

Compatibility of Thermo Scientific Nunc Chamber Slide Components with Fixation Reagents

The Thermo Scientific Nunc Lab-Tek Chamber Slide is used with a variety of microscopy techniques. Microscopic evaluations of cells in culture often require the use of many fixation and staining procedures. Fixation is of prime importance because the procedure and reagents used are frequently adapted to the cells or tissues to be examined in order to preserve the cellular structures. Staining methods are often dependent upon the fixation methods.

One of the most commonly asked questions by scientists using Nunc™ Chamber Slide™ products concerns the chemical compatibility of fixation reagents with the Lab-Tek™ Chamber Slide components.

This Tech Note demonstrates compatibility of the different growth surfaces in the Lab-Tek Chamber Slide System with some commonly used fixation reagents at incubation temperatures routinely used in many product applications.

Materials

The following reagents were used in the experiments described in this Tech Note:

- Formamide (reagent grade)
- Paraformaldehyde (reagent grade)
- Formaldehyde (molecular biology grade)
- Glutaldehyde (practical grade)
- Acetone (reagent grade)
- Ethanol (reagent grade)
- Methanol (biotech grade)
- Glacial acetic acid (sequencing grade)
- Dulbeccos Phosphate Buffer Saline (PBS)

Methods

- Lab-Tek Flask on Slide, polystyrene slide.
- Lab-Tek Chamber Slide, Permanox™ slide.
- Lab-Tek Chamber Slide, glass slide.

Three pieces of each product were incubated with each reagent at specified temperatures (room temperature and 4-8°C) for 30 minutes.

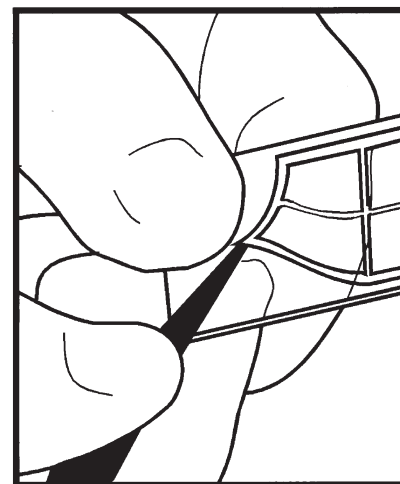
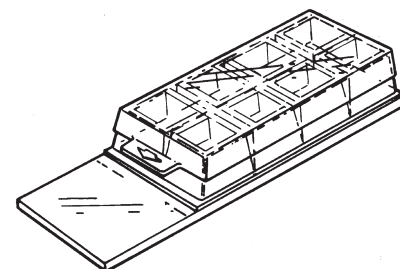
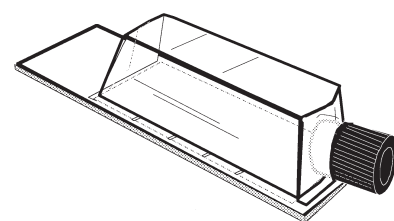
Chamber Slide, glass slide and Chamber Slide, Permanox slide contained 0.5 mL of each reagent. Flask on Slide, polystyrene slide contained 4.0 mL of each reagent. After 30 minutes, the reagent(s) were discarded and the medium chambers removed from the slides.

Slides and polystyrene medium chambers were visually inspected for warpage, cloudiness or cracks. Gasket peelability from Chamber Slide, Permanox slide and Chamber Slide, glass slide was rated as successful, if the gasket could be removed from the slides with a scalpel after three initiations or less.

Discussion

The experimental results demonstrate that Lab-Tek Chamber Slide products are chemically compatible with many commonly used fixation reagents in histochemical and in situ hybridization procedures. However, acetone at 100% and some mixtures of acetone and alcohols such as methanol or ethanol are not compatible with the polystyrene chambers or polystyrene slide material. Acetone at 100% or

mixed with alcohols is compatible with the Permanox slide material. Removal of the silicone gasket present in the Lab-Tek Chamber Slide, Permanox slide and Lab-Tek Chamber Slide, glass slide was not affected by exposure to these fixation reagents.



Results: Reagent Compatibility with Chamber Slide Components

Effect on Lab-Tek Chamber Slide, Permanox Slide			
Fixation Reagents	Ratio of Reagents (vol:vol)	Temperatures at 4-8°C and Room Temperature Gasket Peelability Chamber Structure	
Acetone: PBS	2:3	A	S
	3:2	A	S
	4:1	A	S
Acetone: Methanol	2:3	A	S
	3:2	A	S
	4:1	A	D
Acetone: Ethanol	2:3	A	S
	3:2	A	D
	4:1	A	D
Methanol: Glacial Acetic Acid	3:1	A	S
	2:3	A	S
	3:2	A	S
	4:1	A	S
Methanol	100%	A	S
Ethanol	100%	A	S
Acetone	100%	A	D
Glacial Acetic Acid	100%	A	S
Paraformaldehyde	4%	A	S
Glutaldehyde	4%	A	S
Formaldehyde	10%	A	S
Formamide	50%	A	S
Formamide	100%	A	S

Legend: A = peel acceptable D = destroyed S = satisfactory (unaffected)

Effect on Lab-Tek Flask on Slide, Polystyrene Slide			
Fixation Reagents	Ratio of Reagents (vol:vol)	Temperatures at 4-8°C and Room Temperature Chamber Structure	
Acetone: PBS	2:3		S
	3:2		S
	4:1		S
Acetone: Methanol	2:3		S
	3:2		S
	4:1		D
Acetone: Ethanol	2:3		S
	3:2		D
	4:1		D
Methanol: Glacial Acetic Acid	3:1		S
	2:3		S
	3:2		S
	4:1		S
Methanol	100%		S
Ethanol	100%		S
Acetone	100%		D
Glacial Acetic Acid	100%		S
Paraformaldehyde	4%		S
Glutaldehyde	4%		S
Formaldehyde	10%		S
Formamide	50%		S
Formamide	100%		S

Legend: A = peel acceptable D = destroyed S = satisfactory (unaffected)

Effect on Lab-Teb Chamber Slide, Glass Slide

Fixation Reagents	Ratio of Reagents (vol:vol)	TEMPERATURES at 4-8°C and Room Temperature	
		Gasket Peelability	Chamber Structure
Acetone: PBS	2:3	A	S
	3:2	A	S
	4:1	A	S
Acetone: Methanol	2:3	A	S
	3:2	A	S
	4:1	A	D
Acetone: Ethanol	2:3	A	S
	3:2	A	D
	4:1	A	D
Methanol: Glacial Acetic Acid	3:1	A	S
	2:3	A	S
	3:2	A	S
	4:1	A	S
Methanol	100%	A	S
Ethanol	100%	A	S
Acetone	100%	A	D
Glacial Acetic Acid	100%	A	S
Paraformaldehyde	4%	A	S
Glutaldehyde	4%	A	S
Formaldehyde	10%	A	S
Formamide	50%	A	S
Formamide	100%	A	S

Legend: A = peel acceptable D = destroyed S = satisfactory (unaffected)

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