-020-400	6,-	962-331	26,-		79,-
317-02	2 g	0,04	50,-	317-020-400	6,-	962-332	26,-		82,-
317-03	5 g	0,05	54,-	317-030-400	6,-	962-333	26,-		86,-
317-04	10 g	0,06	56,-	317-040-400	6,-	962-334	26,-		88,-
317-05	20 g	0,08	65,-	317-050-400	6,-	962-335	26,-		97,-
317-06	50 g	0,10	76,-	317-060-400	6,-	962-336	26,-		108,-
317-07	100 g	0,16	82,-	317-070-400	6,-	962-337	33,-		121,-
317-08	200 g	0,3	104,-	317-080-400	6,-	962-338	33,-		143,-
317-09	500 g	0,8	175,-	317-090-400	9,-	962-339	33,-		217,-
317-11	1 kg	1,6	260,-	317-110-400	9,-	962-341	33,-		302,-
317-12	2 kg	3,0	415,-	317-120-400	9,-	962-342	41,-		465,-
317-13	5 kg	8,0	590,-	317-130-400	15,-	962-343	41,-		646,-
317-14	10 kg	16,0	850,-	317-140-400	20,-	962-344	41,-		911,-
317-15	20 kg	30,0	1680,-	317-150-100	340,-	962-345	52,-		2072,-
317-16	50 kg	80,0	3500,-	317-160-100	415,-	962-346	64,-		3979,-

For individual weights, wooden boxes are also available as an alternative to the plastic containers.
 For more details on this, please see page 180

For weights ≤ 500 g For weights ≥ 1 kg

Class E2 • Weight sets, compact shape, polished stainless steel



Test weight material: Polished stainless steel
Case material: Lined plastic

Weight set			+ DAKkS certificate		= Package price	
KERN		€	KERN	€	KERN	€
312-024	1 g - 50 g	370,-	962-315	127,-		497,-
312-034	1 g - 100 g	410,-	962-316	150,-		560,-
312-044	1 g - 200 g	500,-	962-317	196,-		696,-
312-054	1 g - 500 g	610,-	962-318	220,-		830,-
312-064	1 g - 1 kg	810,-	962-319	245,-		1055,-
312-074	1 g - 2 kg	1310,-	962-320	305,-		1615,-
312-084	1 g - 5 kg	1650,-	962-321	340,-		1990,-

Class E2 • Weight sets, cylindrical shape, polished stainless steel



Test weight material: Individual weights, polished stainless steel,
milligram weights aluminium/German silver
Case material: Lined plastic. Milligram weights 1 mg - 500 mg in plastic box

Weight set			+ DAKkS certificate		= Package price	
KERN		€	KERN	€	KERN	€
318-22	1 mg - 500 mg	320,-	962-350	190,-		510,-
313-024	1 mg - 50 g	820,-	962-301	315,-		1135,-
313-034	1 mg - 100 g	910,-	962-302	340,-		1250,-
313-044	1 mg - 200 g	1110,-	962-303	385,-		1495,-
313-054	1 mg - 500 g	1270,-	962-304	410,-		1680,-
313-064	1 mg - 1 kg	1630,-	962-305	435,-		2065,-
313-074	1 mg - 2 kg	2460,-	962-306	495,-		2955,-
313-084	1 mg - 5 kg	3050,-	962-307	530,-		3580,-
314-024	1 g - 50 g	540,-	962-315	127,-		667,-
314-034	1 g - 100 g	620,-	962-316	150,-		770,-
314-044	1 g - 200 g	830,-	962-317	196,-		1026,-
314-054	1 g - 500 g	1010,-	962-318	220,-		1230,-
314-064	1 g - 1 kg	1340,-	962-319	245,-		1585,-
314-074	1 g - 2 kg	2180,-	962-320	305,-		2485,-
314-084	1 g - 5 kg	2760,-	962-321	340,-		3100,-

Class E2 • Weight sets, cylindrical shape, polished stainless steel



Test weight material: Individual weights, polished stainless steel,
milligram weights aluminium /German silver
Case material: Lined wood. Milligram weights 1 mg - 500 mg in plastic box

