

Testing equipment for foreign body detection validation

Always the right solution through large shape variety



German Quality

! Benefits

- Conformity to food processing & FDA-approved
- Test pieces do not affect product
- Ultimate process reliability for customers through the use of high-grade inspection and testing equipment
- Optimal for validating critical control points (CCP)
- Thanks to high-quality materials, the inspection and testing equipment remains reliable for years

The most important elements of a quality management system are the inspection and testing equipment used. This equipment serves as a reference according to which compliance with quality standards can be validated. Its careful selection is paramount.

Minebea Intec offers proprietary foreign objects that are designed for this purpose and integrated into test pieces. When selecting the test pieces, care was taken to use materials that do not generate any intrinsic signal that might thereby falsify the detection result of the test balls in the metal detector. These test balls are available in various types of materials. That makes them convenient and easy for you to verify in your different machines.

Moreover, test materials like plastic and ceramic are also suitable when X-ray technology is used. In this area, as well, no carrier materials can falsify the detection result. Unlike metal detectors, X-ray devices can detect different foreign objects individually. That is the reason why we similarly offer multi-cards for this technology where several test balls of varying diameters are located in one of these test pieces.

Poor-quality test pieces can have major adverse effects on test results. By choosing from Minebea Intec's range of inspection and testing equipment, you are committing yourself to the highest safety requirements. Also in terms of regulatory compliance with

- HACCP
- IFS
- BRC

and other safety standards, this range gives you a choice of ubiquitously reliable test pieces matched to fit your application.

Product profile

The test pieces are available in various versions. Optimized to fit your application, you can select between

- Cards,
- Sticks,
- Pucks,
- Balls &
- Rods.

All test pieces are harmless in contact with food and have been granted FDA approval.

We would be delighted to certify your inspection and testing equipment and issue an individual conformity certification for each separate piece of your equipment.

Over the course of a test part's lifecycle, the detection properties may change, e.g. due to damage etc. Therefore, regular comparison against a reference value is recommended.

For example, this can be carried out during the annual maintenance of your critical control point by Minebea Service or by inspection at our company.

Inspection and testing equipment for metal detection technology

Test cards



The test card is a classic type of inspection and testing equipment. Supplied in credit card format, this card is easy to handle and suited for a variety of products. It is laminated and supplied in a large variety of materials such as stainless steel, aluminum, brass and bronze. The metal spheres on the cards range in sizes from 0.35 mm to 8.0 mm.

Diameter in mm	Iron 1.3505	Stainless steel AISI 304	Stainless steel AISI 316	Aluminum 99.98%	Brass 2.0321	Bronze 2.1030
0.35						
0.50						
0.60						
0.65						
0.80						
0.90						
1.00						
1.20						
1.27						
1.50						
1.58						
1.80						
2.00						
2.50						
3.00						
3.50						
4.00						
4.50						
5.00						
6.00						
7.00						
8.00						

Light grey highlighted fields indicate available designs.

Test sticks

Thanks to their compact design, sticks are particularly suitable inspection and testing equipment for use on soft products like bread or cheese. Here, the stick is pressed into the center of the product and, together with a product from the customer, thereby ensures optimal validation results. The test sticks contain a metal sphere ranging in size from 0.35 mm to 5.0 mm and differ in the colors gray, blue, red and yellow assigned to their respective material type.



Diameter in mm	Iron 1.3505	Stainless steel AISI 304	Stainless steel AISI 316	Aluminum 99.98%	Brass 2.0321	Bronze 2.1030
0.35						
0.50						
0.60						
0.65						
0.70						
0.80						
0.90						
1.00						
1.20						
1.27						
1.50						
1.58						
1.80						
2.00						
2.50						
3.00						
3.50						
4.00						
4.50						
5.00						

Light grey highlighted fields indicate available designs.

Test pucks

Due to its flat shape, the test puck is particularly suited for the pharmaceutical industry. Primarily in flat products, like tablets, this test piece format shows its advantages. The test pucks likewise come in the colors gray, blue, red and yellow and the metal spheres contained thereon range in size from 0.35 mm to 3.0 mm.



Diameter in mm	Iron 1.3505	Stainless steel AISI 304	Stainless steel AISI 316	Aluminum 99.98%	Brass 2.0321	Bronze 2.1030
0.35						
0.50						
0.60						
0.65						
0.80						
0.90						
1.00						
1.20						
1.27						
1.50						
1.58						
1.80						
2.00						
2.50						
3.00						

Light grey highlighted fields indicate available designs.

