



Product Inspection Testing Maintaining Performance Levels

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Product Inspection

Introduction

Product Inspection equipment provides the means for food and pharmaceutical manufacturers to ensure product quality standards are upheld, consumer welfare is maintained, brands are protected, and regulatory and legislative requirements are met.

METTLER TOLEDO provides a range of inspection technologies to meet these needs.

Metal Detection

Advanced technology provides industry-leading metal contaminant detection levels and reliability, ensuring the safest products and tightest brand protection.



X-ray Inspection

X-ray provides exceptional detection capabilities while simultaneously performing a range of in-line product integrity checks. Inspecting fill levels, identifying missing or damaged products and rejecting damaged products are examples of powerful quality control tools for manufacturers.



Checkweighing

Dynamic checkweighing provides 100% quality and quantity control, helping to reduce costly giveaway, ensure local Weights & Measures legislation compliance, and maximize ROI.



Vision Inspection

METTLER TOLEDO CI-Vision inspection systems ensure that products consistently meet manufacturers' quality standards and specifications resulting in perfect product presentation every time.



Demonstrating Due Diligence

Meeting Your Obligations

Regular testing of the performance of product inspection equipment is an essential part of any well-designed quality management system.

METTLER TOLEDO can provide a comprehensive range of certifiable test samples in a variety of materials, sizes and carriers to assist in this process.

Having the correct test pieces available to conduct the testing ensures that the performance verification is carried out effectively in order to meet due diligence obligations.



Supporting Compliance

Certified test samples from METTLER TOLEDO can support compliance with all leading food safety and pharmaceutical standards and external codes of practice including:

- IFS (International Food Standard)
- SQF 2000 (Safe Quality Food)
- FSSC 22000
- FDA (Food and Drugs Association)
- GAMP (Good Automated Manufacturing Practice)
- BRC (British Retail Consortium)
- All major retailer standards



Contaminant Detection Equipment

For Critical Control Points

Manufacturing processes in the food and pharmaceutical industry can introduce the risk of foreign bodies in the product. Manufacturers need to ensure contamination risks are identified and steps are taken to eliminate them.

The Hazards Analysis Critical Control Points (HACCP) audit process is commonly used to identify contamination risks in a manufacturing process. Once a risk is highlighted, steps must be taken to mitigate the risk. This is achieved through establishing Critical Control Points (CCPs)

Product inspection equipment used at CCPs can include metal detectors if the likely contamination is metal only or x-ray inspection systems if the contamination risks are more diverse - for example glass, stone, and dense plastics, among others.

Identification of Critical Control Points

When a product inspection device is used as a Critical Control Point (CCP) the identification and labeling of the device becomes important as it is a key element of the manufacturing process and the Hazard Analysis and Critical Control Points (HACCP) program.

Frequency of Testing

For an Effective Program

Product inspection systems should be periodically verified in order to demonstrate due diligence and ensure they continue to operate in accordance with specified standards.

Every product inspection application and product is different and it is not possible to define generic test frequencies.

Once a product inspection system has been installed and commissioned, it is necessary to define the testing frequency appropriate for the situation. This will be based on the product, the manufacturing process and risks of contamination highlighted from the HACCP audit.

The testing frequency should be done often enough to ensure all products are properly inspected, isolated in the event of a failed test, and quarantined before they have left the manufacturing site.

Consideration should be given to conducting tests at the following stages:

- At the start and finish of daily production / shift
- At changes in production batches
- At changes in machine settings
- After downtime for repairs or maintenance

METTLER TOLEDO Service will support you in defining the right testing frequencies and procedures for your applications and products.

More information is contained on this subject in a range of guides available from METTLER TOLEDO. Guides are available covering metal detection, checkweighing, x-ray inspection, and vision technology. To register for free copies, visit:

► www.mt.com/pi-guides

Simplifying Testing

Effective Use of Test Packs

The use of test packs on production lines for packed goods is common and can save time and costs.

Test packs are specially-prepared, original packed goods which are intended to carry the test sample through the product inspection device. It is important that the pack reflects the actual product being inspected.

During the preparation of the test pack, it is important to verify that the pack is free of any contamination before affixing the test sample to it.

The test pack should be clearly labeled and identified using highly visible colored tape in order to ensure that an undetected pack does not flow through the production process and accidentally into the supply chain.



