Good Weighing Practice™

GWP®
Good Weighing Practice™

Guaranteed Quality
Minimized Risk
Reduced Costs
Secure Audits

Guaranteed Quality

Through Good Weighing Practice™

METTLER TOLEDO

Weighing Without Risks
Assures Good Quality

Every measurement involves risks, which can affect the quality of your products.

Keeping measuring instruments under control is a challenge. However, how can you minimize risks with a minimum of effort?

Good decisions are necessary. Good Weighing Practice™ is a guideline that allows you to improve control of your whole measuring process. It is based on a defined set of activities that begin with an evaluation of your risks, recommend appropriate actions and lead to safe routine operation.

Good Weighing Practice™ addresses the needs of all current Quality Management Systems such as ISO, GLP, GMP, and HACCP and puts them into meaningful practice for your process. With Good Weighing Practice™ you weigh without risks, comply with regulations easily and achieve consistent good quality of your products.

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5. Routine operation

Safe operation, accurate measurements, minimized costs and risks through proper routine testing.

4. Calibration

Determination of the measurement uncertainty ensures that the balance weighs within the required tolerances.

1. Evaluation

Control your weighing process based on an objective risk assessment and take action where the impact is high.

2. Selection

Determines the correct weighing system to improve certainty and eliminate errors.

3. Installation

Weigh correctly right from the start, with documented installation, reduced environmental influence and user training.

Mr. P. Brenner
Manager Pharma
In Process Control

Measuring errors lead to costly batch rejections and also pose a threat to humans and the environment.

Minimizing risks in quality-critical processes is essential. However, this requires significant effort; optimization is of great importance. Good Weighing Practice™ enables us to evaluate the risks associated with the weighing processes. As a consequence we place more emphasis on control when the risk is high and save costs where the risk is low. Reliability of our weighing systems and compliance with GMP guidelines are crucial factors. Good Weighing Practice™ assures both.

Careful Selection
Guarantees Great Taste

It is often the smallest components in a mixture which have the greatest impact on the product quality.

These small components can pose the greatest challenge for a weighing system; the smaller the net weight, the larger the relative measurement uncertainty.
Good Weighing Practice™ ensures that you choose the right balance for your needs and that each measurement is accurate.

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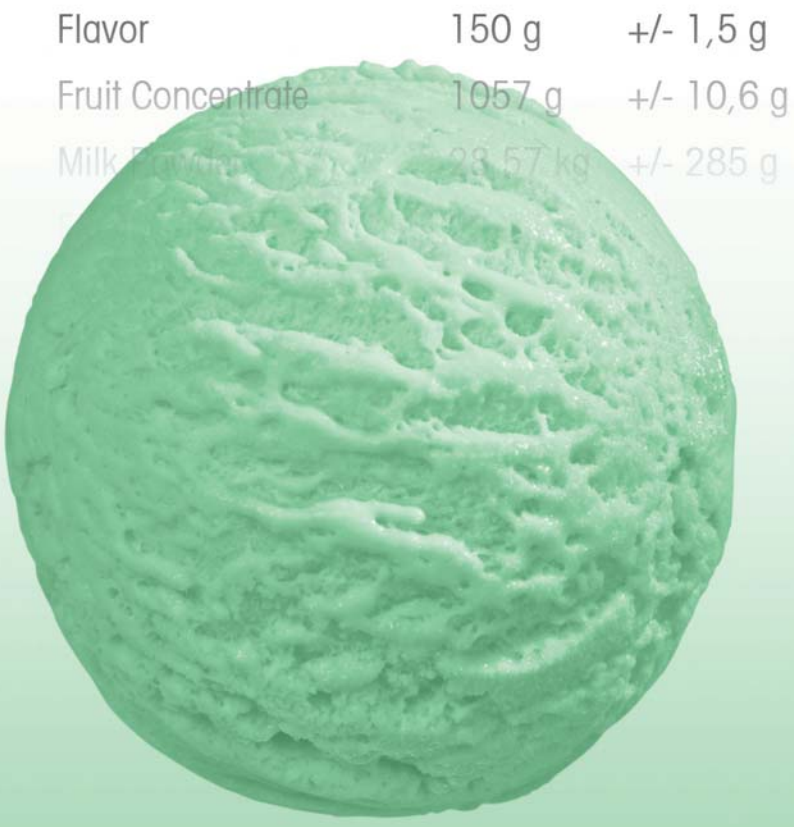

Mrs. G. Nielsson
Quality Control Manager
Ice Cream

The selection of the right balance makes an important contribution to meeting our requirements.
Knowing the minimum weight helps us meet the required accuracy at any time. We use balances with specifically dedicated warning systems. In this way we can be sure to meet our customer's demand for great taste, smell, color and consistency.

