

MIDASplus™ FX-96

MD1-107-FX

MIDASplus™: The original MIDAS screen with new precipitants – explore chemical space even further with this new and improved crystallization kit.

MD1-107-FX is presented as 96 x 100µL conditions.

Features of MIDASplus™:

- Ideal for soluble protein, protein/protein complexes, protein-nucleic acid complexes and sensitive macromolecular complexes.
- Includes addition of PPGBA's to increase diversity of polymers in the screen.
- Narrow range of pH and salt concentrations centered on physiological values.
- Every condition contains at least one alternative polymeric precipitant.
- Designed to complement PEG and salt-based screens.
- Compatible with liquid-handling robots.

There are many alternatives to PEGs which have been described as being useful for macromolecular crystallogensis; alternative polymers (Figure 2) e.g. Jeffamine® polyetheramines, pentaerythritol propoxylate and pentarerythritol ethoxylate, polyvinylpyrrolidone, polypropylene glycol, polyvinyl alcohol and polyacrylate have so far only sporadically been introduced into standard crystallization screens.

Introduction

MIDASplus™ is an updated 96 condition crystallization screen based on the MIDAS alternative polymeric precipitant screen. Devised and tested (Figure 1) in the Laboratory of Dr. Clemens Grimm *et al* of Würzburg University in Germany. MIDASplus™ has taken the same core chemicals as found in MIDAS but with a group of polymers called the polypropylene glycol bis-aminopropylether's (PPGBA's). These will increase the polymer diversity of the current screen. MIDASplus™ contains the following new PEG alternatives:

Sokalan® PA 25 CL
Sokalan® CP45
PPGBA 230
PPGBA 400 and
PPGBA 2000

PEG Alternatives:

For decades PEGs or their monomethyl ethers (PEG MMEs), have dominated crystallization screens. Out of 8289 entries scanned in the PDB, almost half of the crystallization conditions contained a PEG component and most commercial screens available today contain PEGs. However, the success rate of PEGs might be influenced due to their widespread dominance in crystallization screens.

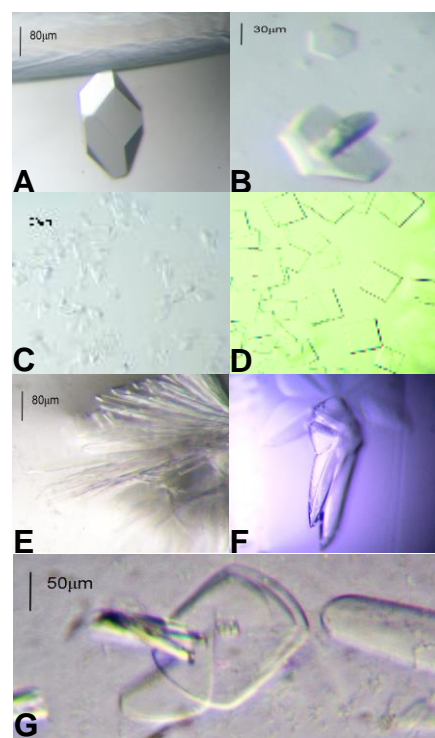
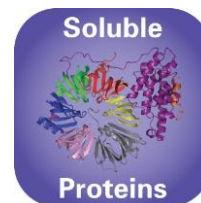
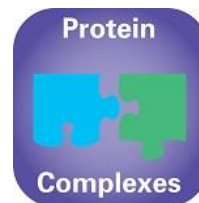


Figure 1. Examples of protein crystals grown using conditions from MIDASplus.

(A) Lysozyme crystals obtained in 35% Sokalan HP 56, (B) spliceosomal assembly complex (SAC) 7 obtained in 6% polyvinyl pyrrolidone, (C) Crystals of the cytokine receptor–ligand complex obtained in 45% pentaerythritol propoxylate (5/4 PO/OH), (D) Crystals of streptavidin core obtained in 5% polyacrylate 2100, sodium salt, (E) Histone tail recognizing MBT repeats in 35% polyacrylate 2100, sodium salt, (F) Lysozyme crystals in 30% Sokalan CP 42, (G) Crystals of spliceosomal assembly complex (SAC) 9 obtained in 25% Sokalan CP 42.



Formulation Notes:

MIDASplus™ reagents are formulated using ultrapure water (>18.0 MΩ) and are sterile-filtered using 0.22 μm filters. No preservatives are added.