Documentation of Testing

Keeping Accurate Records

The results of tests conducted should be documented in order to demonstrate due diligence and support compliance needs.

In the event of a customer complaint, a manufacturer may need to rely on these records to prove that procedures were correctly followed and that the product inspection systems were functioning correctly to the agreed specifications.

Well documented records should include the following:

- Product inspection system unique identification reference (for example serial number, CCP number...)
- Product being produced
- Date and time of test
- Test samples used
- Name of the person who conducted the test
- Test result for both detection and rejection
- Test result for any fail-safe devices
- Fault details and corrective action taken (as applicable)

Should any verification or part of a verification test fail, then the cause should be immediately investigated and rectified before production recommences. All necessary procedures to deal with products manufactured since the last satisfactory test should be started and the details of the fault and the subsequent corrective action should be recorded as part of the test record.

Metal Detection Test Samples

For Every Application

A Choice of Materials, Sphere Sizes and Carrier Types.

Test samples for metal detection applications are available in a wide range of sizes, metals and carriers.

The test samples are labeled with the contaminant sphere size and a serial number. Materials used include:

Metal
Aluminum
Ferrous-Chrome
Non-Ferrous-Brass
Stainless Steel

FDA Certified Carrier Materials for Improved Food Safety*

As there is a likelihood that test pieces will come into contact with food products, most METTLER TOLEDO test samples utilize materials with full FDA certification for contact with foodstuffs.

* All test sample carriers with the exception of laminated Test Cards are certified to FDA standards.

Metal Detection Test Sticks

For a Range of Inspection Applications

Format

- Standard 1/2" x 6" rectangular
for test spheres up to 9.00 mm diameter

FDA Certified – Yes

Application

Conveyor lines with discrete packaged or bulk products



Testing Procedure

Depending of the product application the sticks can be used with test packs (see "Simplifying Testing" on page 7) or they can be positioned directly into the product flow of bulk products.

The test sequence should be repeated for the specified number of tests with different contaminant materials and sphere sizes, according to each company's testing procedures and sensitivity standards.

Sphere size in mm	Aluminium	Ferrous-Chrome	Non-Ferrous / Brass	Stainless Steel		
				440	304	316
0.30		●				●
0.39					●	●
0.40		●	●	●	●	●
0.41						●
0.50	●	●	●	●	●	●
0.60	●	●	●	●	●	●
0.70	●	●	●	●	●	●
0.80	●	●	●	●	●	●
0.90	●	●	●	●	●	●
1.00	●	●	●	●	●	●
1.10			●	●		●
1.20		●	●	●	●	●
1.30		●			●	
1.32			●			
1.40						
1.50	●	●	●	●	●	●
1.60		●	●	●		●
1.70						●
1.80		●	●			●
1.90						●
2.00	●	●	●	●	●	●
2.20		●	●			●
2.40		●	●	●	●	●
2.50	●	●	●		●	●
2.60				●		
2.80		●	●	●	●	●
3.00	●	●	●	●	●	●
3.20		●	●			●
3.40		●				
3.50	●	●	●		●	●
3.60		●				
3.70		●				
3.80		●	●			●
3.90		●				
4.00	●	●	●	●	●	●
4.30						
4.50		●	●			●
4.75						
4.80						●
5.00	●	●	●	●		●
5.40			●			
5.50		●	●			●
5.55						
5.70						●
6.00		●	●			●
6.50		●				●
7.00		●	●			●
7.20						●
7.50						●
8.00		●	●			●
9.00		●	●			●

Metal Detection Test Cards

For Conveyorized Applications

Format

3-3/4" x 2-1/4" laminated credit card format for test spheres up to 3.00 mm diameter

FDA Certified – No

Application

Conveyor lines with discrete packed products



Testing Procedure

Depending on the product application, test cards can be used with test packs (see "Simplifying Testing" on page 7) or they can be positioned directly into the product flow of bulk products.

Different contamination material types and sphere sizes should be used according to each company's testing procedures and sensitivity standards.

