



**Molecular
Dimensions**

A CALIBRE SCIENTIFIC COMPANY

Data Sheet

MIDASplus™ Crystallisation Screen
Soluble Proteins, Protein Complexes

MIDASplus™ 10 mL, HT-96, and FX-96 Pre-Filled Plate
MD1-106, MD1-107 and MD1-107-FX

Key Info

MIDASplus™ is 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.

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.

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
- PPGBA 2000

For decades PEGs or their monomethyl ethers (PEG MMEs), have dominated crystallization screens.

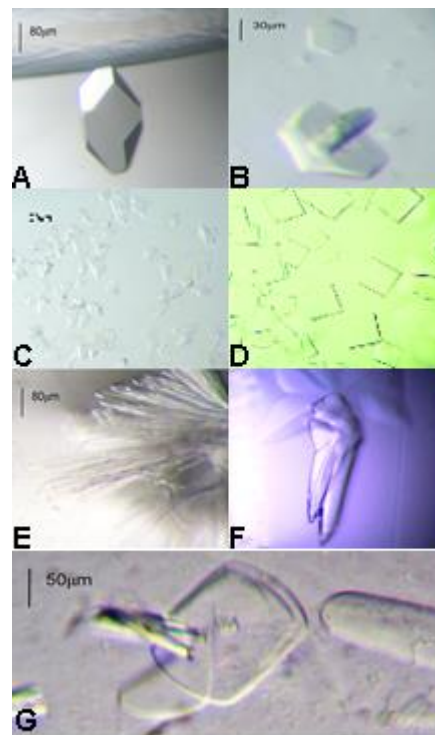


Figure 1: Examples of protein crystals grown using conditions from MIDASplus™. (A) Lysozyme crystals obtained in 35% Sokalan HP 56, (B) spliceosomal assembly complex (SAC) 7 obtained in 6% polyvinyl pyrrolidone, (C) Crystals of the cytokine receptor–ligand complex obtained in 45% pentaerythritol propoxylate (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.



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PEG Alternatives

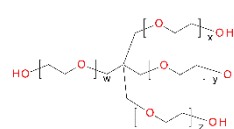
There are many alternatives to PEGs which have been described as being useful for macromolecular crystallogensis; alternative polymers e.g. (Figure 2) Jeffamine® polyetheramines, pentaerythritol propoxylate and pentaerythritol ethoxylate, polyvinylpyrrolidone, polypropylene glycol, polyvinyl alcohol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

Formulation Notes

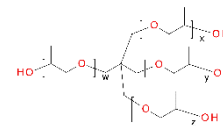
MIDASplus™ reagents are formulated using ultrapure water (>18.0 MΩ) and are sterile filtered using 0.22 µm filters. No preservatives are added.

Final pH may vary from datasheet specification. Molecular Dimensions is happy to discuss the precise formulation of individual reagents. Individual reagents and stock solutions for optimisation are available from Molecular Dimensions.

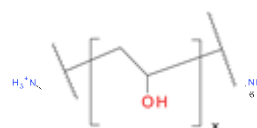
The license to use MIDASplus™ specifically excludes any rights to use the product information for the manufacture of the product or derivatives thereof, or distribute, transfer, or otherwise provide access to such information to any third party for any purpose or use



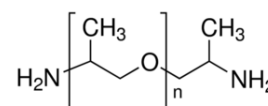
Pentaerythritol ethoxylate.



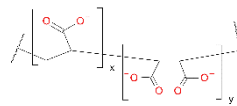
Pentaerythritol propoxylate



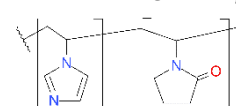
Jeffamine ED2003



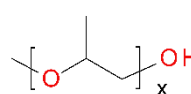
Poly(propylene glycol)
bis(2-aminopropyl ether)
PPGBA



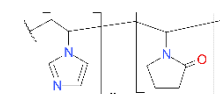
Poly(acrylic acid-co-maleic) acid



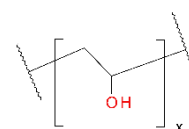
polyvinylpyrrolidone



polypropylene glycol



Vinylpyrrolidone/vinylimidazole
Copolymer



Polyvinyl alcohol

Figure 2: Examples of alternative precipitants used in MIDASplus™



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MIDASplus™ is manufactured and distributed under an exclusive license with Dr. C. Grimm & Prof. Dr. U. Fischer. Limited Use and Restrictions: Products sold by Molecular Dimensions Ltd. or its affiliates or authorized distributors and information relating to same are intended for research use only in crystal growth and optimization of crystal growth following use of the product by the purchaser and are not to be used for any other purpose, which includes but is not limited to, unauthorized commercial uses, including resale or use in manufacture.

