

Consumer Products Inspection

RETAIL



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Executive Summary

In today's retail industry, success means the ability to offer the right products at the right time at a competitive price. To meet market demand, manufacturers select their materials and suppliers from all over the world. As a result, manufacturers are often removed from where their products are produced. This can make it quite challenging to ensure consistent, high quality product.

While retail manufacturers' ultimate goal is to deliver safe, quality products to the consumer, issues within retail factories are still found every day. These issues include non-conforming units, incorrect product order quantities, illegible barcodes, poor packaging, shipping damage, and much more. While some of this may seem insignificant, these issues actually lead to production disruptions in all areas of the supply chain -- causing costly delays, product returns, or even a complete re-design of the product.

This often leaves manufacturers with more questions than answers. How do you ensure the quality of materials to avoid supply chain disruptions down the line? How can you guarantee the punctuality and integrity of shipments? The most effective way to avoid these issues is to undergo a Retail Factory Inspection. This whitepaper will highlight the overall process, how to prepare, and the benefits for manufacturers.

Inspection Process

In order to guarantee the quality of products and customer satisfaction, manufacturers should consider support from third-party resources in all stages of the supply chain. From pre-production to post production, retail services can take over quality and safety controls, help avoid long-term recourse procedures and meet contractual warranties – ultimately ensuring business success.

FACTORY EVALUATION (FEV) PRE-PRODUCTION

FEV audits are carried out at the pre-production stage to determine whether the manufacturer can fulfil all technical, organizational, social and security requirements. Inspectors are expected to provide complete and reliable information to ensure safety, quality and compliance of products destined for the open market.

Before beginning production, an inspector verifies that the manufacturer is accredited to an ISO quality management system standard such as ISO 9001, ISO 14000, and ISO 13485. These standards set forth specific procedures for developing products. Although it is not a requirement, it is advised for manufacturers to be certified to these standards to ensure product quality and demonstrate the ability to consistently provide products and services that meet customer and regulatory requirements.

The next step in the factory evaluation process is to verify that the Bill of Materials drawings and work instructions are complete. This too can prove that products were made the same way every time – meeting contractual agreements and ensuring a consistent product.

Finally, the inspector will check the physical capabilities of the factory and staff. This establishes whether the manufacturer has control over the build process by using process flow sheets, check lists, and in-line inspections. The inspector will then validate that test equipment is calibrated and the operators at the facility know how to perform required test – ensuring that test instructions have been provided by customer, and those test instructions are followed properly.

INITIAL PRODUCTION CHECK (IPC)

Carried out at the beginning of production, IPC inspections check that all components, raw materials, storage procedures and first-production runs are compliant with requirements to avoid time-consuming and potentially costly delays. The inspector will confirm that the Bill of Materials drawings are consistent against actual materials and components present at the facility.

DURING PRODUCTION (DUPRO) CHECK

After a minimum quantity has been manufactured, DUPRO inspections are designed to ensure that products meet agreed specifications based on **Acceptable Quality Levels**. Defects found are labeled by three major categories – minor, major, and critical. On-site advice may be given to the manufacturer during the inspection to maintain quality levels.

Conducting a DUPRO check is one the most important steps in the inspection process. If an insufficient amount of in-line inspections are conducted during production, or it is neglected altogether, many issues can arise and cause quite a headache for manufacturers. It can lead to the production of incorrect quantities and defective products – ultimately disrupting the overall production process, causing costly delays and possible re-design.

FINAL RANDOM INSPECTION

This post-production inspection ensures that 100% of the ordered quantity has been produced and that at least 80% of the shipment to be inspected is ready and packed. In accordance with established sampling procedures, sample draws are taken at random and checked for compliance with the agreed specifications. A final random inspection follows a similar process to the DUPRO inspection. It helps identify issues such as unreadable or wrong labeling on products, poor packaging of products, and final packaging, including external barcodes and warning labels.

What is the Procedure for a Sample Inspection / Sample Draw?

