

# The importance of pipette tip quality

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## Key Words

- **dfMEA** is the application of the Failure Mode and Effects Analysis method specifically used in product design.
- **pFMEA** is the application of the Failure Mode and Effects Analysis method specifically used in the production process.
- **Process verification** is the layer of quality that involves examining current processes and steps involved in creating the finished goods.
- **Inspection** is the layer of quality involving hands-on testing of pipette tips for potential failures and defects.
- **Process control** is the layer of quality that focuses on auditing and examining each process for potential improvements and efficiencies.
- **Detection** is the layer of quality where defects and failures are discovered, examined and broken down into their components.
- **Prevention** is the layer of quality focused on taking corrective action to ensure that future products exhibit the highest quality and reliability.
- **Practical Process Improvement (PPI)** is the process by which we are continuously and proactively improving our processes, with our eye always on the customer.

## Thermo Scientific quality

For 40 years, Thermo Scientific has been the market leader in liquid handling and handheld pipetting products. Advanced ergonomics, dependable accuracy and precision, and uncompromised safety – all are the hallmarks of our innovative product design. A wise man once said, “Quality is not an act, it is a habit.” Although Aristotle spoke these profound words around the 4<sup>th</sup> century BC, this statement is still relevant centuries later. Thermo Scientific products have been continuously enhanced and improved to meet the ever changing needs of pipetting. Pipette tips are consumable products trusted by millions of dedicated researchers around the world. Thermo Scientific takes this responsibility extremely seriously and thus makes every attempt possible to uphold the highest quality standards for pipette tips and packaging.



## Why is having a quality pipette tip important?

Having a high-quality pipette tip can have a profound impact on the ability of the researcher to perform his/her job. A pipette tip that is not manufactured consistently will not exhibit reliable accuracy and precision. This can be due to many factors, such as a poor fit with the pipette and inconsistent tip dimensions. Thus, results cannot be relied on and the experiment will ultimately need to be performed again. Undoubtedly redoing experiments wastes not only money in terms of additional reagent, sample and consumables costs, but more importantly wastes the researcher's time. Researchers simply cannot afford the money and time wasted if such a commonly used consumable, such as pipette tips, hinders their work.

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Another potential, and more damaging result of using a pipette tip of poor quality is the impact on long-term comfort and repetitive stress injury. The overall comfort of the pipette can also have an immediate impact on the user's ability to perform the desired task efficiently and consistently. A poorly fitting pipette tip requires more force by the researcher to load and eject, potentially causing injury and discomfort. Ergonomic issues such as these may cause significant reductions in accuracy and repeatability by impairing the proper pipetting techniques that are crucial to achieving optimal results.

Outside of just comfort, it is important to understand that a pipette is only as good as the tip you put on it. Thermo Scientific pipette tips are manufactured and tested with market leading pipette brands to ensure accuracy and precision regardless of the instrument in use. Reproducible results are the key to a successful experiment, and without proper pipette and tip fits, these characteristics are less likely. For this reason, scientists around the world have chosen Thermo Scientific pipette tips to provide precise sample delivery with virtually any pipette in the lab.

### Components of quality at Thermo Scientific

Thermo Scientific places the highest standards of quality on its products in order to ensure that premium quality products are consistently delivered to its customers. To this end, Thermo Scientific has developed an interactive approach to the design and manufacturing process of pipette tips. This approach consists of three major components:

- **Quality Systems** – a continuous cycle of feedback and improvement in every stage of the product design and manufacturing process
  - Design quality into products (dFMEA)
  - Design quality into the process of making and shipping products (pFMEA)
  - Rigorous defect prevention, detection methods and product inspection criteria – 5 layers of quality
    - Process verification
    - Inspection
    - Process control
    - Detection
    - Prevention
  - Continuous improvement of products and processes through Practical Process Improvement
  - Internal and external audits of processes
  - Effective root cause analysis

- **Certifications** – using external certifications to validate the quality systems
  - Ensures quality systems continually comply with the highest standards
  - Covers design, manufacture, and assembly of products for laboratory use and research
  - Continuous review and improvement of quality systems
  - Certifications include:
    - ISO 13485:2003
    - In Vitro Diagnostic Device Directive (IVDD 98/79/EC)
- **Customers** – proactive customer feedback allows continual monitoring of product quality and allows for immediate corrective action to be made if issues are uncovered.
  - Proactive customer feedback through experience surveys
  - CAS (customer allegiance scores) allows continual monitoring of quality and service
  - Review and identify customer complaints and correct quality issues quickly and professionally

### What quality means to Thermo Scientific

Thermo Scientific has long been the market leader in providing high-quality pipette tips. By strictly adhering to the highest quality processes and procedures, these products attain dependable accuracy and precision, as well as uncompromised quality. Choose Thermo Scientific for the highest quality tips in the industry.



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