References

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

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

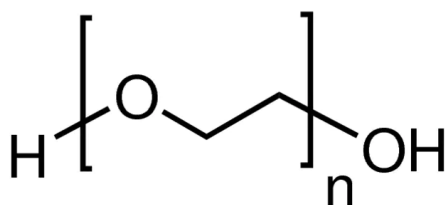


Figure 3: Chemical structure of PEG (polyethylene glycol)

The conditions shown on this datasheet may differ from those shown on previous versions of the datasheet 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, Pentaerythritol propoxylate (17/8 PO/OH) and Pentaerythritol ethoxylate (3/4 EO/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)

Ordering Information

PN:	Description:	Pack Size:
MD1-106	MIDASplus™	96 x 10 mL
MD1-107	MIDASplus™ HT-96	96 x 1 mL
MD1-107-FX	MIDASplus™ FX-96 pre-filled plate	96 x 100 µL

Single Reagents

MDSR-106-tube number	MIDASplus™ single reagent	100 mL
MDSR-107-well number	MIDASplus™ HT-96 single reagent	100 mL



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MIDASplus™ Crystallisation Screen
Soluble Proteins, Protein Complexes

MIDASplus™ 10 mL MD1-106 | HT-96 MD1-107 | MD1-107-FX Conditions 1-1 to 1-48 (Part A) | Conditions A1 to D12