Weight set			+ DAKkS certificate		= Package price	
KERN		€	KERN	€	KERN	€
318-22	1 mg - 500 mg	320,-	962-350	190,-		510,-
313-02	1 mg - 50 g	880,-	962-301	315,-		1195,-
313-03	1 mg - 100 g	960,-	962-302	340,-		1300,-
313-04	1 mg - 200 g	1170,-	962-303	385,-		1555,-
313-05	1 mg - 500 g	1400,-	962-304	410,-		1810,-
313-06	1 mg - 1 kg	1670,-	962-305	435,-		2105,-
313-07	1 mg - 2 kg	2550,-	962-306	495,-		3045,-
313-08	1 mg - 5 kg	3250,-	962-307	530,-		3780,-
313-09	1 mg - 10 kg	4180,-	962-308	560,-		4740,-
314-02	1 g - 50 g	590,-	962-315	127,-		717,-
314-03	1 g - 100 g	670,-	962-316	150,-		820,-
314-04	1 g - 200 g	880,-	962-317	196,-		1076,-
314-05	1 g - 500 g	1120,-	962-318	220,-		1340,-
314-06	1 g - 1 kg	1380,-	962-319	245,-		1625,-
314-07	1 g - 2 kg	2260,-	962-320	305,-		2565,-
314-08	1 g - 5 kg	2960,-	962-321	340,-		3300,-
314-09	1 g - 10 kg	3890,-	962-322	370,-		4260,-

Class F1 • Milligram weights, flat polygonal sheet, aluminium/German silver

Test weight material: Aluminium 1 mg – 5 mg/German silver 10 mg – 500 mg
 Container material: Lined plastic



Milligram weight			+		Container		+		DAkkS certificate		=		Package price	
KERN		Tol ± mg	€		KERN	€	KERN		€		KERN		€	
328-01	1 mg	0,020	11,-		347-009-400	2,-	962-451		18,-		KERN		31,-	
328-02	2 mg	0,020	11,-		347-009-400	2,-	962-452		18,-		KERN		31,-	
328-03	5 mg	0,020	11,-		347-009-400	2,-	962-453		18,-		KERN		31,-	
328-04	10 mg	0,025	11,-		347-009-400	2,-	962-454		18,-		KERN		31,-	
328-05	20 mg	0,03	11,-		347-009-400	2,-	962-455		18,-		KERN		31,-	
328-06	50 mg	0,04	11,-		347-009-400	2,-	962-456		18,-		KERN		31,-	
328-07	100 mg	0,05	11,-		347-009-400	2,-	962-457		18,-		KERN		31,-	
328-08	200 mg	0,06	11,-		347-009-400	2,-	962-458		18,-		KERN		31,-	
328-09	500 mg	0,08	11,-		347-009-400	2,-	962-459		18,-		KERN		31,-	

Individual weights, compact shape, finely turned stainless steel

Test weight material: finely turned stainless steel
 Container material: Lined plastic

■ Build type: Does not conform to OIML:R111, adjusted to F1 error limit class, however no mention of the OIML error limit classes on the calibration certificate



Individual weight			+		Container		+		DAkkS certificate		=		Package price	
KERN		Tol ± mg	€		KERN	€	KERN		€		KERN		€	
329-01	1 g	0,10	18,-		347-030-400	2,-	962-431		18,-		KERN		38,-	
329-02	2 g	0,12	19,-		347-030-400	2,-	962-432		18,-		KERN		39,-	
329-03	5 g	0,16	20,-		347-030-400	2,-	962-433		18,-		KERN		40,-	
329-04	10 g	0,20	23,-		347-050-400	2,-	962-434		18,-		KERN		43,-	
329-05	20 g	0,25	25,-		347-050-400	2,-	962-435		18,-		KERN		45,-	
329-06	50 g	0,3	27,-		347-070-400	2,-	962-436		18,-		KERN		47,-	
329-07	100 g	0,5	31,-		347-070-400	2,-	962-437		20,-		KERN		53,-	
329-08	200 g	1,0	41,-		347-080-400	2,-	962-438		20,-		KERN		63,-	
329-09	500 g	2,5	58,-		347-090-400	3,-	962-439		20,-		KERN		81,-	
329-11	1 kg	5,0	83,-		347-110-400	3,-	962-441		20,-		KERN		106,-	
329-12	2 kg	10	127,-		347-120-400	3,-	962-442		25,-		KERN		155,-	
329-13	5 kg	25	220,-		347-130-400	9,-	962-443		25,-		KERN		254,-	
329-14	10 kg	50	410,-		347-140-400	9,-	962-444		25,-		KERN		444,-	

Class F1 • Individual weights, compact shape, polished stainless steel

Test weight material: Polished stainless steel
 Container material: Lined plastic