Sphere size in mm	Aluminium	Ferrous-Chrome	Non-Ferrous / Brass	Stainless Steel		
				440	304	316
0.30		•				•
0.39					•	•
0.40		•	•	•	•	•
0.41						•
0.50	•	•	•	•	•	•
0.60	•	•	•	•	•	•
0.70	•	•	•	•	•	•
0.80	•	•	•	•	•	•
0.90	•	•	•	•	•	•
1.00	•	•	•	•	•	•
1.10			•	•		•
1.20		•	•	•	•	•
1.30		•			•	
1.32			•			
1.40						
1.50	•	•	•	•	•	•
1.60		•	•	•		•
1.70						•
1.80		•	•			•
1.90						•
2.00	•	•	•	•	•	•
2.20		•	•			•
2.40		•	•	•	•	•
2.50	•	•	•		•	•
2.60				•		
2.80		•	•	•	•	•
3.00	•	•	•	•	•	•

Metal Detection Test Wands

Free Fall Vertical and Pipeline Inspection

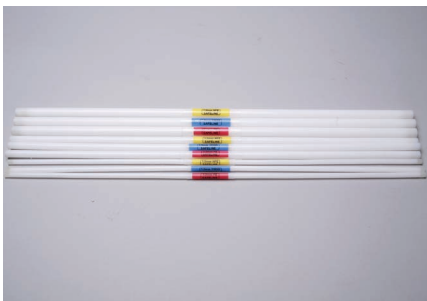
Format

- 1/4" x 20" for test spheres up to 3.00 mm diameter
- 3/8" x 20" for test spheres up to 6.00 mm diameter
- 1/2" x 20" for test spheres up to 9.00 mm diameter

FDA Certified – Yes

Application

Inspection of powders and granules in vertical packaging applications, and inspection of liquids, pastes and slurries where test sample retrieval is not practical



Testing Procedure

If a metal detection application does not provide the possibility to catch a test sample in the event of it not being rejected, then the system can be tested by inserting a test rod.

The test should be repeated for the specified number of times and for each metal contamination type, according to each company's testing procedures and sensitivity standards.

Sphere size in mm	Aluminium			Ferrous-Chrome			Non-Ferrous / Brass			Stainless Steel								
	1/4"	3/8"	1/2"	1/4"	3/8"	1/2"	1/4"	3/8"	1/2"	440			304			316		
	1/4"	3/8"	1/2"	1/4"	3/8"	1/2"	1/4"	3/8"	1/2"	1/4"	3/8"	1/2"	1/4"	3/8"	1/2"	1/4"	3/8"	1/2"
0.30				•	•	•										•	•	•
0.39													•	•	•	•	•	•
0.40				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
0.41																•	•	•
0.50	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
0.60	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
0.70	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
0.80	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
0.90	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1.00	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1.10							•	•	•	•	•	•				•	•	•
1.20				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1.30				•	•	•							•	•	•			
1.32							•	•	•									
1.40																		
1.50	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1.60				•	•	•	•	•	•	•	•	•				•	•	•
1.70																•	•	•
1.80				•	•	•	•	•	•							•	•	•
1.90																•	•	•
2.00	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2.20				•	•	•	•	•	•	•	•	•				•	•	•
2.40				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2.50	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2.60										•	•	•						
2.80				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3.00	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3.20					•	•		•	•								•	•
3.40					•	•												
3.50		•	•		•	•		•	•					•	•		•	•
3.60					•	•												
3.70					•	•												
3.80					•	•		•	•								•	•
3.90					•	•												
4.00		•	•		•	•		•	•	•	•	•		•	•		•	•
4.30																		
4.50					•	•		•	•								•	•
4.75																		
4.80																	•	•
5.00		•	•		•	•		•	•	•	•	•					•	•
5.40								•	•									
5.50					•	•		•	•								•	•
5.55																		
5.70																•	•	•
6.00					•	•		•	•								•	•
6.50						•												•
7.00						•			•									•
7.20																•	•	•
7.50																		•
8.00						•			•									•
9.00						•			•									•

Metal Detection Test Tablets

For Tablet and Capsule Inspection

Format

- Diameter 16mm x 5mm
for test spheres up to 3.00 mm diameter

FDA Certified – Yes

Application

Pharmaceutical and nutraceutical applications



Testing Procedure

The specified test sample can be inserted into the product flow to verify the correct operation of the reject device.

The test should be repeated for the specified number of times and for each metal contamination type and sphere size, according to each company's testing procedures and sensitivity standards.

