WEIGHING FROM A to ZWIEBEL

www.zwiebel-weights.com
ZWIEBEL - THE STAMP OF QUALITY

At Zwiebel, quality knows no compromise! Our COFRAC 17025 accreditation, ISO 9001 certification and quality service are a sure guarantee that every stage of manufacture is strictly respected and our weights and masses are in conformity.

CONNECT ONLINE!

On Zwiebel’s comprehensive website, you will find plenty of information on our company and products: news, technical data, sales brochures, ISO certificates etc.

www.zwiebel-weights.com
ZWIEBEL - YOUR PARTNER

Two centuries of experience have forged our know-how at Zwiebel, and today we rank as the top European manufacturer of precision weights and masses.

Zwiebel is present in every market sector. Our state-of-the-art expertise and innovation capacity mean we can meet all types of requests from 0.1 mg to 2 tonnes in every class of precision (E0 to M3).

Today, our products are marketed to myriad customers across the industrial sectors, including aeronautics, the food industry, chemicals and pharmaceuticals both in France and across the world. Furthermore, we supply leading references of international renown.

Zwiebel also works with a network of distributors ensuring a dynamic, growing presence in a broad range of countries.

We take part in research on defining new materials and we research and develop new automation equipment for calibration.

We are also the first manufacturer to meet normative requirements and the only one to integrate all the stages of manufacturing on our premises - from the selection of raw materials to transport.

MADE IN FRANCE

All our products are designed and assembled in our factory in France – a real guarantee of quality.
TOTAL CONTROL OF THE MANUFACTURING PROCESS

METICULOUS SELECTION OF RAW MATERIALS
At Zwiebel, our experience and expertise is reflected in our partner-suppliers who share our exacting requirements. The common point they share is precise, stringent specifications for top-quality products. We take particular care in selecting our raw materials and conduct quality control on reception before supplying our production workshops.

HIGH-PERFORMANCE MACHINING PROCESS
The machining workshop manufactures each weight in conformity with technical specifications approved by the methods department. The aim is to approach the tolerances required before adjusting the weight. The process relies on high-precision CNC machines combining optimum mechanics and robotics.

A SPLASH OF COLOUR
To provide the very best service, Zwiebel focuses on the paint quality and offers a range of colours to meet our users' many needs. All our cast iron masses are painted in a dedicated workshop providing a flawless finish.
As proof of our industrial expertise, all our weights are polished by automated equipment and then finished by hand. This technique means we obtain a mirror-polish surface optimising the use, quality and precision of our masses. Another advantage – polishing means shiny, anti-adhesive surfaces.

At Zwiebel, we have adjustment techniques down to a fine art. The aim is to provide total accuracy for each weight. For this, we use two processes: adding material (stainless steel wires) when the weight has an adjusting cavity, and removing material (abrasion) in the case of a monobloc weight. This is high-precision work – especially for weights under 1 gram.

We make full use of our experience to offer packaging solutions adapted to the requirements and constraints of our customers. Our varied range includes plastic or wooden packaging for standard or made-to-measure weights and masses crafted by our in-house department.

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A WHOLES RANGE OF MATERIALS
Offering quality products through a quality service – that’s the key to our philosophy at Zwiebel. This approach is evident in our choice of materials, selected in agreement with our customers. We propose weights in quality+ stainless steel, brass and cast iron according to our customers’ requirements.

STAINLESS STEEL 8,0 kg/dm³
CAST IRON 7,2 kg/dm³
BRASS 8,4 kg/dm³

WORLDWIDE DELIVERIES
All Zwiebel products are transported via a network of French and international carriers. Daily flows guarantee optimised delivery deadlines in every continent. Packaging solutions are devised to carry our products in all safety using reinforced cardboard boxes and pallets, as appropriate.

Composition example:
plastic cast set 0115.11g F1
OUR EXPERIENCE MAKES ALL THE DIFFERENCE
TRACEABILITY MEANS SECURITY

THE GUARANTEE OF EXCELLENT SERVICE

In our laboratories, we use precision equipment and stringent methods and employ skilled personnel to calibrate the weights. With an extremely fine resolution – from 0.1 microgram to 1 gram – the manual comparators and automated systems we use are the guarantee of excellent service.

A RENOWNED AND ACKNOWLEDGED RANGE

Our weights and masses meet the requirements of the international OIML recommendation R111 (International Organisation of Legal Metrology).

