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? irradiated plasticware in PCR, RT-PCR, and cell biology experiments helps maintain a controlled and contamination-free environment

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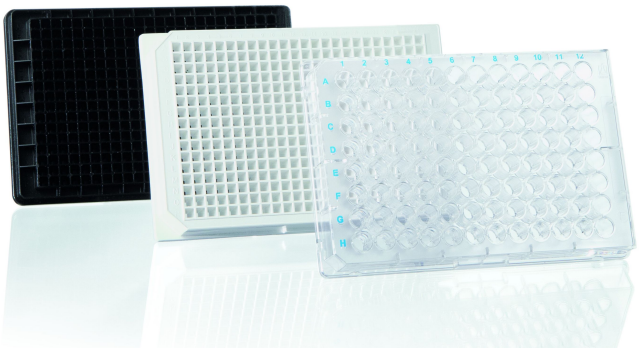
? -irradiation and ? - irradiation are both methods of sterilizing plasticware, but they utilize different types of radiation. Each method has its advantages and disadvantages.



? - irradiation, which involves the use of ? - particles (high-energy electrons) emitted from a radioactive source, offers several advantages over ? irradiation:

- **Depth of Penetration**: ? particles have a lower penetration power compared to ? rays. This means that ? irradiation primarily affects the surface of the material being sterilized. In the context of plasticware, this can be advantageous, as it minimizes potential damage to the bulk properties of the plastic.
- **Uniformity**: ? irradiation can provide a more uniform dose distribution across the irradiated surface. This uniformity is essential to ensure consistent sterilization without creating weak points in the material.
- **No Residual Radiation**: ? irradiation does not leave residual radiation in the material after the sterilization process is complete. This is a significant advantage in applications where residual radiation is a concern.
- **Environmentally Friendly**: ? irradiation doesn't rely on the use of radioactive isotopes, making it more environmentally friendly and easier to handle from a regulatory perspective.
- **Reduced Contamination Risk**: ? irradiation effectively sterilizes plasticware, minimizing the risk of contamination in sensitive experiments like PCR and cell culture. Contamination can lead to inaccurate results, making sterilized plasticware crucial in maintaining experimental integrity.
- **Consistent and Reliable Results**: Sterile plasticware ensures consistent experimental conditions, leading to reliable and reproducible results in PCR and RT-PCR experiments. Contaminants from non-sterile plasticware can interfere with reactions, affecting the outcome of the experiments.
- **Preservation of Enzyme Activity**: ? irradiation's surface sterilization method helps preserve the activity of enzymes used in PCR and RT-PCR reactions. Enzyme activity is essential for the success of these techniques, and minimizing the risk of contamination ensures optimal enzymatic reactions.
- **Cell Viability**: In cell biology experiments, sterile plasticware is critical for maintaining cell viability and ensuring that cell cultures are not compromised by microbial contamination. ? irradiated plasticware provides a controlled environment for cell growth and experimentation.
- **Standardization and Quality Control**: Sterilization through ? irradiation can be precisely controlled and monitored,

ensuring standardized quality across batches of plasticware. This consistency is particularly important in research and clinical settings where reproducibility and accuracy are paramount.

- **Compliance with Regulations**: ? irradiation methods often comply with regulatory standards, ensuring that plasticware used in PCR, RT-PCR, and cell biology experiments meets industry and research-specific guidelines for sterility and safety.

However, it's important to note that the choice between ? and ? irradiation depends on the specific requirements of the application and the type of material being sterilized. Factors such as the thickness and composition of the plasticware, regulatory guidelines, and cost considerations also play a crucial role in the selection of the appropriate sterilization method. At BRAND all BRANDplates® are produced in clean room class 7 according to ISO 14 644 -1 and pre-sterilization according to Ph. Eur. and USP requirements. ? radiation according to ISO 11137 and AAMI Guidelines using minimal dose of 25kGy to obtain SAL 10^{-6} .Overall, the use of ? irradiated plasticware in PCR, RT-PCR, and cell biology experiments helps maintain a controlled and contamination-free environment, leading to accurate, reliable, and reproducible results in scientific research.