Final pH may vary from that specified on the datasheet. Molecular Dimensions will be happy to discuss the precise formulation of individual reagents.

Individual reagents and stock solutions for optimization are available from Molecular Dimensions.

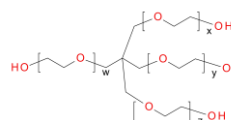
Enquiries regarding MIDASplus™ formulation, interpretation of results or optimization strategies are welcome. Please e-mail, fax or phone your query to Molecular Dimensions.

Contact and product details can be found at www.moleculardimensions.com

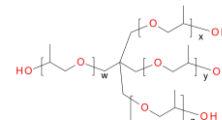
Manufacturer's safety data sheets are available to download from our website.

References :

Grimm, C., Chari, A., Reuter, K. & Fischer, U. (2010). Acta Cryst. D66, 685-697.



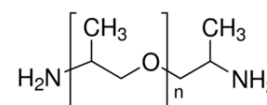
Pentaerythritol ethoxylate.



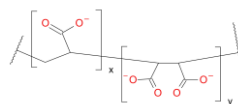
Pentaerythritol propoxylate



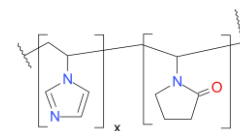
Jeffamine ED2003



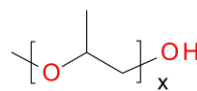
Poly(propylene glycol)
bis(2-aminopropyl ether)
PPGBA



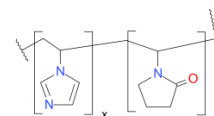
Poly(acrylic acid-co-maleic) acid



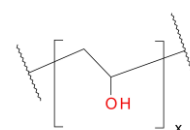
polyvinylpyrrolidone



polypropylene glycol



Vinylpyrrolidone/vinylimidazole
Copolymer

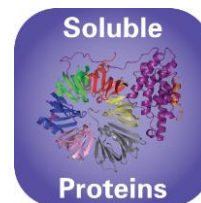
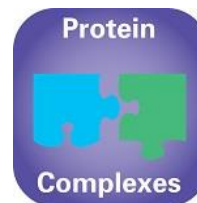


polyvinyl alcohol

Figure 2. Examples of alternative precipitants used in MIDASplus™.

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Re-Ordering details:

Catalogue	Pack size	Catalogue Code
MIDASplus™	96 x 10 mL	MD1-106
MIDASplus™ HT-96	96 x 1 mL	MD1-107
MIDASplus™ FX-96	96 x 100 µL	MD1-107-FX
Single Reagents		
MIDASplus™ single reagents	100 mL	MDSR-106-tube number
MIDASplus™ HT-96 single reagents	100 mL	MDSR-107-well number

For MIDASplus™ stock solutions please visit the Optimization section on our website.
For individual stock reagents for MIDASplus™ see our website.

Notes:

Abbreviations: **BICINE**; 2-(Bis(2-hydroxyethyl)amino)acetic acid, **Bis-Tris**; Bis-(2-hydroxyethyl)amino-tris(hydroxymethyl)methane, **HEPES**; 4-(2-Hydroxyethyl)piperazine-1-ethanesulfonic acid, **MES**; 2-(N-morpholino)ethanesulfonic acid, **PEG**; Polyethylene glycol, **Tris**; 2-Amino-2-(hydroxymethyl)propane-1,3-diol.

N.B. Polyvinylpyrrolidone K15 is now called Polyvinylpyrrolidone, PPGBA2000 is the same as Jeffamine D2000.

The conditions shown on this datasheet may differ from those shown on previous versions of the datasheets due to the discontinuation of raw material supply for the following:

Glascol W13, SOKALAN® CP 12 S and SOKALAN® HP 66 K, Jeffamine D-2000, Jeffamine ED-900, Jeffamine M-2005, Jeffamine M-2070, Jeffamine SD-2001, Jeffamine T-403 and Pentaerythritol propoxylate (17/8 PO/OH). If you require further advice regarding the changes to these conditions or if you have any hits in conditions containing any of the above please contact us at enquiries@moleculardimensions.com

SOKALAN® are water-soluble polymers based on acrylic acid, maleic acid, vinylpyrrolidone, vinylimidazole and/or hydrophobic monomers.