Since 1991, Zwiebel has been accredited by the French Accreditation Committee, COFRAC*, which today is acknowledged on the international market.

This accreditation means we can deliver calibration certificates. We have reinforced this approach through on-going audits and cross-comparisons which guarantee the high precision and quality of the weights and masses produced by the Zwiebel metrology laboratory.

* COFRAC calibration certificates are recognised in all countries signing the EA agreement (European Cooperation for Accreditation).

www.european-accreditation.org

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100% ZWIEBEL SOFTWARE

ZWIEBEL designs specific software to control technical data and ensure the traceability of the calibration record of a weight. Developed through on-going interaction between the technical departments, laboratories and sales teams, the software reflect the flexibility and rapid reactions of our customer-oriented organisation.

ENGRAVING – A COMPETITIVE EDGE

All our products are engraved by diamond point or laser. This service is unique on the market and is part and parcel of our traceability and quality assurance policy.

TRACEABILITY AN EXACTING REQUIREMENT

To meet and guarantee traceability requirements according to Quality Assurance standards, each weight from 1g upwards carries its own identification. This identification is unique and indelible so the weight’s entire record can be traced and tracked (calibrations, material, interventions). It eliminates all risk of error linked with weight permutation or its use with an inappropriate calibration certificate. By recording identification in calibration documents, the calibration data can be associated with the weight concerned without any ambiguity.

AN ACTIVE PRESENCE ON THE INTERNATIONAL SCENE

As a privileged partner in mass metrology, we have a universal clientele. Among them, the BIPM (International Bureau of Weights and Measures) and many national or primary laboratories that are true benchmarks in each country.
From calibration to adjustment, not forgetting repairs, Zwiebel offers a whole panoply of services. The sales department is at the service of each customer. Customer needs are consigned to a reception sheet and monitoring of the order is personalised (advice, assistance, replacement offers). Our sales teams provide feedback on the progress of our interventions.

**VERY LONG-LIFE ASSISTANCE**

We ensure the maintenance of weights and masses over time. Indeed, by recalibrating your weights in our laboratories, you can control developments and, if necessary, request the "manufacturer" to adjust or repair them. Repairs to the weights (adjusting, painting, polishing, shot-blasting, degreasing etc.) guarantee the calibration service and a long useful life. Calibration documents are available in English, German, Italian, Portuguese and Spanish.
OPTIMISING YOUR DEADLINES
You can schedule dispatch, calibration and return dates with our sales department (reconfirming your order if necessary).
If appropriate, indicate the number of the last ZWIEBEL calibration certificate to obtain an identical service.
Specify the shape, material, constitution, values, quantities, the state of the weights and masses and the services you require.

SENDING YOUR PRODUCTS GUIDE
Use the original boxes or packaging. Do not underestimate the weight of the equipment during transport. We advise you to check that the products are firmly packed and to place the heaviest weights at the bottom of your package. You should use shock-resistant packaging.
The equipment must arrive clean and, if appropriate, decontaminated at our delivery address.

WHAT DOES ACCREDITATION IMPLY?
NF EN ISO/CEI 17025
Accreditation is an acknowledgement that a laboratory conducts calibration in a defined field with specified uncertainties.

HANDLING – GUIDE
Handling the weights requires some precautions. Using our fine brushes, remove the dust from your weights after each use. Never handle the weights with bare hands. Always wear protective gloves and equip yourself with tweezers and handles. Don’t forget to use our cases and boxes to store your weights correctly.
BEYOND REGULATIONS
Perfect density, superior quality stainless steel, optimum magnetic susceptibility and greater resistance to wear: the Quality+ solution underscores Zwiebel’s expertise and constitutes a top-of-the-range answer to the criteria laid down by the International Organisation of Legal Metrology. A true market pioneer, Zwiebel is developing solutions which go beyond the regulations.

EXPERT IN SCIENTIFIC METROLOGY
Proving its commitment to all markets, Zwiebel can meet all requirements in all classes of metrology. From E0 to F1, we have developed a full range in scientific metrology. E1 class weights ensure the traceability between national standards and weights of lower accuracy classes. E2 class weights are used to calibrate weights of lower accuracy classes and are used with class I weighing instruments. All these weights must be delivered with a calibration certificate guaranteeing traceability. Zwiebel also produces a full spectrum of cobalt alloy wires reputed for their reliability and long life. Materials, shapes and finishes - Zwiebel quality knows no bounds.