Each of these balances is able to weigh in 150 g of aroma. But which one achieves an accuracy of at least 1 %?

Minimum weight 1.4 mg **suitable** ✓

Capacity 220 g
Readability 0.01 mg

Minimum weight 0.8 g **suitable** ✓

Capacity 4100 g
Readability 0.01 g

Minimum weight 120 g **suitable** ✓

Capacity 15 kg
Readability 0.5 g

Minimum weight 4 kg **unsuitable** ✗

Capacity 300 kg
Readability 20 g

1 % accuracy is achieved if the sample of 150 g is above the minimum weight.

On-Site Competence
Optimizes Efficiency

Professional installation and configuration, the certification of weighing accuracy and complete documentation according to Good Weighing Practice™ ensures that your process requirements are met right from the start.

Our service specialists install the balance and take into consideration the regulations, environmental and process conditions, and optimize the user settings in order to get the maximum out of the weighing system. You can benefit from our experience and minimize risks from the beginning.

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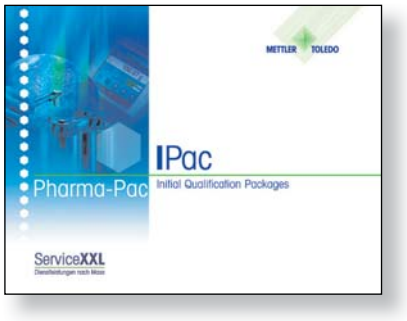
Mr. P. Brenner
Manager Pharma
In Process Control

The human risk factor led to deviations in our audits.
So we decided to let METTLER TOLEDO systematically train our users. Now they know how to handle and look after their balances correctly. The users feel more comfortable and the risk of measurement errors is reduced drastically.



Professional training gives the users the confidence and competence needed for correct handling of the balance. You can be assured you will save time and money because user and instrument are up to the job.

Professional installation is the first important step towards compliance with process requirements. It is also the beginning of complete traceability.

Systematic Testing
Minimizes Risks and Reduces Costs

The GWP® recommendation gives clear answers based on your risks and the required accuracy.

- **How should I test my balance?**
- **How often should these tests be done?**
- **Where can I reduce efforts?**

To weigh accurately and reduce risks, METTLER TOLEDO recommends a combination of three recognized testing methods which complement each other and allow you to save time and money.

Mrs. G. Nielsson
Quality Control Manager
Ice Cream

Am I testing too much or not enough?
According to ISO 9001, I have to calibrate and verify my balance at specified intervals. But the standard makes no statement on how this should be done or how often.

Good Weighing Practice™ provides me with a recommendation on testing, based on my specific needs, meeting my internal requirements as well as ISO9001. The GWP® recommendation also contains all relevant information about test weights and SOPs. So, I am sure to do the right thing.

Intelligent balance functions reduce the testing efforts and offer additional quality assurance. Balances with Fully Automated Calibration Technology (FACT) require less frequent routine tests.

METTLER TOLEDO service technicians use accredited calibration methods and document the correct performance of the balance.