The following components are adjusted to pH 7 prior to using
Jeffamine® M-600 (HCl)
Jeffamine® ED-2003 (HCl)
PPGBA 400 (HCl)
PPGBA 2000 (HCl)
PPGBA 230 (HCl)
SOKALAN® CP 45 (NaOH)

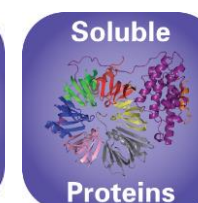


**Molecular
Dimensions**

MIDASplus™ FX-96

Conditions A1- D12

MD1–107-FX



Well No.	Conc.	Units	Salt	Conc.	Units	Buffer	pH	Conc.	Precipitant1	Conc.	Units	Precipitant2
A1				0.1 M		HEPES	6	50 % v/v	Polypropylene glycol 400		5 % v/v	Dimethyl sulfoxide
A2				0.1 M		MES	5.5	12 % w/v	Polyvinylpyrrolidone			
A3				0.1 M		HEPES	6.5	45 % w/v	Poly(acrylic acid sodium salt) 2100			
A4								14 % v/v	Poly(acrylic acid-co-maleic acid) solution			
A5	0.5 M		Ammonium phosphate monobasic					12.5 % w/v	Poly(acrylic acid sodium salt) 2100			
A6				0.1 M		Tris	8.5	19 % v/v	Poly(acrylic acid-co-maleic acid) solution			
A7								10 % v/v	Polypropylene glycol 400			
A8								5 % w/v	Poly(acrylic acid sodium salt) 2100			
A9				0.1 M		MES	6	25 % v/v	Pentaerythritol propoxylate (5/4 PO/OH)			
A10	0.1 M		Sodium sulfate					24 % w/v	Polyvinylpyrrolidone			
A11	0.2 M		Calcium chloride dihydrate	0.1 M		HEPES	6.5	35 % v/v	Pentaerythritol ethoxylate (15/4 EO/OH)			
A12				0.1 M		Potassium/sodium phosphate	7	35 % v/v	Polypropylene glycol 400			
B1*	0.1 M		Sodium formate					20 % w/v	SOKALAN® CP 45			
B2	0.2 M		Sodium thiocyanate	0.1 M		HEPES	7	15 % v/v	Pentaerythritol propoxylate (5/4 PO/OH)			
B3*	0.1 M		Sodium chloride	0.1 M		HEPES	7	25 % w/v	SOKALAN® PA 25 CL			
B4	0.2 M		Sodium chloride	0.1 M		MES	6	45 % v/v	Pentaerythritol propoxylate (5/4 PO/OH)			
B5				0.1 M		HEPES	7	8 % w/v	Polyvinyl alcohol	10 % v/v		1-Propanol
B6	0.1 M		Lithium sulfate	0.1 M		HEPES	7	30 % w/v	Polyvinylpyrrolidone			
B7				0.2 M		Imidazole	7	40 % v/v	Polypropylene glycol 400			
B8	0.06 M		Lithium sulfate	0.1 M		HEPES	7.5	8 % v/v	Poly(acrylic acid-co-maleic acid) solution	3 % v/v		Pentaerythritol ethoxylate (3/4 EO/OH)
B9*	0.1 M		Sodium tartrate dibasic dihydrate	0.1 M		HEPES	7	20 % w/v	SOKALAN® PA 25 CL			
