

ScreenTape® P200 Buffer Compatibility

This Technical Note lists the buffers that are compatible with the ScreenTape P200 platform. It shows that for the majority of buffers that are commonly used for protein purification and preparation, the platform will perform well. Some more extreme buffers however, affect the performance characteristics of the system in a number of different ways. We describe here what these effects are and provide some recommendations and tips to deal with them.

P200 Performance

Sizing range	10 - 200kDa
MW accuracy (average deviation)	<10%
MW precision	< 2% CV
Suggested sample concentration range	100 to 1000µg/ml
Quantitative range	5 to 5000µg/ml
Typical sensitivity	5 µg/ml
Sample volume needed	2µl
Number of lanes / tape	16
Protein analysis values	Molecular weight Protein purity Protein quantity

Recommendations

Protein preparation and purification methods use a very diverse assortment of buffers, salts, and additives, that can span a broad range of concentrations and pH values. The resulting collected fractions are typically analysed for protein content using platforms such as SDS-PAGE or capillary electrophoresis. Depending on the salts, additives and pH, separation buffers can have a variety of effects on the sizing, mobility and staining of the collected proteins, which are platform dependant. Although many protein buffers are compatible with the ScreenTape protein platform, a certain number of these effects can be observed. Beyond listing which buffers are compatible with ScreenTape, this document describes some of the effects of the buffers that are not compatible with the platform and gives recommendations on how to counter these effects.

The following table summarises protein sample buffers and buffer components which are known to be compatible with the ScreenTape P200 platform.

Buffer	Compatibility at normal working concentrations	For best results use less than:	Recommendations and Tips
Common laboratory buffers			
Phosphate buffer	High	-	-
Citrate buffer	High	-	-
Acetate buffer	High	-	-
HEPES buffer	High	-	-
MES buffer	High	-	-
MOPS buffer	High	-	-

Buffer	Compatibility at normal working concentrations	For best results use less than:	Recommendations and Tips
Salts			
NaCl - Salt	Medium	500mM	High levels of salt lowers the effective charge of the sample, retarding migration and affecting MW accuracy. In assays where MW Accuracy is vital: <ul style="list-style-type: none"> • If possible dilute sample. • Analyse ladder and sample in the same buffer composition. • Desalt sample.
Potassium	Low	-	Potassium salts cause the precipitation of dodecyl sulphate and have a strong detrimental effect upon the assay.
Urea	High	8M	-
Reducing agents			
DTT	High	-	-
β -mercaptoethanol	High	-	-
Detergents			
Tween	High	-	-
NP-40	High	-	-
Brij 35	High	-	-
SDS	Medium	0.3%	The supplied reagents contain sufficient dodecyl sulphate for analysis. The inclusion of additional dodecyl sulphate can have reduce the assay sensitivity.
Sugars			
Sucrose	High	-	High viscosity (see Glycerol - Others)
Trehalose	High	-	High viscosity (see Glycerol - Others)
Solvents			
Acetonitrile	Medium	20%	Care must be taken when analysing higher concentrations to avoid sample evaporation during heating
Methanol	High	20%	Volatile (see Acetonitrile)
Ethanol	High	20%	Volatile (see Acetonitrile)
DMSO	High	-	-
DMF	High	-	-
Amines			
Tris	Medium	50mM	Primary amines interfere with the staining reaction and reduces sensitivity, but not molecular weight sizing. <ul style="list-style-type: none"> • Include an internal standard during quantification • Buffer exchange samples when sensitivity is important
Glycine	Medium	50mM	Primary amine (See Tris)
Primary amines	Medium	50mM	Primary amine (See Tris)
Secondary amines	Medium	100mM	Secondary amines may interfere with staining (See Tris)
Tertiary amines	High	-	-
Chaotropic agent			
Guanidine	Low	600mM	Guanidine causes the precipitation of dodecyl sulphate and has a strong detrimental effect upon the assay. <ul style="list-style-type: none"> • If possible dilute guanidine to <600mM • Vortex samples well during sample preparation as Guanidine even at 600mM can cause protein to precipitate after heating. • Preferably use urea as a chaotrope or where possible buffer exchange into a guanidine free solution
Other			
Glutathione	High	20mM	
Glycerol	High	-	Care must be taken when pipetting small volumes of high viscosity samples to ensure reproducibility of analysis.
Extreme Acidic pH	-	-	Acidic samples with strong buffering capacity may require dilution or pH adjustment before analysis.

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