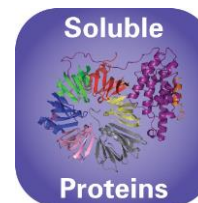
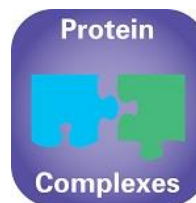


Molecular Dimensions



# ProPlex™ HT-96 Eco Screen

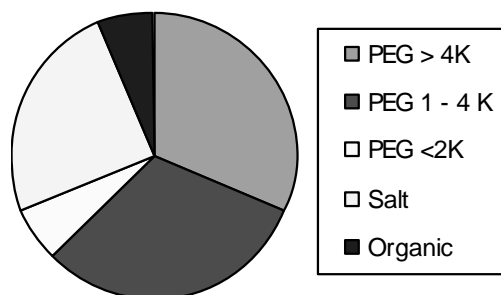
# MD1-42-ECO

ProPlex™ is formulated for the crystallization of *Protein complexes*.

MD1-42-ECO is presented as a 96 x 1 mL cacodylate-free condition targeted sparse matrix screen.

### Features of ProPlex™ HT-96:

- Helps maintain protein-protein interactions
- Reduces solubility of complex.
- Medium and High MW PEGs and lower concentrations specifically for protein complexes.
- pH range from 4.0 – 8.5 promote stabilization of complexes.
- Cacodylate-free – conditions replaced with MES.

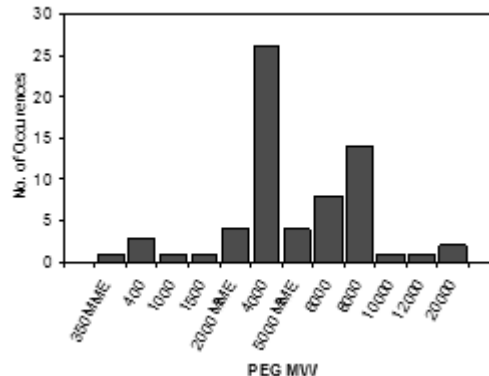


Types of precipitants used for protein-protein complex crystallization.

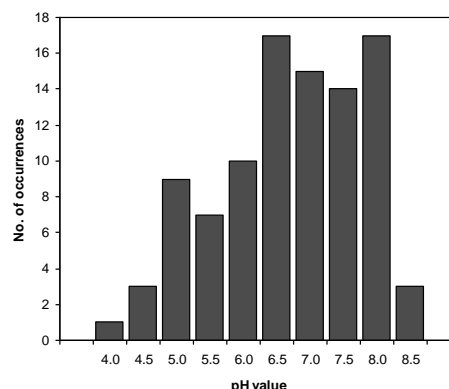
### Introduction

#### Crystallization of protein complexes

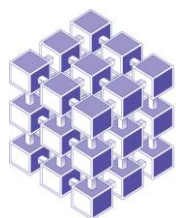
Successful crystallization of protein-protein complexes requires conditions to satisfy two independent criteria: solubility of the complex and stability of the complex. Protein-protein interactions are often weak or transient and their satisfaction precludes a number of reagent zones, thus constricting boundaries around which conditions for crystallization of the complex may be found. Compared to comprehensive crystallization databases containing all proteins, fewer complexes crystallize at extreme pH values due to the destabilisation of protein-protein interactions. Protein complexes were also found to crystallize at lower concentrations of precipitant than is generally observed. As a consequence, traditional sparse matrix screens contain many conditions which fall outside these boundaries and therefore can never crystallize intact protein complexes.



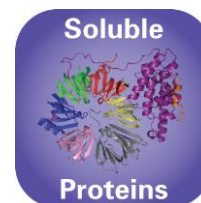
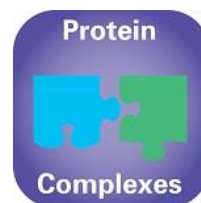
Typical PEG Molecular Weights used in protein-protein complex crystallization.



Typical pH conditions used for protein-protein complex crystallization.



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### The protein-complex crystallization database

The protein-complex crystallization database (PCCD) was established by Radaev *et al* (2006). All published protein-protein complex structures were extracted from the PDB, and multi-subunit proteins, such as free antibodies, were excluded. The resulting PCCD contained 659 unique, dissociable protein-protein complexes. They included 155 enzyme-inhibitor complexes, 121 receptor-ligand complexes, 117 cellular protein complexes, 74 antibody-antigen complexes, 71 signal transduction complexes, 52 large, multi-protein complexes such as ribosomes, and 69 other types of protein-protein complexes. Analysis of crystallization conditions in the PCCD enabled the definition of crystallization boundaries specific to protein complexes.

### The Development of ProPlex™

This **Protein Complex Screen** is a sparse matrix screen containing conditions obtained by cluster-analysis of data from the PCCD. The number of conditions containing each precipitant type is proportional to the number of observed crystallizations in the PCCD: 66 PEG-based, 24 salt-based and 6 organics-based.

Conditions included, contain precipitants at concentrations representative of those within the crystallization space identified from the PCCD. These are on average, lower than the concentrations found in general sparse matrix screens.

### Screening for crystallization of protein complexes

Analysis of the PCCD revealed that 96% of the crystallizations used the vapour diffusion method. Crystallization experiments should be set-up in parallel at 4°C and 23°C, since the strength of interactions at protein-protein interfaces are temperature dependent. Most protein complexes were crystallized at a concentration between 5 and 20 mg/mL, with 10 mg/mL being the most successful starting concentration.

