


# Sample Loss and Sample Recovery

Eppendorf LoBind® and LoRetention enable low binding and low retention of liquids

### Binding

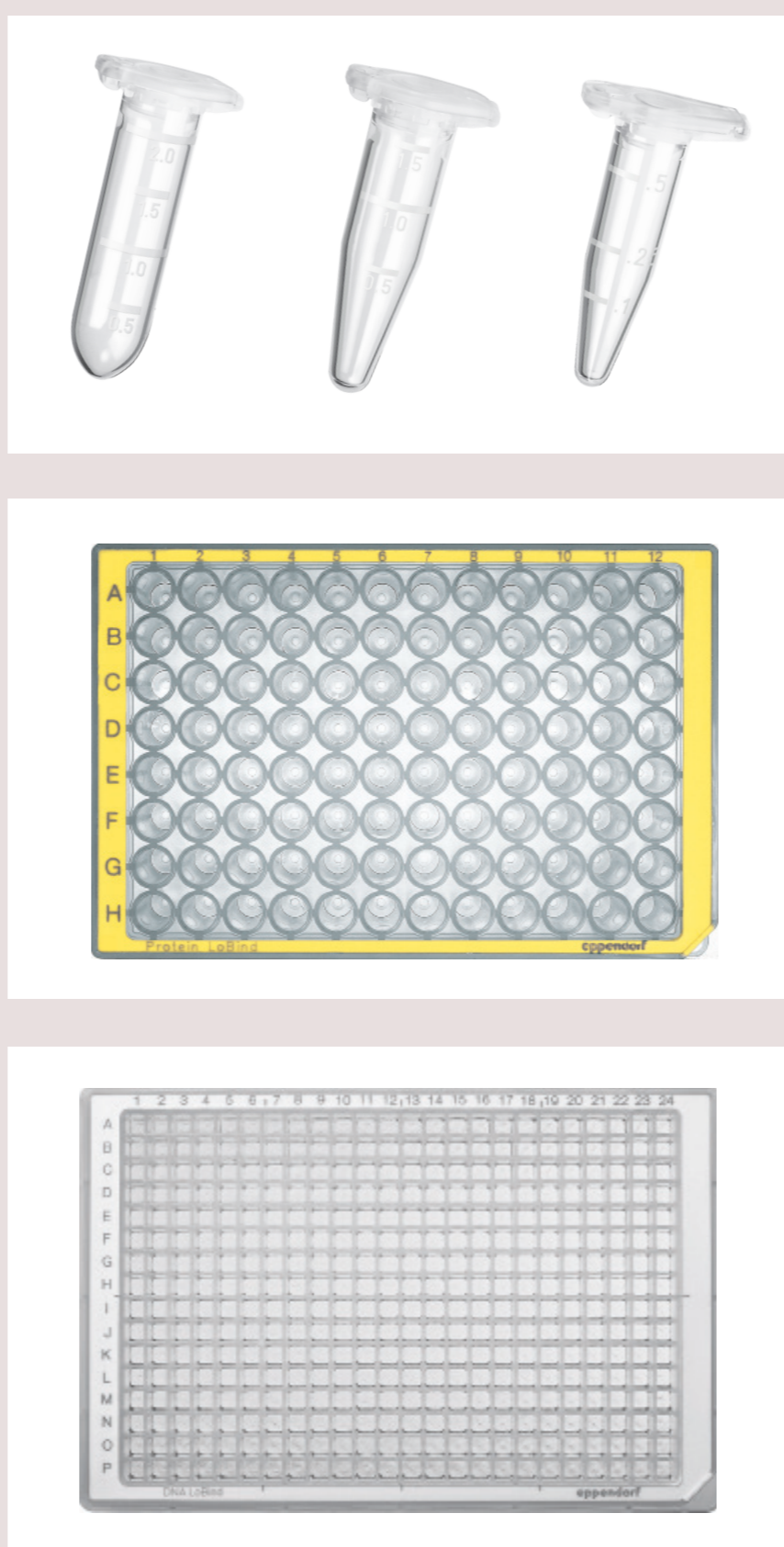


**Binding**  
Forces between atoms, molecules and surfaces enable adhesion of a gecko to a wall by cilia under his feet.

The same type of forces cause proteins and nucleic acids to bind to solid glass or polymersurfaces (tubes and plates).

**Time-dependent process for molecules in solution**  
→ Storage + Incubation

### DNA LoBind/Protein LoBind



Eppendorf Safe-Lock Tubes

Eppendorf Deepwell Plates

Eppendorf Microplates

A two-component polymer mix minimizes interaction of sample molecules with LoBind surface.