Individual weight			+		Container		+		DAkkS certificate		=		Package price	
KERN		Tol ± mg	€		KERN	€	KERN		€		KERN		€	
326-01	1 g	0,10	22,-		347-030-400	2,-	962-431		18,-		KERN		42,-	
326-02	2 g	0,12	23,-		347-030-400	2,-	962-432		18,-		KERN		43,-	
326-03	5 g	0,16	25,-		347-030-400	2,-	962-433		18,-		KERN		45,-	
326-04	10 g	0,20	28,-		347-050-400	2,-	962-434		18,-		KERN		48,-	
326-05	20 g	0,25	29,-		347-050-400	2,-	962-435		18,-		KERN		49,-	
326-06	50 g	0,3	32,-		347-070-400	2,-	962-436		18,-		KERN		52,-	
326-07	100 g	0,5	36,-		347-070-400	2,-	962-437		20,-		KERN		58,-	
326-08	200 g	1,0	49,-		347-080-400	2,-	962-438		20,-		KERN		71,-	
326-09	500 g	2,5	68,-		347-090-400	3,-	962-439		20,-		KERN		91,-	
326-11	1 kg	5,0	101,-		347-110-400	3,-	962-441		20,-		KERN		124,-	
326-12	2 kg	10	150,-		347-120-400	3,-	962-442		25,-		KERN		178,-	
326-13	5 kg	25	260,-		347-130-400	9,-	962-443		25,-		KERN		294,-	
326-14	10 kg	50	485,-		347-140-400	9,-	962-444		25,-		KERN		519,-	

Class F1 • Individual weights, cylindrical shape, nickel-plated and polished brass

Test weight material: Nickel-plated and polished brass

Container material: Lined plastic or lined wooden box (317-150-100 and 317-160-100)



Individual weight				+		Container		+		DAkkS certificate		=		Package price	
KERN		Tol ± mg	€	KERN	€	KERN	€	KERN	€	KERN	€	KERN	€		
327-61	1 g	0,10	23,-	347-030-400	2,-	962-431	18,-							43,-	
327-62	2 g	0,12	24,-	347-030-400	2,-	962-432	18,-							44,-	
327-63	5 g	0,16	26,-	347-030-400	2,-	962-433	18,-							46,-	
327-64	10 g	0,20	29,-	347-050-400	2,-	962-434	18,-							49,-	
327-65	20 g	0,25	31,-	347-050-400	2,-	962-435	18,-							51,-	
327-66	50 g	0,3	34,-	347-070-400	2,-	962-436	18,-							54,-	
327-67	100 g	0,5	38,-	347-070-400	2,-	962-437	20,-							60,-	
327-68	200 g	1,0	52,-	347-080-400	2,-	962-438	20,-							74,-	
327-69	500 g	2,5	72,-	347-090-400	3,-	962-439	20,-							95,-	
327-71	1 kg	5,0	106,-	347-110-400	3,-	962-441	20,-							129,-	
327-72	2 kg	10	158,-	347-120-400	3,-	962-442	25,-							186,-	
327-73	5 kg	25	270,-	347-130-400	9,-	962-443	25,-							304,-	
327-74	10 kg	50	510,-	347-140-400	9,-	962-444	25,-							544,-	
327-75	20 kg	100	960,-	317-150-100	340,-	962-445	28,-							1328,-	
327-76	50 kg	250	1800,-	317-160-100	415,-	962-446	39,-							2254,-	

Class F1 • Individual weights, cylindrical shape, polished stainless steel

Test weight material: Polished stainless steel

Container material: Lined plastic or lined wooden box (317-150-100 and 317-160-100)



Individual weight				+		Container		+		DAkkS certificate		=		Package price	
KERN		Tol ± mg	€	KERN	€	KERN	€	KERN	€	KERN	€	KERN	€		
327-01	1 g	0,10	30,-	347-030-400	2,-	962-431	18,-							50,-	
327-02	2 g	0,12	31,-	347-030-400	2,-	962-432	18,-							51,-	
327-03	5 g	0,16	33,-	347-030-400	2,-	962-433	18,-							53,-	
327-04	10 g	0,20	37,-	347-050-400	2,-	962-434	18,-							57,-	
327-05	20 g	0,25	41,-	347-050-400	2,-	962-435	18,-							61,-	
327-06	50 g	0,3	45,-	347-070-400	2,-	962-436	18,-							65,-	
327-07	100 g	0,5	55,-	347-070-400	2,-	962-437	20,-							77,-	
327-08	200 g	1,0	72,-	347-080-400	2,-	962-438	20,-							94,-	
327-09	500 g	2,5	118,-	347-090-400	3,-	962-439	20,-							141,-	
327-11	1 kg	5,0	165,-	347-110-400	3,-	962-441	20,-							188,-	
327-12	2 kg	10	250,-	347-120-400	3,-	962-442	25,-							278,-	
327-13	5 kg	25	375,-	347-130-400	9,-	962-443	25,-							409,-	
327-14	10 kg	50	680,-	347-140-400	9,-	962-444	25,-							714,-	
327-15	20 kg	100	1350,-	317-150-100	340,-	962-445	28,-							1718,-	
327-16	50 kg	250	2900,-	317-160-100	415,-	962-446	39,-							3354,-	



Alternative to plastic container:

Wooden boxes for individual weights. For more details on this, please see page 180