Sphere size in mm	Aluminium	Ferrous-Chrome	Non-Ferrous / Brass	Stainless Steel		
				440	304	316
0.30		•				•
0.39					•	•
0.40		•	•	•	•	•
0.41						•
0.50	•	•	•	•	•	•
0.60	•	•	•	•	•	•
0.70	•	•	•	•	•	•
0.80	•	•	•	•	•	•
0.90	•	•	•	•	•	•
1.00	•	•	•	•	•	•
1.10			•	•		•
1.20		•	•	•	•	•
1.30		•	•		•	
1.32			•			
1.40						
1.50	•	•	•	•	•	•
1.60		•	•	•		•
1.70						•
1.80		•	•			•
1.90						•
2.00	•	•	•	•	•	•
2.20		•	•			•
2.40		•	•	•	•	•
2.50	•	•	•		•	•
2.60				•		
2.80		•	•	•	•	•
3.00	•	•	•	•	•	•

Metal Detection Test Balls

For Gravity Fall Applications

Format

- Diameter 5/8"
for test spheres up to 6.00 mm diameter
- Diameter 3/4"
for test spheres up to 9.00 mm diameter
- Diameter 1"
for test spheres up to 9.00 mm diameter
- Diameter 1-3/8"
for test spheres up to 9.00 mm diameter

FDA Certified – Yes

Application

Gravity fall inspection of powders and granules



Testing Procedure

The specified test sample can be inserted into the product flow to verify the correct operation of the reject device.

The test should be repeated for the specified number of times and for each metal contamination type and sphere size, according to each company's testing procedures and sensitivity standards.

If it is not possible to catch the test sample in the event of it not being rejected, then the system will have to be tested using a test rod (see "Metal Detection Test Wands" on page 14).

Metal Detection Test Plugs

For Gravity Fall Applications

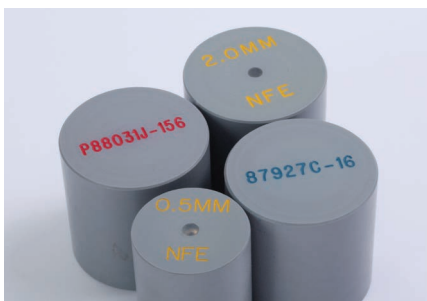
Format

- Diameter 1-1/2" x 2"
for test spheres up to 9.00 mm diameter
- Diameter 2" x 2"
for test spheres up to 9.00 mm diameter

FDA Certified – Yes

Application

Gravity fall inspection of powders and granules



Testing Procedure

The specified test sample can be inserted into the product flow to verify the correct operation of the reject device.

The test should be repeated for the specified number of times and for each metal contamination type and sphere size, according to each company's testing procedures and sensitivity standards.

If it is not possible to catch the test sample in the event of it not being rejected, then the system will have to be tested using a test rod (see "Metal Detection Test Rods" on page 14).

Sphere size in mm	Aluminum		Ferrous- Chrome		Non- Ferrous / Brass		Stainless Steel					
							440		304		316	
	1-1/2"	2"	1-1/2"	2"	1-1/2"	2"	1-1/2"	2"	1-1/2"	2"	1-1/2"	2"
0.30			●	●							●	●
0.39									●	●	●	●
0.40			●	●	●	●	●	●	●	●	●	●
0.41											●	●
0.50	●	●	●	●	●	●	●	●	●	●	●	●
0.60	●	●	●	●	●	●	●	●	●	●	●	●
0.70	●	●	●	●	●	●	●	●	●	●	●	●
0.80	●	●	●	●	●	●	●	●	●	●	●	●
0.90	●	●	●	●	●	●	●	●	●	●	●	●
1.00	●	●	●	●	●	●	●	●	●	●	●	●
1.10					●	●	●	●			●	●
1.20			●	●	●	●	●	●	●	●	●	●
1.30			●	●					●	●		
1.32					●	●						
1.40												
1.50	●	●	●	●	●	●	●	●	●	●	●	●
1.60			●	●	●	●			●	●	●	●
1.70											●	●
1.80			●	●	●	●					●	●
1.90											●	●
2.00	●	●	●	●	●	●	●	●	●	●	●	●
2.20			●	●	●	●					●	●
2.40			●	●	●	●	●	●	●	●	●	●
2.50	●	●	●	●	●	●			●	●	●	●
2.60							●	●			●	●
2.80			●	●	●	●	●	●	●	●	●	●
3.00	●	●	●	●	●	●	●	●	●	●	●	●
3.20			●	●	●	●						●
3.40			●	●								
3.50	●	●	●	●	●	●			●	●	●	●
3.60			●	●								
3.70			●	●								
3.80			●	●	●	●					●	●
3.90			●	●								
4.00	●	●	●	●	●	●	●	●	●	●	●	●
4.30												
4.50			●	●	●	●					●	●
4.75												
4.80											●	●
5.00	●	●	●	●	●	●	●	●			●	●
5.40					●	●						
5.50			●	●	●	●					●	●
5.55												
5.70											●	●
6.00			●	●	●	●					●	●
6.50			●	●							●	●
7.00			●	●	●	●					●	●
7.20											●	●
7.50											●	●
8.00			●	●	●	●					●	●
9.00			●	●	●	●					●	●