B10								30 % v/v	Jeffamine® M-600	10 % v/v		Dimethyl sulfoxide
B11								20 % v/v	Polypropylene glycol 400	10 % v/v		1-Propanol
B12				0.1 M		HEPES	6.5	28 % v/v	Poly(acrylic acid-co-maleic acid) solution			
C1								15 % v/v	Jeffamine® ED-2003	10 % v/v		Ethanol
C2	0.2 M		Sodium chloride	0.1 M		MES	6	30 % v/v	Jeffamine® ED-2003			
C3*	0.1 M		Sodium malonate dibasic monohydrate	0.1 M		MES	5.5	25 % w/v	SOKALAN® CP 45			
C4	0.2 M		Sodium chloride	0.1 M		MES	6	15 % v/v	Pentaerythritol propoxylate (5/4 PO/OH)			
C5	0.2 M		Magnesium chloride hexahydrate					35 % v/v	Pentaerythritol ethoxylate (3/4 EO/OH)			
C6								40 % v/v	Pentaerythritol propoxylate (5/4 PO/OH)	15 % v/v		Ethanol
C7				0.1 M		Tris	8	50 % v/v	Pentaerythritol propoxylate (5/4 PO/OH)			
C8	0.2 M		Sodium chloride	0.1 M		Tris	8	12.5 % w/v	Polyvinylpyrrolidone	10 % w/v		PEG 4000
C9	0.1 M		Sodium chloride					25 % v/v	Pentaerythritol propoxylate (5/4 PO/OH)	10 % v/v		Dimethyl sulfoxide
C10	0.2 M		Ammonium sulfate	0.1 M		HEPES	7.5	35 % w/v	Poly(acrylic acid sodium salt) 2100			
C11	0.1 M		Magnesium formate dihydrate	0.1 M		Tris	8.5	30 % v/v	Pentaerythritol ethoxylate (15/4 EO/OH)			
C12	0.2 M		Potassium acetate					24 % v/v	Poly(acrylic acid-co-maleic acid) solution			
D1				0.1 M		Tris	8	60 % v/v	Polypropylene glycol 400			
D2				0.1 M		HEPES	7.5	30 % v/v	Pentaerythritol ethoxylate (15/4 EO/OH)	6 % w/v		Polyvinylpyrrolidone
D3								45 % v/v	Polypropylene glycol 400	10 % v/v		Ethanol
D4								10 % v/v	Pentaerythritol ethoxylate (3/4 EO/OH)	10 % v/v		1-Butanol
D5*				0.1 M		HEPES	7	12.5 % w/v	Poly(acrylic acid sodium salt) 2100	6 % v/v		PPGBA 2000
D6				0.1 M		HEPES	6.5	6 % w/v	Polyvinylpyrrolidone			
D7				0.1 M		HEPES	6.5	20 % v/v	Jeffamine® ED-2003			
D8				0.1 M		Tris	8	20 % v/v	Glycerol ethoxylate	10 % v/v		Tetrahydrofuran
D9*				0.2 M		Imidazole	7	25 % v/v	PPGBA 2000			
D10*	0.2 M		Potassium chloride	0.1 M		HEPES	6.5	30 % v/v	PPGBA 230			
D11	0.1 M		Sodium chloride					30 % v/v	Polypropylene glycol 400			
D12*								20 % v/v	PPGBA 400	15 % v/v		1-Propanol