Test balls



Test balls are particularly suitable for verifying metal detectors in tubular and fall-shaft systems within the conveyor tube. Depending on the diameter of the metal sphere, the diameter of the reference block is 13 mm or 30 mm. The metal spheres contained in it range in size from 0.35 mm to 5.0 mm.

Diameter in mm	Iron 1.3505	Stainless steel AISI 304	Stainless steel AISI 316	Aluminum 99.98%	Brass 2.0321	Bronze 2.1030
0.35						
0.50						
0.60						
0.65						
0.80						
0.90						
1.00						
1.20						
1.27						
1.50						
1.58						
1.80						
2.00						
2.50						
3.00						
3.50						
4.00						
4.50						
5.00						

Light grey highlighted fields indicate available designs.

Test rods



On some tube transport systems, it is not possible to place inspection and testing equipment within the product flow. To nevertheless enable a function test of the product separation, a test rod can be inserted between conveyor tube and metal detector. The test rods are made of Plexiglas. Their bendability also allows validation in angled installation scenarios.

Diameter in mm	Iron 1.3505	Stainless steel AISI 304	Stainless steel AISI 316	Aluminum 99.98%	Brass 2.0321	Bronze 2.1030
0.35						
0.50						
0.60						
0.70						
0.80						
0.90						
1.00						
1.20						
1.27						
1.50						
1.58						
1.80						

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Diameter in mm	Iron 1.3505	Stainless steel AISI 304	Stainless steel AISI 316	Aluminum 99.98%	Brass 2.0321	Bronze 2.1030
2.00						
2.50						
3.00						
3.50						
4.00						
4.50						
5.00						
6.00						
7.00						
8.00						

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Inspection and testing equipment for X-ray inspection

X-ray single cards

X-ray test cards are proprietary designed for inspection by X-ray detectors. The test piece is contained on a laminated film and ensures optimal test results for your test process.

Material	AISI 316	Ceramic	Zirconia	Sodium silicate glass	Crystal	Nylon
0.30						
0.40						
0.50						
0.60						
0.80						
1.00						
1.20						
1.40						
1.50						
1.80						
2.00						
2.20						
2.40						
2.50						
2.80						
3.00						
3.50						
4.00						
4.50						
5.00						
5.50						
6.00						
7.00						
8.00						
9.00						



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X-ray multi-cards



X-ray detectors can distinguish between different contaminants; therefore, we also supply multi-cards in addition to single cards. In these, up to five different ball diameters are contained in one test card.

Material	AISI 316	Ceramic	Zirconia	Sodium silicate glass	Crystal	Nylon
Diameter from – to	0.3 – 1.0					
	1.0 – 2.0	1.0 – 4.0	1.0 – 6.0	1.0 – 4.0		
	2.0 – 3.0	4.5 – 9.0		4.0 – 10.0	2.0 – 8.0	2.0 – 6.0
	3.0 – 5.5					

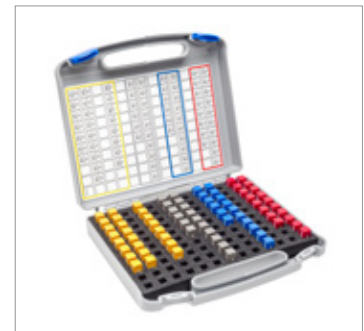
Light grey highlighted fields indicate available designs.

Reference test kit

The Minebea Intec Reference test kit contains test balls in the different diameters available. For metal detection technology, a case is supplied containing a total of 79 small square-shaped blocks made from all conventional types of metal.

For X-ray technology, we provide you with a summary of all multi-cards in the carrying case. In addition to the metal spheres, we also offer you balls made of stone, glass & plastic in various densities for this specific area. This reference test kit is ideally suited for quality managers, service technicians and staff responsible for production lines. That way you always have a broad portfolio of inspection and testing equipment on hand and can determine the output limit of your foreign body detection at all times.

Particularly when new products are introduced to your production line, you will always have the appropriately sized balls on hand to immediately establish your maximum detection sensitivity.