Metal Detection Test Kits

Configurable to Suit Your Needs

Metal detection cards, balls, sticks, plugs, tablets and wands are also available in test kit packs for even greater convenience.

The kits will be configured to your needs: you define 6 test pieces you need to verify your metal detection application and we will deliver them in a robust test sample box which allows for safe storage and transport of the test samples.



Test Card Wallets

Metal detection test cards are also available in wallets. You define up to 12 test cards to meet your metal detection and/or x-ray needs, and we ship them to you in a convenient card wallet. This is a great way to get more cards at an economical price.



X-ray Inspection Test Samples

For Every Application

A Choice of Materials, Sizes and Carrier Types.

X-ray sample carriers have been designed specifically for use with x-ray systems. The materials used in their construction are usually FDA certified* and the correct density for x-ray contamination detection.

Test samples for x-ray applications are available in a wide range of sizes, materials and carriers. All test samples are labeled with the contaminant material and a serial number. Materials include:

Contaminant Material
Aluminum
Ferrous-Chrome
Non-Ferrous / Brass
Stainless Steel - 440 - 304 - 316
Glass - Low Mineral Content - High Mineral Content
Porcelain (simulated bone)
Ceramic

* All test sample carriers with the exception of laminated Test Cards are certified to FDA standards.

X-ray Inspection Test Sticks

For a Range of Inspection Applications

Format

- Standard 1/2" x 6" rectangular
for test spheres up to 9.00 mm diameter

FDA Certified – Yes

Application

Conveyor lines with discrete packaged or bulk products



Testing Procedure

Depending of the product application the sticks can be used with test packs (see "Simplifying Testing" on page 7) or they can be positioned directly into the product flow of bulk products.

The test sequence should be repeated for the specified number of tests with different contaminant materials and sphere sizes, according to each company's testing procedures and sensitivity standards.

Sphere size in mm				Stainless Steel			Glass		Porcelain*
	Aluminium	Ferrous-Chrome	Non-Ferrous / Brass	440	304	316	Low Mineral	High Mineral	
0.30		●				●			
0.39					●	●			
0.40		●	●	●	●	●			
0.41						●			
0.50	●	●	●	●	●	●			
0.60	●	●	●	●	●	●			
0.70	●	●	●	●	●	●			
0.80	●	●	●	●	●	●			
0.90	●	●	●	●	●	●			
1.00	●	●	●	●	●	●			●
1.10			●	●		●			
1.20		●	●	●	●	●			
1.30		●			●				
1.32			●						
1.40									
1.50	●	●	●	●	●	●	●	●	
1.60		●	●	●		●			
1.70						●			
1.80		●	●			●			
1.90						●			
2.00	●	●	●	●	●	●	●	●	●
2.20		●	●			●			
2.40		●	●	●	●	●			
2.50	●	●	●		●	●	●	●	
2.60				●					
2.80		●	●	●	●	●			
3.00	●	●	●	●	●	●	●	●	●
3.20		●	●			●			
3.40		●							
3.50	●	●	●		●	●	●	●	
3.60		●							
3.70		●							
3.80		●	●			●			
3.90		●							
4.00	●	●	●	●	●	●	●	●	●
4.30									
4.50		●	●			●			
4.75									
4.80						●			
5.00	●	●	●	●		●	●	●	
5.40			●						
5.50		●	●			●			
5.55									
5.70						●			
6.00		●	●			●	●	●	●
6.50		●				●			
7.00		●	●			●	●		
7.20						●			
7.50						●			
8.00		●	●			●			
9.00		●	●			●			
10.00									●
15.00									●

*All porcelean spheres - diameter tolerance +/- 0.1MM

X-ray Inspection Test Cards

For Conveyorized Inspection

Format

- 3-3/4" x 2-1/4" laminated test cards containing stainless steel, glass, porcelain or ceramic
- High capacity test cards

FDA Certified – No

Application

Conveyor lines with discrete packed products



Testing Procedure

Depending on the product application, test cards can be used with test packs (see "Simplifying Testing" on page 7) or they can be positioned directly into the product flow of bulk products.

