Eppendorf Purity Grades Selection Guide

	 Eppendorf Quality	 Sterile*	 PCR clean	 PCR clean and sterile*	 Biopur*
Continuous quality control for the following relevant criteria					
Function, tightness,precision	■	■	■	■	■
Low wetting	■	■	■	■	■
High chemical resistance	■	■	■	■	■
High thermal resistance	■	■	■	■	■
High resistance to centrifugation forces**	■	■	■	■	■
High transparency	■	■	■	■	■
Precisely shaped	■	■	■	■	■
Lot testing (certified) for the following purity criteria					
Human DNA-free			■	■	■
DNA-free (Human- + bacterial DNA)					■
DNase-free			■	■	■
RNase-free			■	■	■
PCR inhibitor-free			■	■	■
ATP-free					■
Pyrogen-free (endotoxin-free)		■		■	■
Sterile (Ph.Eur./USP)		■		■	■
Methods (Examples)					
Methods where high quality consumables are needed without special purities	■				
Bacteria and yeast culture		■		■	■
Cell and tissue culture		■		■	■■
Isolation and storage of DNA			■■	■	
Isolation and storage of RNA			■	■	■■
DNA analysis (PCR, qPCR, restriction analysis, hybridization, microarrays, sequencing)			■■	■	■
Mitochondrial DNA analysis					■■
Bacterial DNA analysis					■■
RNA analysis					■■
Application Areas (Examples)					
Routine Application	■				
Molecular biology			■■	■	■
Microbiology				■	■
Cell technology > Stem cell research > Transgenic animals / plants		■		■	■■
Research > Medical Research > Agriculture & Aquaculture Research				■	■■
Quality control > Food and beverage > Water supply > Environmental monitoring				■	■■
Forensic			■	■	■■

■ Recommanded ■■ Highly recommanded

* Increased safety due to availability of individually packaged / single-blistered products

** For accurate details regarding resistance to centrifugation, please refer to the product individual instruction for use.

Importance of Purity Criteria

Sterility	Importance
Per definition, a sterile product does not harbor any living organisms on its surface. The degree of sterilization is described by a residual probability of contamination. This probability is expressed as SAL (Sterility Assurance Level). Thus, a SAL value of 10-6 indicates the presence of one non-sterile item among 106 (1,000,000) sterilized items.	Sterile products are required whenever the presence of germs may have a negative effect; for example, in the prevention of infection of samples or incorrect test results for microbiological experiments that would be caused by unsterile lab equipment.

Pyrogen-free (endotoxin-free)	Importance
Thermostable substances (glycoproteins) from the outer membrane of bacteria and other microorganisms can cause fever in humans and impair the growth of cell cultures.	Absence of pyrogen prevents endotoxin-based contamination in drug manufacture, cell culture and medical laboratories.

Bacterial DNA-free (E. coli)	Importance
DNA is found in all cells of living entities, and it is the carrier of all genetic information. The highly sensitive PCR technique enables the detection of individual molecules.	The presence of DNA could lead to falsepositive results for different applications involving DNA. Note: Autoclaving does not remove traces of DNA.

Human DNA-free	Importance
To eliminate this potential source of contamination, the consumables are tested for the presence of human DNA. Even a single cell (e.g. skin particles) would be detected in the test. Manufacturing is virtually fully automated and monitored by staff wearing protective clothing.	Tests for human DNA prevent consumables from containing DNA that could lead to falsepositive results (e.g. genetic tests in forensics)

DNase-free	Importance
DNases are enzymes which degrade DNA.	DNase contaminations can influence DNA analysis.

RNase-free	Importance
RNases are enzymes that degrade RNA. These enzymes are extremely resistant, even to autoclaving and irradiation.	RNase-free products are an absolute must in the field of molecular biology because RNA is highly sensitive and can be destroyed very quickly by RNases.

ATP-free	Importance
ATP is a part of all living cells; therefore, its presence can indicate biological contamination.	The test procedure for the quantitative and qualitative detection of ATP is already an integral part of hygiene monitoring, e.g. in the pharmaceutical industry.

PCR inhibitor-free	Importance
PCR—the replication of DNA—has developed into one of the most important and commonplace molecular biology methods used in medical diagnostics, genetic counseling and all basic biological research. However, there are also substances that impair this reaction, so lab products must be free of these inhibitors.	It is essential that consumables used contain no impurities that could adversely affect PCR. This is particularly crucial for the amplification of minute quantities of genetic substances and for quantitative PCRs.

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