Service Technician

Cali-bration

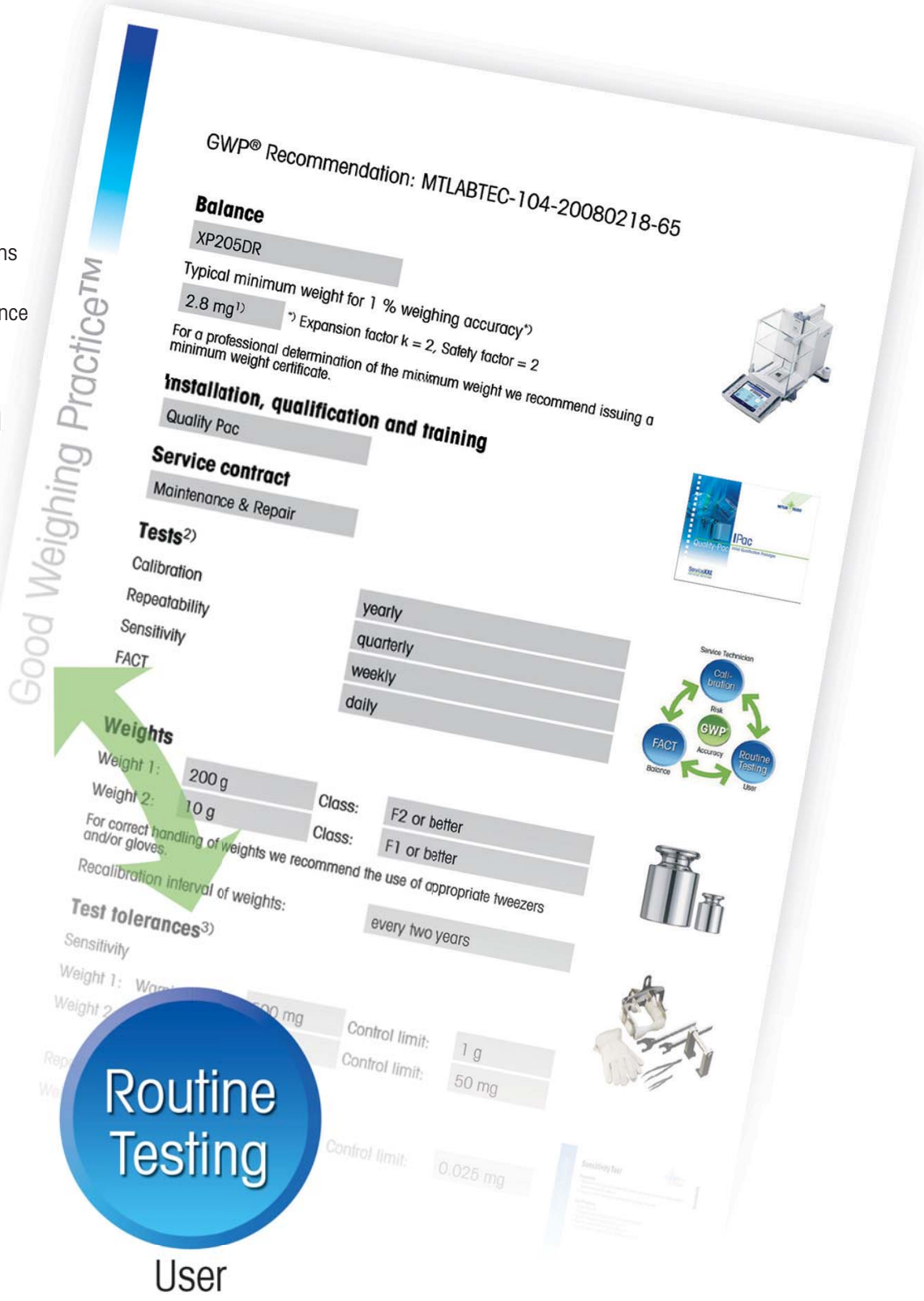
Risk

GWP®

Accuracy

Routine Testing

User



The user performs periodically short tests and recognizes right away, if he is within process tolerances.

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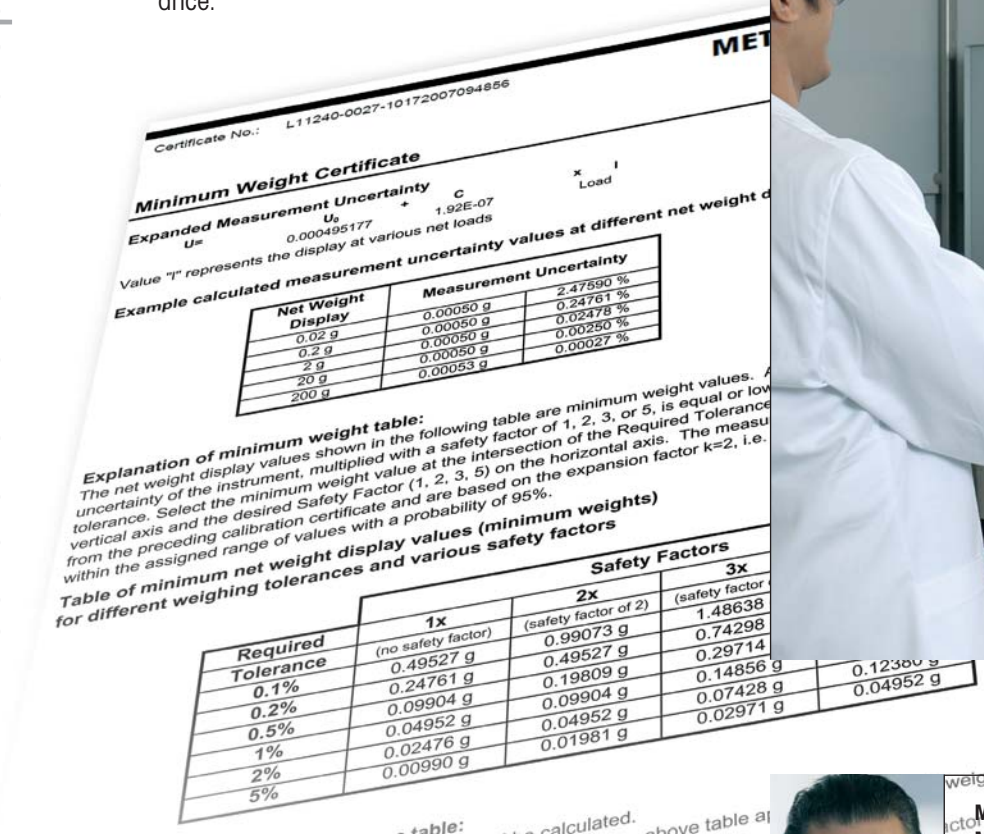
Calibration

The METTLER TOLEDO service technicians check all important weighing parameters and document the information in the measurement uncertainty and minimum weight certificate. This calibration certificate is the accredited and fully traceable certificate of the balance.