Different contamination material types and sphere sizes should be used according to each company's testing procedures and sensitivity standards.

Sphere size in mm	Aluminium	Ferrous-Chrome	Non-Ferrous / Brass	Stainless Steel			Glass		Porcelain*	Ceramic Cube
				440	304	316	Low Mineral	High Mineral		
0.30		●	●			●				
0.39					●	●				
0.40		●	●	●	●	●				
0.41						●				
0.50	●	●	●	●	●	●				
0.60	●	●	●	●	●	●				
0.70	●	●	●	●	●	●				
0.80	●	●	●	●	●	●				
0.90	●	●	●	●	●	●				
1.00	●	●	●	●	●	●			●	
1.10			●	●		●				
1.20		●	●	●	●	●				
1.27			●							
1.30		●			●					
1.32			●							
1.40										
1.50	●	●	●	●	●	●	●	●		
1.60		●	●	●		●				
1.70						●				
1.80		●	●			●				
1.90						●				
2.00	●	●	●	●	●	●	●	●	●	●
2.20		●	●			●				
2.40		●	●	●	●	●				
2.50	●	●	●		●	●	●	●		●
2.60				●						
2.80		●	●	●	●	●				
3.00	●	●	●	●	●	●	●	●	●	●
3.20						●				
3.50					●	●	●	●		
3.80						●				
4.00				●	●	●	●	●	●	●
4.50						●				
4.80						●				
5.00				●		●	●	●		
5.50						●				
5.70						●				
6.00						●	●	●	●	●
6.50						●				
7.00						●	●			
7.20						●				
7.50						●				
8.00						●				●
9.00						●				
10.00										●
15.00										●

*All porcelean spheres - diameter tolerance +/- 0.1MM

- Orange dot indicates a high capacity test card available for x-ray applications only

X-ray Inspection Test Wands

Free Fall Vertical and Pipeline Inspection

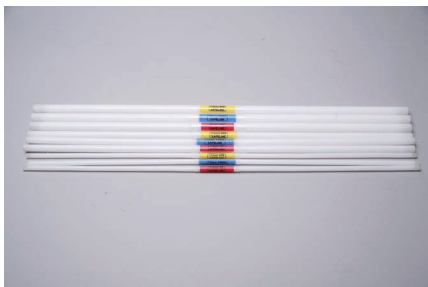
Format

- 1/4" x 20" for test spheres up to 3.00 mm diameter
- 3/8" x 20" for test spheres up to 6.00 mm diameter
- 1/2" x 20" for test spheres up to 9.00 mm diameter

FDA Certified – Yes

Application

Inspection of powders and granules in vertical packaging applications, and inspection of liquids, pastes and slurries where test sample retrieval is not practical



Testing Procedure

If a metal detection application does not provide the possibility to catch a test sample in the event of it not being rejected, then the system can be tested by inserting a test rod.

The test should be repeated for the specified number of times and for each metal contamination type, according to each company's testing procedures and sensitivity standards.