Composition example: wooden box set totalling 1111.11g E2 and individual weight of 100g.

www.zwiebel-weights.com
Zwiebel is developing solutions which go beyond the regulations. Acknowledged for the quality of our solutions in scientific metrology, Zwiebel has been selected as a benchmark by national metrology laboratories both in France and abroad. Our expertise extends to a variety of sectors from state-of-the-art to more traditional industries, not forgetting research and measure and control laboratories.

Experience is the baseline enabling Zwiebel to offer a broad choice of weights and masses. We are therefore able to go further in ultra-precision by proposing products superior to quality E1 – sound proof of our tried-and-tested expertise.

Type E and F weights can be supplied individually or as a set, in a plastic case or a wooden box. Quality wood, velvet trim and meticulous finishes provide a professional touch to the overall look.

3 shapes of wire are proposed: triangular, square and pentagonal, each one corresponding to a nominal mass.

Zwiebel proposes F1 class weights in the Quality+ version. This means top-of-the-range for the whole spectrum of scientific metrology. Up to 20g, these F1 weights are monobloc. Above this value, they have an adjustment cavity. The F1 class is used for calibrating weights of lower accuracy classes and with class I and II weighing instruments. They can also be used as control weights and usually come with a calibration certificate.

Tweezers, gloves and fine brushes: Zwiebel has developed a range of appropriate accessories to handle the weights. An extended, coordinated range of tools bearing witness to Zwiebel’s tradition of innovation.
EXPERTISE AT EVERY LEVEL

QUALITY GOES HAND-IN-HAND WITH COMPETITIVE EDGE
From class F1 to class M2, Zwiebel combines high quality and competitive edge. Stainless steel for class F1 to M1 weights, brass for M2 class weights: the range conforms to the recommendations of the OIML. Aluminium leaf weights from 1 mg to 500 mg make up the Zwiebel product line.

PERFORMANCE AND RELIABILITY
The Zwiebel range also includes a set of hanging masses and hook-fitted masses. The applications are countless: pressure measurement, torque measurement, resistance and traction tests, dynamometric power. The base is made of stainless steel or brass. The adjustment and calibration of each mass and their individual identification are a sure guarantee of performance and reliability.

THE WHOLE WEIGHING SPECTRUM
Class F1 to M2 weights are designed to calibrate masses of a lower accuracy class and be used with class II and III weighing instruments. Zwiebel therefore proposes a particularly broad range reflecting a know-how accumulated over decades.

Example of composition: wooden box set totalling 611.11g F1
TAILOR-MADE
FROM DESIGN TO THE FINISHED PRODUCT

INDIVIDUALISED ATTENTION
FOR EACH REQUEST

PERSONALISATION -
A KEYWORD

A SPECIFIC COMPETENCE : PACKAGING

Zwiebel applies a specific know-how in this field: designing special cases. Tailor-made packaging for weights and all other laboratory equipment. Our approach spans many processes: tailored cut-outs, personalisation through milling logos or specific motifs, creation of additional receptacles in our standard cases. We design and produce individual units or small or medium batches, in different sizes according to our customers’ needs. A sure way to protect and enhance our customers’ equipment.

At Zwiebel, we work hand-in-hand with our customers to define, design and produce specific weights and masses. Special products designed using CAD-CAM and visual 2D or 3D systems. Combining this expertise and technical resources means we can study all types of projects and find solutions for our customers’ exacting processes.

To meet customer needs in terms of value, space, use and handling, we can design weights with specific characteristics. Whether in terms of material: brass, aluminium, stainless steel, steel, cast iron, plastic - or shape: monobloc, with adjusting cavity, cylindrical, cubic etc. There is also a wide variety of finishes: mirror polish, brushed, painted, surface coated. We propose weights of all tolerances conforming to OIML classes and specific tolerances. Other personalised solutions: laser marking, diamond engraving, painted reference marks. Finally, we have developed a range of accessories adapted to the needs of our customers: table, handling system, protection devices and packing.