Reference test kit for metal detection technology

Diameter in mm	Iron 1.3505	Stainless steel AISI 304	Stainless steel AISI 316	Aluminum 99.98%	Brass 2.0321	Bronze 2.1030
0.35						
0.50						
0.60						
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0.90						
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1.20						
1.50						
1.59						
1.80						
2.00						
2.50						
3.00						
3.50						
4.00						
4.50						
5.00						
6.00						
7.00						
8.00						

Light grey highlighted fields indicate available designs.

Reference test kit for X-ray technology

Material	AISI 316	Ceramic	Zirconia	Soda-lime glass	Crystal glass	Nylon
Diameter from – to	1.0 – 2.0	1.0 – 4.0	1.0 – 6.0	1.0 – 4.0	2.0 – 8.0	2.0 – 6.0
	2.0 – 3.0	4.5 – 9.0		4.0 – 10.0		
	3.0 – 5.5					

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How do I perform proper validation

Use of test piece in the test product

- In foreign body detection, your product has a big influence on the detection result
- To simulate a true detection result, the test piece must be incorporated into the product
- You should always test at the “most sensitive or critical point” to apply the worst case scenario as a reference for your quality management
- Always test product separation in addition to detection sensitivity. 100% safety can only be guaranteed once a contaminated product has been correctly separated out of the process.**

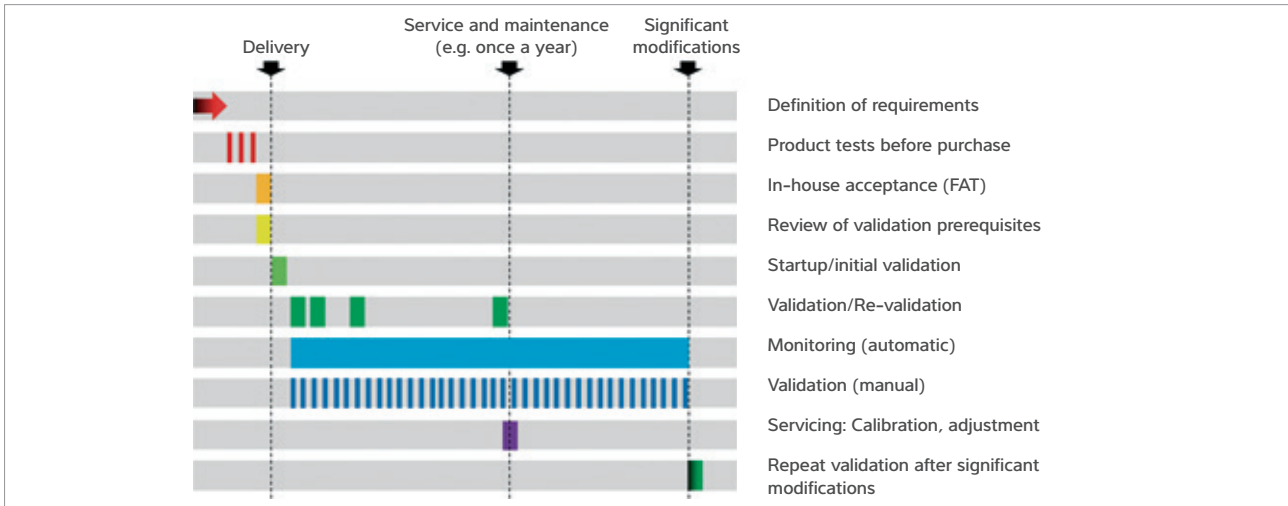
Thanks to the color coding system of our test pieces, no mix-ups are possible between the different material types:

Iron	Stainless steel	Non-ferrous metal	Glass	Ceramic	Plastic

Validation should take place at which intervals

Validation of your foreign body detection at the beginning and the end of every product lot should always make up a minimal part of your inspection.

In light of the economic framework, the shortest possible interval for interim inspections is recommended between these test cycles. Any downtimes can be identified immediately. This option thus offers the highest level of safety within the production process.



Logging your test results

To support you in documenting your test results, all foreign body detectors from Minebea Intec feature an automatic report function which supplies you with a summary of your tests.

Additionally, you can also set up an array of automated test intervals. Optionally select time or event-driven prompts to remind the operator when to perform a validation.

The products and solutions presented in this data sheet make major contributions in the following sectors:



The technical data given serves as a product description only and should not be understood as guaranteed properties in the legal sense.

Specifications subject to change without notice.
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