Sphere size in mm	Aluminium			Ferrous-Chrome			Non-Ferrous / Brass			Stainless Steel								
	1/4"	3/8"	1/2"	1/4"	3/8"	1/2"	1/4"	3/8"	1/2"	440			304			316		
										1/4"	3/8"	1/2"	1/4"	3/8"	1/2"	1/4"	3/8"	1/2"
0.30				●	●	●										●	●	●
0.39													●	●	●	●	●	●
0.40				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.41										●	●	●				●	●	●
0.50	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.60	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.70	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.80	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0.90	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1.00	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1.10							●	●	●	●	●	●				●	●	●
1.20				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1.30				●	●	●							●	●	●			
1.32							●	●	●									
1.40																		
1.50	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1.60				●	●	●	●	●	●	●	●	●				●	●	●
1.70																●	●	●
1.80				●	●	●	●	●	●							●	●	●
1.90																●	●	●
2.00	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2.20				●	●	●	●	●	●							●	●	●
2.40				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2.50	●	●	●	●	●	●	●	●	●				●	●	●	●	●	●
2.60										●	●	●						
2.80				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3.00	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3.20					●	●		●	●								●	●
3.40					●	●												
3.50		●	●		●	●		●	●					●	●		●	●
3.60					●	●												
3.70					●	●												
3.80					●	●		●	●								●	●
3.90					●	●												
4.00		●	●		●	●		●	●	●	●	●		●	●		●	●
4.30																		
4.50					●	●		●	●								●	●
4.75																		
4.80																	●	●
5.00		●	●		●	●		●	●	●	●	●		●	●		●	●
5.40								●	●									
5.50					●	●		●	●								●	●
5.55																		
5.70																●	●	●
6.00					●	●		●	●								●	●
6.50						●												●
7.00						●			●									●
7.20																●	●	●
7.50																		●
8.00						●			●									●
9.00						●			●									●
10.00																		●
15.00																		●

*All porcelean spheres - diameter tolerance +/- 0.1MM

X-ray Inspection Test Tablets

For Tablet and Capsule Inspection

Format

- Diameter 16mm x 5mm
for test spheres up to 3.00 mm diameter

FDA Certified – Yes

Application

Pharmaceutical and nutraceutical applications



Testing Procedure

The specified test sample can be inserted into the product flow to verify the correct operation of the reject device.

The test should be repeated for the specified number of times and for each metal contamination type and sphere size, according to each company's testing procedures and sensitivity standards.

Sphere size in mm	Aluminium	Ferrous-Chrome	Non-Ferrous / Brass	Stainless Steel		
				440	304	316
0.30		•				•
0.39					•	•
0.40		•	•	•	•	•
0.41						•
0.50	•	•	•	•	•	•
0.60	•	•	•	•	•	•
0.70	•	•	•	•	•	•
0.80	•	•	•	•	•	•
0.90	•	•	•	•	•	•
1.00	•	•	•	•	•	•
1.10			•	•		•
1.20		•	•	•	•	•
1.30		•	•		•	
1.32			•			
1.40						
1.50	•	•	•	•	•	•
1.60		•	•	•		•
1.70						•
1.80		•	•			•
1.90						•
2.00	•	•	•	•	•	•
2.20		•	•			•
2.40		•	•	•	•	•
2.50	•	•	•		•	•
2.60				•		
2.80		•	•	•	•	•
3.00	•	•	•	•	•	•

X-ray Inspection Test Balls

For Gravity Fall Applications

Format

- Diameter 5/8"
for test spheres up to 6.00 mm diameter
- Diameter 3/4"
for test spheres up to 9.00 mm diameter
- Diameter 1"
for test spheres up to 9.00 mm diameter
- Diameter 1-3/8"
for test spheres up to 9.00 mm diameter

FDA Certified – Yes

Application

Gravity fall inspection of powders and granules



Testing Procedure

The specified test sample can be inserted into the product flow to verify the correct operation of the reject device.

The test should be repeated for the specified number of times and for each metal contamination type and sphere size, according to each company's testing procedures and sensitivity standards.

X-ray Inspection Test Plugs

For Gravity Fall Applications

Format

- Diameter 1-1/2" x 2"
for test spheres up to 9.00 mm diameter
- Diameter 2" x 2"
for test spheres up to 9.00 mm diameter

FDA Certified – Yes

Application

Gravity fall inspection of powders and granules



Testing Procedure

The specified test sample can be inserted into the product flow to verify the correct operation of the reject device.

The test should be repeated for the specified number of times and for each metal contamination type and sphere size, according to each company's testing procedures and sensitivity standards.

If it is not possible to catch the test sample in the event of it not being rejected, then the system will have to be tested using a test rod (see "X-ray Inspection Test Rods" on page 28).