THE CONTRIBUTION OF OUR RESEARCH TEAMS

Zwiebel is backed by a research laboratory and a machining workshop to develop measurement know-how. Each project is studied in depth to find the optimum solutions at the best prices and shortest deadlines. Our teams make full use of a whole series of technical resources: CAD-CAM software, 3-D models and CNC machines.
HIGH-PERFORMANCE MASSES FOR INDUSTRY

VARIATIONS ON THE THEME OF INDUSTRIAL MASSES
From 5 kg to 2 tonnes, Zwiebel has designed a whole range of industrial masses with myriad variations: stainless steel or cast iron, F1, F2, M1, M2, or M3 classes, with or without feet depending on nominal masses, stackable or not. We also propose a broad range of colours. Ultra-compact, practical and easy to handle, the heaviest masses can be handled by forklift trucks or slings. We make the difference in that we take on board the customer’s specifications way upstream in order to build a personalised solution together.

A COMPLETE SET OF STANDARD MASSES
Zwiebel also proposes calibrated weight baskets. Made of stainless steel, they allow you to obtain a broad scale of masses by accumulating parallelepiped weights of 5, 10 or 20 kg. They can be handled by forklift trucks or slings and are favourable for linear measurements. A tailor-made solution adapted to all control requirements: pallet scales, ground scales etc. Our baskets are adjusted and calibrated.

PARALLELEPIPED WEIGHTS IN STAINLESS STEEL AND CAST IRON

Example of a basket with a capacity of 250 kg.
Painting

VARIATIONS ON THE THEME
OF INDUSTRIAL MASSES

A COMPLETE SET OF
STANDARD MASSES

Example of a basket
with a capacity of 250 kg.

PAINTING+ -
NOTHING BUT PLUS POINTS!

DID YOU KNOW...
MASSES FOR CONTROL
AND TEST

In addition to metrology, Zwiebel is diversifying its range by offering control and test masses from 100 to 2000 kg with a tolerance of +/- 5%. These masses and mainly designed to check safety equipment such as lifts, hoists, traveling cranes, trolleys and tailgate lifts etc.

PARALLELEPIPED WEIGHTS
IN STAINLESS STEEL AND
CAST IRON

Weights ranging from 5 to 50 kg designed to verify or calibrate class M2 weights and be used with class III weighing instruments (medium accuracy). The cast iron weights are delivered painted grey in the standard version, but we offer our customers the possibility of personalising them through a wide choice of colours. Stainless steel is recommended in the food industry, pharmaceuticals, chemicals and similar industries.

HANDLING – GUIDE

Use our slings to handle masses ranging from 100 kg to 2 tonnes. Don’t forget to use cotton or leather gloves especially when handling parallelepipeds weights.

IN EVERY FIELD

From petrochemicals to the mechanical industry, from the food industry to chemicals and pharmaceuticals, Zwiebel offers a range of solutions for every industrial need. A made-to-measure approach both in terms of designing weights and masses and also in terms of advice, training and logistics.
BASES DESIGNED FOR THE QUALITY OF YOUR MEASUREMENTS

AIM: STABILITY
Made entirely of granite, the anti-vibration tables and bases are designed to optimise the quality of our customers’ measurements. Designed more specifically for laboratories and metrology rooms, they offer a number of advantages: maximum resistance to wear due to the extreme robustness of the material, an anti-vibration effect accentuated by the use of perfectly positioned studs, and stability and level adjustment ensured by adjustable feet.

FIXED OR MOBILE?
We adapt our bases to suit our customer’s needs and facilities. We propose mobile bases combining a granite base with an aluminium structure. Adjustable feet ensure stability and level adjustment. Tailored solutions integrating our customers’ constraints and requirements.

Contact Us: Tel. +33 (0)3 88 71 53 10 - commercial@zwiebel.fr
OF YOUR MEASUREMENTS
BASES DESIGNED FOR THE QUALITY

We propose mobile bases designed more specifically for customer's needs and facilities. We adapt our bases to suit our customers' measurements. Designed more specifically for constraints and requirements. Our vibration tables and bases are made entirely of granite, the anti-vibration adjustment ensured by adjustable feet.