Tube #	Well #	Conc.	Units	Salt	Conc.	Units	Buffer	pH	Conc.	Units	Precipitant 1	Conc.	Units	Precipitant 2
1-1	A1	-	-	-	0.1	M	HEPES	6	50	%w/v	Polypropylene glycol 400	5	% v/v	Dimethyl sulfoxide
1-2	A2	-	-	-	0.1	M	MES	5.5	12	%w/v	Polyvinylpyrrolidone	-	-	-
1-3	A3	-	-	-	0.1	M	HEPES	6.5	45	%w/v	Poly(acrylic acid sodium salt) 2100	-	-	-
1-4	A4	-	-	-	-	-	-	7.0	14	%w/v	Poly(acrylic acid-co-maleic acid) solution	-	-	-
1-5	A5	0.5	M	Ammonium phosphate monobasic	-	-	-	-	12.5	%w/v	Poly(acrylic acid sodium salt) 2100	-	-	-
1-6	A6	-	-	-	0.1	M	Tris	8.5	19	%w/v	Poly(acrylic acid-co-maleic acid) solution	-	-	-
1-7	A7	-	-	-	-	-	-	-	10	%w/v	Polypropylene glycol 400	-	-	-
1-8	A8	-	-	-	-	-	-	-	5	%w/v	Poly(acrylic acid sodium salt) 2100	-	-	-
1-9	A9	-	-	-	0.1	M	MES	6	25	%w/v	Pentaerythritol propoxylate (5/4 PO/OH)	-	-	-
1-10	A10	0.1	M	Sodium sulfate	-	-	-	7.0	24	%w/v	Polyvinylpyrrolidone	-	-	-
1-11	A11	0.2	M	Calcium chloride dihydrate	0.1	M	HEPES	6.5	35	%w/v	Pentaerythritol ethoxylate (15/4 EO/OH)	-	-	-
1-12	A12	-	-	-	0.1	M	Potassium/sodium phosphate	7	35	%w/v	Polypropylene glycol 400	-	-	-
1-13	B1	0.1	M	Sodium formate	-	-	-	-	20	%w/v	SOKALAN® CP 45 pH 7	-	-	-
1-14	B2	0.2	M	Sodium thiocyanate	0.1	M	HEPES	7	15	%w/v	Pentaerythritol propoxylate (5/4 PO/OH)	-	-	-
1-15	B3	0.1	M	Sodium chloride	0.1	M	HEPES	7	25	%w/v	SOKALAN® PA 25 CL	-	-	-
1-16	B4	0.2	M	Sodium chloride	0.1	M	MES	6	45	%w/v	Pentaerythritol propoxylate (5/4 PO/OH)	-	-	-
1-17	B5	-	-	-	0.1	M	HEPES	7	8	%w/v	Polyvinyl alcohol	10	% v/v	1-Propanol
1-18	B6	0.1	M	Lithium sulfate	0.1	M	HEPES	7	30	%w/v	Polyvinylpyrrolidone	-	-	-
1-19	B7	-	-	-	0.2	M	Imidazole	7	40	%w/v	Polypropylene glycol 400	-	-	-
1-20	B8	0.06	M	Lithium sulfate	0.1	M	HEPES	7.5	8	%w/v	Poly(acrylic acid-co-maleic acid) solution	3	% v/v	Pentaerythritol ethoxylate (15/4 EO/OH)
1-21	B9	0.1	M	Sodium tartrate dibasic dihydrate	0.1	M	HEPES	7	20	%w/v	SOKALAN® PA 25 CL	-	-	-
1-22	B10	-	-	-	-	-	-	-	30	%w/v	Jeffamine® M-600 pH 7	10	% v/v	Dimethyl sulfoxide
1-23	B11	-	-	-	-	-	-	-	20	%w/v	Polypropylene glycol 400	10	% v/v	1-Propanol
1-24	B12	-	-	-	0.1	M	HEPES	6.5	28	%w/v	Poly(acrylic acid-co-maleic acid) solution	-	-	-