- Check the quantity stored in the warehouse as compared to the Purchase Order (PO) from the customer
- 2. Check the outer packaging for quality and required markings
 - Shipping and packaging laws require specific markings. Here are just a couple of examples:



- **3.** Upon opening of sample packages, inspectors may complete the following checklist:
 - Visual appearance checks for any obvious damage to products, scratches, broken corners, dented metal, dead insect, also verify user manuals are included.
 - Function checks where an inspector verifies whatever the product is and if it functions as expected. For example, if it is a battery, an inspector would place the battery in a flashlight to make sure it works. If the product is a phone, an inspector would use the features of the phone to ensure it functions as expected.
 - General Safety Tests, which could be a hipot or ground bond test, or a leakage current test. If a product has any soft of safety device, inspectors would also verify they are working as expected.
 - Any Special tests as agreed with the client in advance.
 - Dimension and measurement checks, which refer to the verification of product dimensions and weights match the client's documentation. This also assures product packaging matches the dimension and measurements that will be labeled on the final package.
 - Endurance test according to the specification designated by the client. For example, a client may ask an inspector to bend a cable so many times to ensure it doesn't break.
 - Component check on one or more samples (if applicable). For example, if a product has safety components like a power supply or capacitors, inspectors would verify that the safety components match a test report.

Drop	Orient.	Drop Orientation	Package Wei	Test Drop Height				
Number			Equal to or greater than	But less than	(in./mm)			
1	Corner	most fragile face - 3 corner	0 / 0	21 / 10	30 / 760			
2	Edge	shortest edge radiating from corner tested	21 / 10	41 / 19	24 / 610			
3	Edge	next longest edge radiating from corner tested	41 / 19	61 / 28	18 / 460			
4	Edge	longest edge radiating from the corner tested	61 / 28	100 / 45	12 / 310			
5	Face	one of the smallest faces	100 / 45	150 / 68	8 / 200			
6	Face	opposite small face	Tests may be performed	d using a free fall dr	op tester, vertical shock			
7	Face	one of the medium faces	machine, incline impact tester or horizonal impact test system.					
8	Face	opposite medium face	_					
9	Face	one of the largest faces	_					
10	Face	oposite large face						

4. Certificate check and packaging drop tests according to the table below:

LOADING SUPERVISION

Finally, the inspector will ensure that the final products that passed inspection are the same products being shipped out to consumers. An inspector verifies that the Purchase Order (PO) matches exactly what is about to be loaded and shipped. It is important for the manufacturer to be supervised during this step to ensure the shipped products meet customer requirements, validating that it is done correctly, and documented for proof. This process also validates that the transportation vehicle is packed correctly and safely, minimizing the likelihood of damaged goods and ensuring the most efficient shipping methods.

PRE-SHIPMENT INSPECTION AND LOADING SUPERVISION

With the contribution of a PSI expert, manufacturers can be sure that the products ordered corresponds with quantity and quality requirements, is packed to withstand adversities of transport and that shipping documentation is complete. Pre-shipment inspection services includes, but is not limited to:

Packing method to make sure sufficient protection during transportation is

provided and confirm it is in accordance with specified requirements

- Verification of completeness of shipment documentation
- Verification that all products align with the agreed contractual conditions prior to shipment
- · Provision of pre-shipment inspection report

During loading supervision, the inspector verifies that the Purchase Order (PO) matches exactly what is about to be loaded and shipped. It is important for the manufacturer to be supervised during this step to ensure the shipped products meet customer requirements, validating that it is done correctly, and documented for proof. This process also validates that the transportation vehicle is packed correctly and safely, minimizing the likelihood of damaged goods and ensuring the most efficient shipping methods. Whether the manufacturer decides to choose a pre-shipment inspection, loading supervision, or both, the manufacturer can rest easy knowing their products will be delivered safely to their customers.

How Can You be Ready for Your Inspection?

Upon the request of a factory evaluation, there are many things manufacturers should understand before the inspector arrives to be properly prepared. The manufacturer should be aware of the common terminologies and methods the inspector will use such as AQL level, defect classification, and what the auditor will look for during the inspection.

WHAT IS AQL?

Acceptance sampling is a common quality control technique used in the industry and helps determine whether to accept or reject a product batch. **A**cceptable **Q**uality **L**evel is the maximum percentage or proportion of nonconformities in a lot or batch that can be considered satisfactory as a process average. It indicates the number of defects that can be accepted in accordance with the sampling size inspected. AQL measurements adhere to the ISO 2589-1:1999 standard. The General Inspection Level II is the most widely used AQL. The goal for most vendors is to achieve this level inspection in order to qualify or maintain a relationship with the factory or supplier.