Certificate No.: L11240-0027-10172007094856

Minimum Weight Certificate

Expanded Measurement Uncertainty

$U = U_0 + C \times \text{Load}^I$

U_0 = 0.000495177, C = 1.92E-07, I = 1

Value "I" represents the display at various net loads

Example calculated measurement uncertainty values at different net weight d

Net Weight Display	Measurement Uncertainty	
0.02 g	0.00050 g	2.47590 %
0.2 g	0.00050 g	0.24761 %
2 g	0.00050 g	0.02478 %
20 g	0.00050 g	0.00250 %
200 g	0.00053 g	0.00027 %

Explanation of minimum weight table:

The net weight display values shown in the following table are minimum weight values. A uncertainty of the instrument, multiplied with a safety factor of 1, 2, 3, or 5, is equal or low tolerance. Select the minimum weight value at the intersection of the Required Tolerance vertical axis and the desired Safety Factor (1, 2, 3, 5) on the horizontal axis. The measu from the preceding calibration certificate and are based on the expansion factor k=2, i.e. within the assigned range of values with a probability of 95%.

Table of minimum net weight display values (minimum weights) for different weighing tolerances and various safety factors

Required Tolerance	Safety Factors 1x (no safety factor)	2x (safety factor of 2)	3x (safety factor
0.1%	0.49527 g	0.99073 g	1.48638
0.2%	0.24761 g	0.49527 g	0.74298
0.5%	0.09904 g	0.19809 g	0.29714
1%	0.04952 g	0.09904 g	0.14856 g
2%	0.02476 g	0.04952 g	0.07428 g
5%	0.00990 g	0.01981 g	0.02971 g

				0.12380 g
				0.04952 g

Notes on minimum weight values in above table:

1. If "N/A" is shown above, no appropriate value could be calculated.
2. For multirange and multi-interval devices, the display values in the above table ap range.
3. METTLER TOLEDO is not responsible for the proper selection of a Required Tol
4. The user is responsible for ensuring that device settings are not modified from th for producing this certificate were conducted.

Mr. P. Brenner
Manager Pharma
In Process Control

Maintaining process tolerances are crucial to us!

Therefore, it is important that we know the minimum weight of a weighing system.
The calibration certificate points this out for different tolerances and corresponding safety factors.
Based on this information, the conformity to our tolerances is always traceable.

Required Tolerance	Safety Factors 1x (no safety factor)	2x (safety factor of 2)	3x (safety factor of 3)	5x (safety factor of 5)
0.1 %	0.49527 g	0.99073 g	1.48638 g	2.47826 g
0.2 %	0.24761 g	0.49527 g	0.74298 g	1.23854 g
0.5 %	0.09904 g	0.19809 g	0.29714 g	0.49527 g
1 %	0.04592 g	0.09904 g	0.14856 g	0.24716 g
2 %	0.02476 g	0.04952 g	0.07428 g	0.12380 g
5 %	0.00990 g	0.01981 g	0.02971 g	0.04952 g

Table of minimum net weight display values (minimum weights) for different weighing tolerances and safety factors

Routine Operation

Users should be able to check process tolerances and identify deviations in measurement performance early. With simple tests at defined intervals risks can be minimized.

- Which weights are needed?
- Which tests have to be done?
- Which tolerances are needed?

GWP® makes clear recommendations.

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Mrs. G. Nielsson
Quality Control Manager
Ice Cream

Our customers appreciate our delivery capability and reliability.

In the past, we had to trust that everything was OK over a time period of several months.
Due to a lack of routine testing, the quality of our products changed, which went unnoticed initially, until we ended up with delays in our delivery schedules. Now we take a couple minutes every week to check the accuracy of our balance. It's worth it because now we know we are delivering good products, and on time.

Only an external test weight with a calibration certificate makes a balance a traceable measuring instrument.

GWP®
Good Weighing Practice™

Good Decisions
For Safe Weighing

Good Evaluation

Good Selection

Good Installation

Good Calibration

Good Operation

www.mt.com/GWP
For more information

ISO 9001 registered
ISO 14001 registered

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