1-25	C1	-	-	-	-	-	-	-	15	%w/v	Jeffamine® ED-2003 pH 7	10	% v/v	Ethanol
1-26	C2	0.2	M	Sodium chloride	0.1	M	MES	6	30	%w/v	Jeffamine® ED-2003 pH 7	-	-	-
1-27	C3	0.1	M	Sodium malonate dibasic monohydrate	0.1	M	MES	5.5	25	%w/v	SOKALAN® CP 45 pH 7	-	-	-
1-28	C4	0.2	M	Sodium chloride	0.1	M	MES	6	15	%w/v	Pentaerythritol propoxylate (5/4 PO/OH)	-	-	-
1-29	C5	0.2	M	Magnesium chloride hexahydrate	-	-	-	-	35	%w/v	Pentaerythritol ethoxylate (15/4 EO/OH)	-	-	-
1-30	C6	-	-	-	-	-	-	-	40	%w/v	Pentaerythritol propoxylate (5/4 PO/OH)	15	% v/v	Ethanol
1-31	C7	-	-	-	0.1	M	Tris	8	50	%w/v	Pentaerythritol propoxylate (5/4 PO/OH)	-	-	-
1-32	C8	0.2	M	Sodium chloride	0.1	M	Tris	8	12.5	%w/v	Polyvinylpyrrolidone	10	% w/v	PEG 4000
1-33	C9	0.1	M	Sodium chloride	-	-	-	-	25	%w/v	Pentaerythritol propoxylate (5/4 PO/OH)	10	% v/v	Dimethyl sulfoxide
1-34	C10	0.2	M	Ammonium sulfate	0.1	M	HEPES	7.5	35	%w/v	Poly(acrylic acid sodium salt) 2100	-	-	-
1-35	C11	0.1	M	Magnesium formate dihydrate	0.1	M	Tris	8.5	30	%w/v	Pentaerythritol ethoxylate (15/4 EO/OH)	-	-	-
1-36	C12	0.2	M	Potassium acetate	-	-	-	-	24	%w/v	Poly(acrylic acid-co-maleic acid) solution	-	-	-
1-37	D1	-	-	-	0.1	M	Tris	8	60	%w/v	Polypropylene glycol 400	-	-	-
1-38	D2	-	-	-	0.1	M	HEPES	7.5	30	%w/v	Pentaerythritol ethoxylate (15/4 EO/OH)	6	%w/v	Polyvinylpyrrolidone
1-39	D3	-	-	-	-	-	-	-	45	%w/v	Polypropylene glycol 400	10	% v/v	Ethanol
1-40	D4	-	-	-	-	-	-	-	10	%w/v	Pentaerythritol ethoxylate (15/4 EO/OH)	10	% v/v	1-Butanol
1-41	D5	-	-	-	0.1	M	HEPES	7	12.5	%w/v	Poly(acrylic acid sodium salt) 2100	6	% v/v	PPGBA 2000 pH 7
1-42	D6	-	-	-	0.1	M	HEPES	6.5	6	%w/v	Polyvinylpyrrolidone	-	-	-
1-43	D7	-	-	-	0.1	M	HEPES	6.5	20	%w/v	Jeffamine® ED-2003 pH 7	-	-	-
1-44	D8	-	-	-	0.1	M	Tris	8	20	%w/v	Glycerol ethoxylate	10	% v/v	Tetrahydrofuran
1-45	D9	-	-	-	0.2	M	Imidazole	7	25	%w/v	PPGBA 2000 pH 7	-	-	-
1-46	D10	0.2	M	Potassium chloride	0.1	M	HEPES	6.5	30	%w/v	PPGBA 230 pH 7	-	-	-
1-47	D11	0.1	M	Sodium chloride	-	-	-	-	30	%w/v	Polypropylene glycol 400	-	-	-
1-48	D12	-	-	-	-	-	-	-	20	%w/v	PPGBA 400 pH 7	15	% v/v	1-Propanol