**No coating!**

### Best recovery with Eppendorf LoBind®

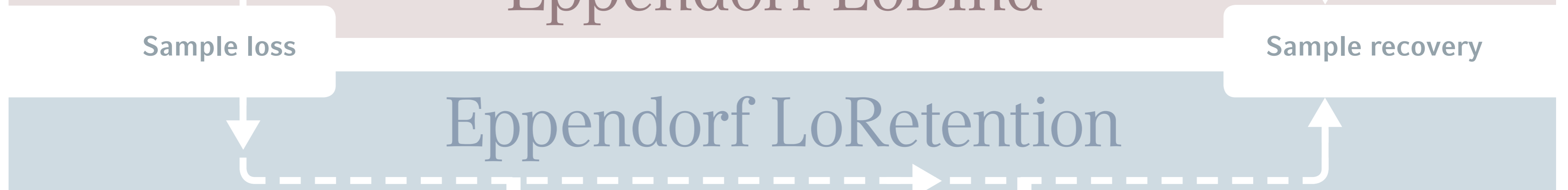
Protein recovery in %

Time	Standard	LoBind
0 h	100	100
1 h	100	90
3 h	100	55
5 h	99	35
24 h	95	15

**Method:**  
Incubation of labeled BSA (1 µg/mL).


**Result:**  
Recovery rates after 24 h  
Standard: 15 %  
LoBind: 95 %

**Applications**  
Preparation and storage of low concentrated nucleic acid solutions (DNA LoBind) or protein/peptide/virus solutions (Protein LoBind).




### Retention

Retention depends on the combination of liquid and surface.




Drop rolls off when surface tension of liquid > surface energy of leaf

Water



Liquid wets the surface when surface tension is reduced by detergents


Water with detergent



**Residual liquid when pipetting detergent containing solutions**

**Time-dependent process**  
> Pipetting

### Eppendorf LoRetention



ep Dualfilter T.I.P.S.® LoRetention

ep T.I.P.S.® LoRetention

Ultra-hydrophobic surface by molecular modification minimizes retention characteristics for liquids.

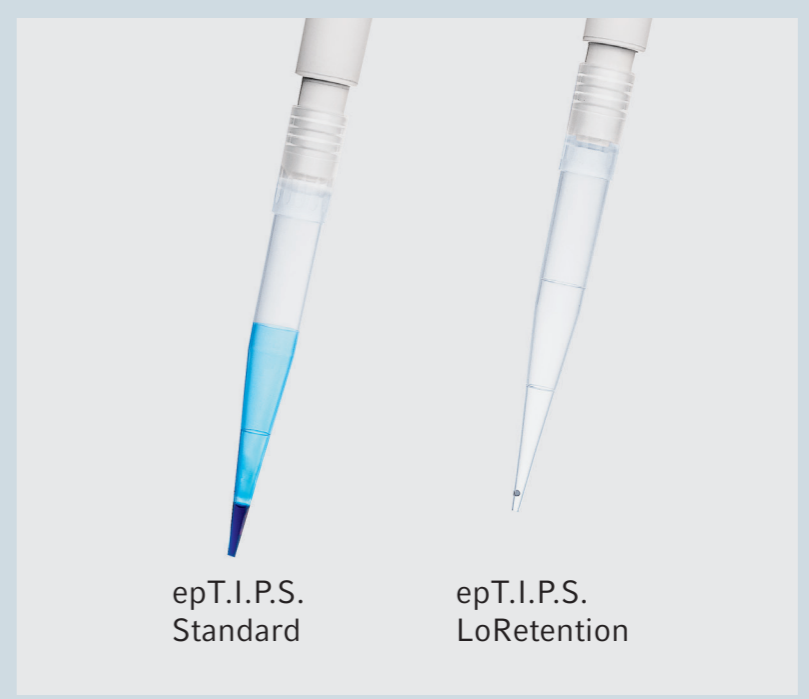
**No coating!**

### Highest recovery with epT.I.P.S. LoRetention

Residual liquid in 200 µL tips in mg

Detergent	epT.I.P.S. Standard	ep T.I.P.S. LoRetention
Triton X-100 (0.1 %)	2,3	0,2
Tween 20 (0.1 %)	1,5	0,6
SDS (1 %)	0,4	0,1
PCR Mastermix	5,6	0,7

**Applications**  
> Set up of PCR, qPCR, restriction digestion, ligase reaction  
> Isolation of nucleic acids and proteins (denaturation solution)  
> Gel electrophoresis (ready-to-use DNA ladder)



epT.I.P.S. Standard      epT.I.P.S. LoRetention