MICRONIC
INNOVATION IN SAMPLE STORAGE

TECHNOTE

"Micronic tubes are almost 4 times more efficient for low-binding applications compared to competition. When using sterilized Micronic Polypropylene tubes, the protein recovery rates are notably maximized and consequently, the protein loss is greatly minimized."

ULTRA LOW BINDING TUBES

For use in proteomics or other fields of protein research

ULTRA LOW BINDING TUBES

RESEARCH CENTERS AND OTHER LABORATORY FACILITIES NORMALLY USE SMALL SAMPLE VOLUMES FOR REASONS SUCH AS STORAGE SPACE, LIMITED SAMPLE AVAILABILITY, AND SO ON. FOR THIS REASON, IT IS EXTREMELY IMPORTANT TO UTILIZE A LOW BINDING TUBE IN ORDER TO RECOVER THE MAXIMUM AMOUNT OF SAMPLE. MICRONIC TUBES ARE PROVEN TO BE 98% MORE EFFICIENT FOR USE IN PROTEOMICS OR OTHER FIELDS OF PROTEIN RESEARCH.

When the interaction between the sample and the tube surface is minimized, more protein can be recovered for downstream analysis. In proteomics or other protein field research such as antibodies, cell biology, and peptide drugs, maximum sample recovery is critical due to the small amount of the protein concentration.

Micronic has a highly-qualified team that regularly conducts research on new and existing materials to keep its products above industry standard. Research is also conducted on the protein binding properties* of Micronic sample storage tubes. Tests were performed to compare the degree of protein binding between Micronic Polypropylene (PP), competitor ZB8 Polypropylene (PP) and Polystyrene (PS) materials. Among the PP tubes from Micronic sterile and non-sterile versions were tested. The PP tubes from the competitor ZB8 were tested since the brand claims to have ultra-low binding tubes. A standard PS sample plate (Microlon) was tested as a reference.

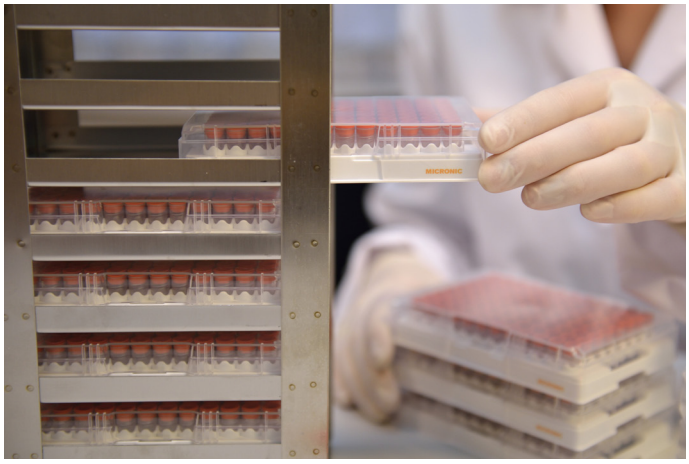
Test Protocol

The following protocol was used to verify the protein binding level:

1. In each type of Polypropylene tube a standard protein solution (an immunoglobulin to which a horse radish peroxidase was linked, MW 240.000, 1mg/ml) was added. For the best results, the protein solution was diluted 800 times in a carbonate binding buffer (of pH 8.5, 25 mmol in salt concentration). To compare, a 12800 times dilution of the same protein was added to the Polystyrene Microlon Elisa plate.

For the protein-binding studies a so-called protein-conjugate was used. In this case, it was a synthetic protein (a classical antibody with an enzyme coupled) that intrinsically has several different surfaces, lipophilic, lipophobic and neutral. Such a construct always finds a place to bind to if there is a binding spot available. These types of protein-constructs are the best average “protein” for binding studies to virtually any type of surface.

*Test Report TR022601 can be requested for more information.



2. Next, the products were placed into an incubator (37°C) for 16-18 hours to enable the proteins to bind to the tube walls.

3. After binding, the tubes and plate were removed from the incubator and washed 10 times with a washing fluid (10x200µl of water with Tween 20, 0.05%). As a result, only the proteins that were bound to the walls remained.

4. Then, a substrate solution (Hydrogen Peroxide and Luminol) was added to the individual tubes and plate. This way, the bound protein molecules could produce RLU’s (Relative Light Units) proportional to the amount of bound proteins.

5. During the last step, the Tristar Luminometer counted the RLU’s (integration time of half a second, every 10 seconds during 30 minutes). After this process, the degree of protein binding was determined (ng protein/cm²) for the Polypropylene tubes and the Polystyrene plate.

Results

The test results show that standard Polystyrene (Microlon plate) appears to be a relatively high protein binding plastic at 78 ng protein/cm² (see Table 1). It should be noted that this type of Polystyrene is known as a medium binding Polystyrene. The Micronic PP non-sterile tube is, compared to Polystyrene, a very low protein binder with 1.90 ng protein/cm². The Micronic PP

sterile (gamma) tube is the lowest protein binder with only 1.38 ng protein/cm².

The competitor ZB8 presented a higher protein binder with 4.88 ng protein/cm². Micronic PP sterile tubes are proved to be 98% more efficient for low-binding applications compared to Polystyrene plates. The Micronic PP non-sterile tubes are proved 97% more efficient. The Micronic PP sterile tubes are nearly 3.5 times less protein binding than the PP tubes from competitor ZB8.

Conclusion

In conclusion, the results indicate that when using sterilized Micronic Polypropylene tubes, the protein recovery rates are notably maximized and consequently, the protein loss is greatly minimized. The results clearly demonstrate that Micronic tubes have far better performance than the competition, and are scientifically engineered to provide the highest quality for low binding applications.

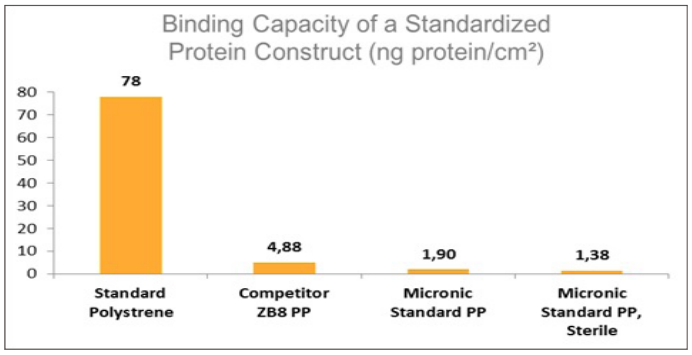


Table 1: Binding capacity of a standardized protein construct (ng protein/cm²)

ABOUT MICRONIC

Our goal is to advance research by serving scientists in finding solutions that contribute to a higher quality of life. We develop and manufacture a range of Dutch-designed products to enhance the process of sample preservation and storage.

Micronic is an independent organization with its headquarters located in Lelystad, the Netherlands. Micronic produces and assembles its labware in certified Class 7 clean rooms which are located in the Netherlands and the United States. Its labware equipment is also assembled inhouse.

Micronic is an ISO 9001 and 14001 certified company. The Micronic sales, marketing and product support is organized at two sales offices: Micronic America LLC and Micronic Europe BV. The products are applied worldwide in the (research) laboratories of university hospitals, forensics, agricultural, veterinary and governmental institutes, as well as companies in biotech, food, chemical and pharmaceutical industries.

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