Sphere size in mm	Aluminium		Ferrous- Chrome		Non- Ferrous / Brass		Stainless Steel					
							440		304		316	
	1-1/2"	2"	1-1/2"	2"	1-1/2"	2"	1-1/2"	2"	1-1/2"	2"	1-1/2"	2"
0.30			•	•							•	•
0.39									•	•	•	•
0.40			•	•	•	•	•	•	•	•	•	•
0.41											•	•
0.50	•	•	•	•	•	•	•	•	•	•	•	•
0.60	•	•	•	•	•	•	•	•	•	•	•	•
0.70	•	•	•	•	•	•	•	•	•	•	•	•
0.80	•	•	•	•	•	•	•	•	•	•	•	•
0.90	•	•	•	•	•	•	•	•	•	•	•	•
1.00	•	•	•	•	•	•	•	•	•	•	•	•
1.10					•	•	•	•			•	•
1.20			•	•	•	•	•	•	•	•	•	•
1.30			•	•					•	•		
1.32					•	•						
1.40												
1.50	•	•	•	•	•	•	•	•	•	•	•	•
1.60			•	•	•	•	•	•			•	•
1.70											•	•
1.80			•	•	•	•					•	•
1.90											•	•
2.00	•	•	•	•	•	•	•	•	•	•	•	•
2.20			•	•	•	•					•	•
2.40			•	•	•	•	•	•	•	•	•	•
2.50	•	•	•	•	•	•			•	•	•	•
2.60							•	•			•	•
2.80			•	•	•	•	•	•	•	•	•	•
3.00	•	•	•	•	•	•	•	•	•	•	•	•
3.20			•	•	•	•						•
3.40			•	•								
3.50	•	•	•	•	•	•			•	•	•	•
3.60			•	•								
3.70			•	•								
3.80			•	•	•	•					•	•
3.90			•	•								
4.00	•	•	•	•	•	•	•	•	•	•	•	•
4.30												
4.50			•	•	•	•					•	•
4.75												
4.80											•	•
5.00	•	•	•	•	•	•	•	•			•	•
5.40					•	•						
5.50			•	•	•	•					•	•
5.55												
5.70											•	•
6.00			•	•	•	•					•	•
6.50			•	•							•	•
7.00			•	•	•	•					•	•
7.20											•	•
7.50											•	•
8.00			•	•	•	•					•	•
9.00			•	•	•	•					•	•
10.00											•	•
15.00											•	•

X-ray Inspection Test Kits

Complete Testing Solutions

X-ray inspection test cards, balls, sticks, plugs, tablets and wands are also available in test kit packs for even greater convenience.

The kits will be configured to your needs: you define the 6 test pieces you need to verify your x-ray inspection application and we will deliver them in a robust test sample box which allows for safe storage and transport of the test samples.



Test Cubes and Spheres

For those who want to create their own test samples, we also offer loose ceramic cubes and metal spheres. Ceramic cubes are available in 2.00, 2.50, 3.00, 4.00, 6.00, 10.00 and 15.00 mm sizes. Metal spheres are either small (0.30 to 5.00 mm), or medium (5.50 to 9.00 mm), and are available in aluminum, ferrous-chrome, non-ferrous brass, and stainless steel.

Need Help Configuring Your Kit?

By analyzing your x-ray inspection and/or metal detection application(s) and product portfolio, as well as possible contaminations, our Service Department will setup a proper verification test procedure and will recommend a test sample kit configured to your needs.

IPac

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The IPac qualification package ensures new machines immediately provide a return on investment and help you meet food safety standards and obligations, including IFS, BRC, SQF and FSSC 22000.

METTLER TOLEDO Service engineers verify installation standards, commissioning your system to achieve the highest performance parameters in active service.

IPac also contributes to continuous productivity improvement, delivering process-based operator training to drive optimum system efficiency as fast as possible, and maintain that performance level into the future, for as long as your equipment is in use.



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Our services have been tailored to give you not only confidence and peace of mind, but also to help you attain and sustain the highest levels of productivity.

We understand the on-going support requirements of our customers and the challenges they face. Therefore we take a proactive approach to customer service and support.

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- **Performance**
- **Compliance**
- **Expertise**

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We talk about Uptime. About optimal performance, 100% compliance and real process profitability.



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Performance Verification audits ensure that on-going compliance needs are met, while operator skills are developed through basic training.

They provide the necessary certification and documentary evidence to show checks have been made and optimum performance is being achieved.

Performance Verification brings together industry safety guidelines, annual certification and up-to-date legislative standards.

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Our range of informative and authoritative guides covers metal detection, checkweighing, x-ray and vision inspection, and assists you in selecting the right product inspection solution for your production line.

They offer support in installing an all-encompassing product inspection program and provide advice to help you in achieving compliance with standards, regulations and legislation.



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