MAGNETISM CHARACTERISTICS

<table>
<thead>
<tr>
<th>Class</th>
<th>Permanent magnetism $B(M_{(T)}$</th>
<th>Susceptible magnetism $H$</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>$&lt; 2.5$</td>
<td>$&lt; 0.25$</td>
</tr>
<tr>
<td>E2</td>
<td>$&lt; 8$</td>
<td>$&lt; 0.9$</td>
</tr>
<tr>
<td>F1</td>
<td>$&lt; 25$</td>
<td>$&lt; 10$</td>
</tr>
<tr>
<td>F2</td>
<td>$&lt; 80$</td>
<td>$&lt; 4$</td>
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<td>M1</td>
<td>$&lt; 250$</td>
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<td>M1-2</td>
<td>$&lt; 500$</td>
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<tr>
<td>M2</td>
<td>$&lt; 800$</td>
<td></td>
</tr>
<tr>
<td>M2-3</td>
<td>$&lt; 1,600$</td>
<td></td>
</tr>
<tr>
<td>M3</td>
<td>$&lt; 2,500$</td>
<td></td>
</tr>
</tbody>
</table>

MASS DENSITIES OF MATERIALS

<table>
<thead>
<tr>
<th>Material</th>
<th>Mass density in kg/m$^3$</th>
<th>Uncertainty in kg/m$^3$ $U_{(k=2)}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel</td>
<td>7 700</td>
<td>± 200</td>
</tr>
<tr>
<td>Aluminum</td>
<td>2 700</td>
<td>± 130</td>
</tr>
<tr>
<td>Cast iron</td>
<td>7 100</td>
<td>± 600</td>
</tr>
<tr>
<td>Brass</td>
<td>8 400</td>
<td>± 170</td>
</tr>
<tr>
<td>Stainless steel</td>
<td>7 950</td>
<td>± 140</td>
</tr>
</tbody>
</table>

LIST OF MEMBERS SIGNING THE EA
(European cooperation for accreditation)

COFRAC certifications are recognised in all countries signing the EA agreement (European Cooperation for Accreditation). This European organisation notably brings together the countries signing the MLA (Multilateral Agreement) or bilateral agreements conferring the same rights and duties on the countries involved. These multilateral agreements facilitate access to international markets: an accreditation obtained in France may be recognised throughout Europe and the entire world. The signatories mutually undertake to facilitate acceptance of results provided under the accreditation rules.
At the spearhead of scientific metrology, Zwiebel also proposes weights for legal metrology from 1 mg to 50 kg. These products are used to carry out commercial transactions in conformity with the regulations in force. They conform to the requirements of OIML recommendation R111.

Our range of legal metrology cannot be supplied with a COFRAC calibration certificate.

ACKNOWLEDGED ACCREDITATION
Legal metrology weights are designed to be used for initial legal verification. They are delivered with the regulatory verification marks. As an acknowledged expert in the field of control and measurement, Zwiebel is authorised to hallmark weights. This accreditation is a further example of Zwiebel’s solid reputation.

BY UNIT OR BY CASE
We propose M1 and M2 class weights as individual units or in sets, in wooden boxes or on a base. Shapes vary from cylindrical versions to old models. These weights are also used in the field of school education (in this case they are delivered without verification markings).
ELECTRONIC & ROBERVAL SCALES

In partnership with a well-known manufacturer, Zwiebel supplies a broad range of precision, portable and industrial scales on request.

PORTABLE SCALES

Zwiebel offers a practical, compact and versatile range. The scales are battery or mains operated.

PRECISION SCALES

We propose a full array to answer all measurement and control needs in laboratories.

INDUSTRIAL SCALES

Industrial performance at a competitive price: at Zwiebel, our expertise is underscored by developing a range of platforms and display systems adapted to the environment of our customers.

ROBERVAL SCALES

Zwiebel manufactures and sells a range of 14 models covering all types of weighing up to 20 kg. The range includes different pan concepts so the scales are adapted to every trade. Mechanical operation does not require any particular maintenance. The products look simple, but are the fruit of in-depth design and extensive know-how.

ENVIRONMENT FRIENDLY

For sustainable development purposes, we propose scales that can operate without batteries or electricity. These products, assembled in our workshops, combine energy savings, reliability and robustness.

DID YOU KNOW...

We supply pans of diameter 130 to 300 mm separately.

www.zwiebel-weights.com
POSTAL ADDRESS
ZWIEBEL
SAINT JEAN SAVERNE
BP 50002
F-67701 SAVERNE CEDEX

DELIVERY ADDRESS
ZWIEBEL
20 Grand Rue
Dépôt n°1
F-67700 SAINT JEAN SAVERNE

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