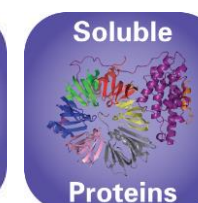
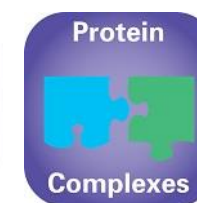


**Molecular
Dimensions**

MIDASplus™ FX-96

ConditionsE1 – H12

MD1–107-FX



Well No.	Conc.	Units	Salt	Conc.	Units	Buffer	pH	Conc.	Precipitant1	Conc.	Units	Precipitant2	Conc.	Units	Precipitant3
E1*	0.1 M		Lithium citrate tribasic tetrahydrate	0.1 M		Tris	8.5	15 % v/v	PPGBA 400						
E2	0.2 M		Potassium acetate					35 % v/v	Pentaerythritol propoxylate (5/4 PO/OH)						
E3	0.2 M		Potassium chloride	0.1 M		Glycine	9.5	20 % v/v	Pentaerythritol ethoxylate (15/4 EO/OH)						
E4	0.2 M		Sodium thiocyanate	0.1 M		HEPES	7	40 % v/v	Pentaerythritol propoxylate (5/4 PO/OH)						
E5*								25 % w/v	SOKALAN® CP 45						
E6*	0.2 M		Potassium acetate	0.1 M		MES	6	15 % v/v	Pentaerythritol ethoxylate (15/4 EO/OH)						
E7	0.1 M		Sodium malonate dibasic monohydrate	0.1 M		HEPES	7	30 % w/v	Poly(acrylic acid sodium salt) 2100						
E8*								10 % v/v	PPGBA 230	10 % v/v		Jeffamine® M-600		10 % v/v	Ethanol
E9	0.1 M		Lithium sulfate	0.1 M		Tris	8	25 % v/v	Jeffamine® ED-2003						
E10*								20 % w/v	SOKALAN® PA 25 CL						
E11	0.1 M		Lithium sulfate	0.1 M		HEPES	6.5	25 % w/v	Poly(acrylic acid sodium salt) 2100						
E12	0.2 M		Magnesium chloride hexahydrate	0.1 M		HEPES	7.5	15 % w/v	Poly(acrylic acid sodium salt) 2100						
F1*								40 % v/v	PPGBA 2000						
F2	0.5 M		Sodium chloride	0.1 M		Tris	8	10 % w/v	Poly(acrylic acid sodium salt) 2100						
F3*								10 % v/v	PPGBA 230	15 % v/v		PPGBA 400			
F4	0.2 M		Sodium chloride	0.1 M		BICINE	9	20 % w/v	Poly(acrylic acid sodium salt) 2100						
F5*	0.2 M		Sodium malonate dibasic monohydrate	0.1 M		MES	5.5	20 % v/v	PPGBA 2000						
F6*	0.1 M		Cesium chloride					25 % w/v	SOKALAN® CP 45						
F7*								25 % w/v	SOKALAN® PA 25 CL						
F8*	0.2 M		Lithium nitrate	0.1 M		Bis-Tris	6.5	30 % v/v	PPGBA 400						
F9								20 % w/v	Poly(acrylic acid sodium salt) 5100						
F10								28 % v/v	Polyethyleneimine						
F11	0.1 M		Ammonium formate	0.1 M		HEPES	7	20 % w/v	SOKALAN® CP 7						
F12	0.2 M		Sodium sulfate	0.1 M		Tris	8	20 % w/v	SOKALAN® HP 56						
G1	0.1 M		Potassium chloride	0.1 M		HEPES	7	25 % w/v	SOKALAN® CP 7						
G2	0.3 M		Ammonium formate	0.1 M		HEPES	7	20 % w/v	SOKALAN® CP 5						
G3								40 % v/v	Glycerol ethoxylate						
G4				0.1 M		Tris	8.5	30 % v/v	Glycerol ethoxylate						
G5								55 % v/v	Polypropylene glycol 400						
G6	0.2 M		Lithium citrate tribasic tetrahydrate					35 % v/v	Glycerol ethoxylate						
G7	0.2 M		Ammonium acetate	0.1 M		MES	6.5	30 % v/v	Glycerol ethoxylate						
G8				0.1 M		Tris	8	20 % w/v	SOKALAN® CP 42	5 % v/v		Methanol			
G9				0.1 M		Tris	7	25 % w/v	SOKALAN® CP 42	10 % v/v		Tetrahydrofuran			
G10	0.1 M		Lithium acetate dihydrate	0.1 M		Bis-Tris	6	20 % w/v	SOKALAN® CP 42						
G11*	0.1 M		Sodium chloride	0.1 M		Bis-Tris	5.5	20 % v/v	PPGBA 400						
G12*				0.1 M		Bis-Tris	6	15 % w/v	SOKALAN® CP 5						
H1				0.1 M		Bis-Tris	6	25 % w/v	SOKALAN® CP 42						
H2	0.2 M		Ammonium formate					25 % v/v	PPGBA 400						
H3				0.1 M		Tris	8.5	20 % v/v	Glycerol ethoxylate	3 % v/v		Polyethyleneimine			
H4	0.2 M		Ammonium chloride	0.1 M		HEPES	7.5	25 % v/v	Glycerol ethoxylate						
H5				0.1 M		Tris	8.5	10 % w/v	SOKALAN® CP 42						
H6				0.1 M		MES	6	30 % w/v	Poly(acrylic acid sodium salt) 5100	10 % v/v		Ethanol			
H7	0.2 M		Potassium citrate tribasic monohydrate					15 % w/v	SOKALAN® CP 42						
H8				0.1 M		Tris	8.5	30 % w/v	SOKALAN® CP 42						
H9	0.2 M		Ammonium acetate	0.1 M		HEPES	7	25 % w/v	SOKALAN® HP 56						
H10				0.1 M		Tris	8.5	25 % w/v	SOKALAN® CP 5						
H11	0.2 M		Ammonium formate					10 % w/v	Polyvinylpyrrolidone	20 % w/v		PEG 4000			
H12				0.1 M		Tris	8	15 % w/v	Polyvinylpyrrolidone	25 % w/v		PEG 5000 MME			