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MIDASplus™ 10 mL MD1-106 | HT-96 MD1-107 | MD1-107-FX Conditions 2-1 to 2-48 (Part B) | Conditions E1 to H12

Tube #	Well #	Conc.	Units	Salt	Conc.	Units	Buffer	pH	Conc.	Units.	Precipitant 1	Conc.	Units	Precipitant 2
2-1	E1	0.1	M	Lithium citrate tribasic tetrahydrate	0.1	M	Tris	8.5	15	%w/v	PPGBA 400 pH 7	-	-	-
2-2	E2	0.2	M	Potassium acetate	-	-	-	-	35	%w/v	Pentaerythritol propoxylate (5/4 PO/OH)	-	-	-
2-3	E3	0.2	M	Potassium chloride	0.1	M	Glycine	9.5	20	%w/v	Pentaerythritol ethoxylate (15/4 EO/OH)	-	-	-
2-4	E4	0.2	M	Sodium thiocyanate	0.1	M	HEPES	7	40	%w/v	Pentaerythritol propoxylate (5/4 PO/OH)	-	-	-
2-5	E5	-	-	-	-	-	-	-	25	%w/v	SOKLAN® CP 45 pH 7	-	-	-
2-6	E6	0.2	M	Potassium acetate	0.1	M	MES	6	15	%w/v	Pentaerythritol ethoxylate (15/4 EO/OH)	-	-	-
2-7	E7	0.1	M	Sodium malonate dibasic monohydrate	0.1	M	HEPES	7	30	%w/v	Poly(acrylic acid sodium salt) 2100	-	-	-
2-8	E8	-	-	-	-	-	-	-	10	%w/v	PPGBA 230 pH 7	10	%w/v	Jeffamine M-600 pH 7, Ethanol
2-9	E9	0.1	M	Lithium sulfate	0.1	M	Tris	8	25	%w/v	Jeffamine® ED-2003 pH 7	-	-	-
2-10	E10	-	-	-	0.1	M	Tris	8	20	%w/v	SOKLAN® PA 25 CL	-	-	-
2-11	E11	0.1	M	Lithium sulfate	0.1	M	HEPES	6.5	25	%w/v	Poly(acrylic acid sodium salt) 2100	-	-	-
2-12	E12	0.2	M	Magnesium chloride hexahydrate	0.1	M	HEPES	7.5	15	%w/v	Poly(acrylic acid sodium salt) 2100	-	-	-
2-13	F1	-	-	-	0.1	M	HEPES	6.5	40	%w/v	PPGBA 2000 pH 7	-	-	-
2-14	F2	0.5	M	Sodium chloride	0.1	M	Tris	8	10	%w/v	Poly(acrylic acid sodium salt) 2100	-	-	-
2-15	F3	-	-	-	0.1	M	Potassium/sodium phosphate	7	10	%w/v	PPGBA 230 pH 7	15	%w/v	PPGBA 400 pH 7
2-16	F4	0.2	M	Sodium chloride	0.1	M	BICINE	9	20	%w/v	Poly(acrylic acid sodium salt) 2100	-	-	-
2-17	F5	0.2	M	Sodium malonate dibasic monohydrate	0.1	M	MES	5.5	20	%w/v	PPGBA 2000 pH 7	-	-	-
2-18	F6	0.1	M	Cesium chloride	-	-	-	-	25	%w/v	SOKLAN® CP 45 pH 7	-	-	-
2-19	F7	-	-	-	-	-	-	-	25	%w/v	SOKLAN® PA 25 CL	-	-	-
2-20	F8	0.2	M	Lithium nitrate	0.1	M	Bis-Tris	6.5	30	%w/v	PPGBA 400 pH 7	-	-	-
2-21	F9	-	-	-	0.1	M	Tris	8	20	%w/v	Poly(acrylic acid sodium salt) 2100	-	-	-
2-22	F10	-	-	-	0.1	M	HEPES	7	28	%w/v	Polyethyleneimine	-	-	-
2-23	F11	0.1	M	Ammonium formate	0.1	M	HEPES	7	20	%w/v	SOKLAN® CP 7	-	-	-
2-24	F12	0.2	M	Sodium sulfate	0.1	M	Tris	8	20	%w/v	SOKLAN® HP 56	-	-	-
2-25	G1	0.1	M	Potassium chloride	0.1	M	HEPES	7	25	%w/v	SOKLAN® CP 7	-	-	-
2-26	G2	0.3	M	Ammonium formate	0.1	M	HEPES	7	20	%w/v	SOKLAN® CP 5	-	-	-
2-27	G3	-	-	-	-	-	-	-	40	%w/v	Glycerol ethoxylate	-	-	-
2-28	G4	-	-	-	0.1	M	Tris	8.5	30	%w/v	Glycerol ethoxylate	-	-	-
2-29	G5	-	-	-	-	-	-	-	55	%w/v	Polypropylene glycol 400	-	-	-
2-30	G6	0.2	M	Lithium citrate tribasic tetrahydrate	-	-	-	-	35	%w/v	Glycerol ethoxylate	-	-	-
2-31	G7	0.2	M	Ammonium acetate	0.1	M	MES	6.5	30	%w/v	Glycerol ethoxylate	-	-	-
2-32	G8	-	-	-	0.1	M	Tris	8	20	%w/v	SOKLAN® CP 42	5	%w/v	Methanol
2-33	G9	-	-	-	0.1	M	Tris	7	25	%w/v	SOKLAN® CP 42	10	%w/v	Tetrahydrofuran
2-34	G10	0.1	M	Lithium acetate dihydrate	0.1	M	Bis-Tris	6	20	%w/v	SOKLAN® CP 42	-	-	-
2-35	G11	0.1	M	Sodium chloride	0.1	M	Bis-Tris	5.5	20	%w/v	PPGBA 400 pH 7	-	-	-
2-36	G12	-	-	-	0.1	M	Bis-Tris	6	15	%w/v	SOKLAN® CP 5	-	-	-
2-37	H1	-	-	-	0.1	M	Bis-Tris	6	25	%w/v	SOKLAN® CP 42	-	-	-
2-38	H2	0.2	M	Ammonium formate	-	-	-	-	25	%w/v	PPGBA 400 pH 7	-	-	-
2-39	H3	-	-	-	0.1	M	Tris	8.5	20	%w/v	Glycerol ethoxylate	3	%w/v	Polyethyleneimine
2-40	H4	0.2	M	Ammonium chloride	0.1	M	HEPES	7.5	25	%w/v	Glycerol ethoxylate	-	-	-
2-41	H5	-	-	-	0.1	M	Tris	8.5	10	%w/v	SOKLAN® CP 42	-	-	-
2-42	H6	-	-	-	0.1	M	MES	6	30	%w/v	Poly(acrylic acid sodium salt) 5100	10	%w/v	Ethanol
2-43	H7	0.2	M	Potassium citrate tribasic monohydrate	-	-	-	-	15	%w/v	SOKLAN® CP 42	-	-	-
2-44	H8	-	-	-	0.1	M	Tris	8.5	30	%w/v	SOKLAN® CP 42	-	-	-
2-45	H9	0.2	M	Ammonium acetate	0.1	M	HEPES	7	25	%w/v	SOKLAN® HP 56	-	-	-
2-46	H10	-	-	-	0.1	M	Tris	8.5	25	%w/v	SOKLAN® CP 42	-	-	-
2-47	H11	0.2	M	Ammonium formate	-	-	-	-	10	%w/v	Polyvinylpyrrolidone	20	%w/v	PEG 4000
2-48	H12	-	-	-	0.1	M	Tris	8	15	%w/v	Polyvinylpyrrolidone	25	%w/v	PEG 5000 MME