I = Use the first sampling plan below the arrow. If sample size equals, or exceeds, lot size, carry out 100% inspection

1 = Use the first sampling plan above the arrow.

Ac = Acceptance number

Re = Rejection number

Defect Classification

Critical Defects Major Defects Minor Defects





CRITICAL DEFECT:

A defect that is likely to result in a hazardous or unsafe condition for the user or that is in contradiction to mandatory regulations.

Examples:

Glassware Inspection Test Failure:

Sharp edges i.e. broken glassware

Electrical Safety Test Failure:

• Product not conformed with the safety standard.

Garment Inspections Test Failure:

- Metal detection test failure
- Open threads/seams in clothes, etc.

MAJOR DEFECT:

A defect that is likely to result in failure, reducing the usability of the product for its intended purpose and obvious appearance defects affecting the sellability of the product.

Examples:

- Product that had no/wrong/intermittent function(s)
- Product with large scratches or damages that seriously affect the appearance of the product, etc.

MINOR DEFECT:

A defect that does not reduce the usability of the product for its intended purpose, but is nevertheless a workmanship defect beyond the defined quality standard.

Examples:

Small or not obvious scratches, etc.

GENERAL CHECKLIST FOR AN INSPECTOR

A great resource for manufacturers to effectively prepare for their inspection is to review the Inspection Worksheet that a TÜV Rheinland Inspector will use. This checklist will be used to conduct the inspection and will be given to the manufacturer as a comprehensive report post-inspection.

CLOSING MEETING

All findings must be summarized and presented by the auditor or inspector to the factory representative(s) at the termination of the audit in a closing meeting. During the closing meeting, the inspector will list all the non-conformities found during all aspects of the inspection – from the factory evaluation to post-production. The inspector will give a thorough explanation of the judgments of such findings against the applicable requirements (relevant standards, client's requirements, etc.) This is also the time for the auditor to answer any questions raised by the factory representatives.

	Inspection Worksheets PAGE of												
	Report No.			Inspector:								\wedge	
	Date:				Client / Item:						TÜVRheinland		
_									Carl	tons		AQL	Defects Allowed
Da	Date Prod. start Finis		inished Q'ty					Critical					
Da	Daily output		Ord	ered	Q'ty						Major		
Es	Est. Prod. End		Sampling Level					Minor					
	OK NO				_		1	DEVIATION	S/FI	NDIN	GS / NOTES	/ REMARKS	
	Raw r	naterial & IQC	-										
g	Warehouse ord Stock with clear	erly, clean & dry identical marking											
-	In/Out Record of	lear & systematic											
	IQC inspection passed for main	records complete and applicable materials											
_	Fail batch clean	y marked & separate											
	0 OC stations not	n-line QC											
	Defects in QC s	tations are recorded											
	Defects identica	Ily placed & marked											
	Products are:	Reworked/Repaired											
		Destroyed											
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	Finis	ned Products											
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		Guarded											
	Finish Products Stored in warehous with clear identical markings												
	QA Records C	complete & Clear											
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ž	All cartons are	identically marked			Seq.	SIZE (Feet)	Contai	ner No.	In OK	ner NOK	Loading Duration	Cartons Loaded	Seal No.
adn	All cartons are	orderly stored			1st								
s.b	Cartons dry &	complete (visual)			2nd								
۲ő	Broken/Dama	ged Cartons ctns			3rd								
•	Replaced Car	ons ctns			4th								
	, Inventory No. Equipm					ent / Model / Supplier			Range Accuracy Calibr D			Calibr. Date	Expiry Date
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What are the Benefits and Why Choose TÜV Rheinland?

TÜV Rheinland's team of experts has the technical know-how to help ensure product quality at every stage of the production process, from pre-production to production and post-production. We help you to identify and eliminate any faults at the production stage, reduce post-sales costs and minimize the likelihood of product recalls, thus protecting your brand reputation. Our goal is to provide the right services for both buyers and manufacturers to help ensure product safety. Demonstrate your commitment to delivering safe, quality products and prove your due-diligence to your customers by receiving a Quality Control Inspection from TÜV Rheinland!



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