Careful biophysical characterisation of the sample is recommended in order to confirm the nature and stability of the complex.

### Formulation Notes

ProPlex™ 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.

### Contact Us

Molecular Dimensions will be happy to discuss the precise formulation of individual reagents.

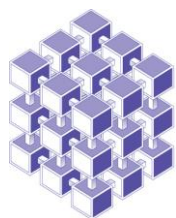
Individual reagents and stock solutions for optimization are available from Molecular Dimensions.

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

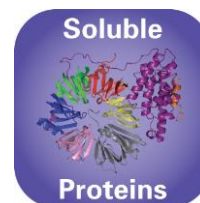
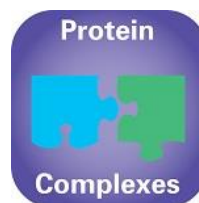
Contact and product details can be found at [www.moleculardimensions.com](http://www.moleculardimensions.com)

### References

1. Radaev, S., Li, S. and Sun, P. D. (2006) A survey of protein-protein complex crystallizations. *Acta Cryst.* **D62** pp 605-612.
2. Radaev & Sun (2002) Crystallization of Protein-protein complexes. *J. Appl. Cryst.* **35** pp 674-676.
3. Dafforn (2007) So how do you know you have a macromolecular complex? *Acta Cryst.* **D63** pp 17-25.
4. Crystallization of Nucleic Acids and Proteins, Edited by A. Ducruix and R. Giegé, The Practical Approach Series, Oxford Univ. Press, 1992.
5. Protein Crystallization Techniques Strategies & Tips, Edited by Terese Bergfors, IUL 1999.



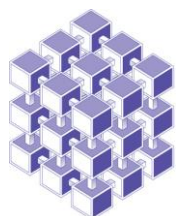
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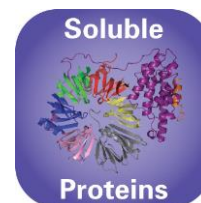
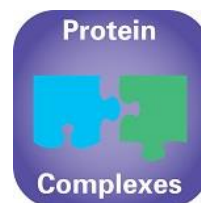
## ProPlex™ HT-96 Eco Screen Conditions A1- D12

## MD1-42-ECO

Well #	Conc.	Salt	Conc.	Buffer	pH	Conc.	Precipitant
A1			0.1 M	Tris	8.0	25 % v/v	PEG 350 MME
A2	0.1 M	Calcium acetate hydrate	0.1 M	MES	6.0	15 % v/v	PEG 400
A3	0.1 M	Lithium chloride	0.1 M	Sodium HEPES	7.5	20 % v/v	PEG 400
A4			0.1 M	Tris	8.0	25 % v/v	PEG 400
A5			0.1 M	MES	6.5	15 % v/v	PEG 500 MME
A6	0.2 M	Sodium chloride	0.1 M	Sodium/potassium phosphate	6.5	25 % w/v	PEG 1000
A7	0.1 M	Ammonium sulfate	0.1 M	Tris	7.5	20 % w/v	PEG 1500
A8	0.2 M	Ammonium sulfate	0.1 M	Sodium acetate	5.5	10 % w/v	PEG 2000 MME
A9	0.2 M	Sodium chloride	0.1 M	MES	6.0	20 % w/v	PEG 2000 MME
A10	0.1 M	Potassium chloride	0.1 M	Tris	8.0	15 % w/v	PEG 2000 MME
A11			0.1 M	Sodium HEPES	7.5	25 % w/v	PEG 2000 MME
A12	0.2 M	Sodium acetate trihydrate	0.1 M	Sodium citrate	5.5	5 % w/v	PEG 4000
B1	0.2 M	Lithium sulfate	0.1 M	Tris	7.5	5 % w/v	PEG 4000
B2	0.1 M	Calcium acetate hydrate	0.1 M	Sodium acetate	4.5	10 % w/v	PEG 4000
B3	0.2 M	Sodium acetate trihydrate	0.1 M	Sodium citrate	5.5	10 % w/v	PEG 4000
B4	0.2 M	Sodium chloride	0.1 M	MES	6.5	10 % w/v	PEG 4000
B5	0.1 M	Magnesium chloride hexahydrate	0.1 M	Sodium HEPES	7.5	10 % w/v	PEG 4000
B6			0.1 M	Sodium HEPES	7.0	10 % w/v	PEG 4000
						10 % v/v	2-Propanol
B7	0.2 M	Ammonium acetate	0.1 M	Sodium acetate	4.0	15 % w/v	PEG 4000
B8	0.1 M	Magnesium chloride hexahydrate	0.1 M	Sodium citrate	5.0	15 % w/v	PEG 4000
B9			0.1 M	MES	6.0	15 % w/v	PEG 4000
B10	0.15 M	Ammonium sulfate	0.1 M	MES	6.0	15 % w/v	PEG 4000
B11			0.1 M	Sodium HEPES	7.0	15 % w/v	PEG 4000
B12	0.1 M	Magnesium chloride hexahydrate	0.1 M	Sodium HEPES	7.0	15 % w/v	PEG 4000
C1	0.15 M	Ammonium sulfate	0.1 M	Tris	8.0	15 % w/v	PEG 4000
C2			0.1 M	Sodium citrate	4.5	20 % w/v	PEG 4000
C3	0.2 M	Ammonium acetate	0.1 M	Sodium acetate	5.0	20 % w/v	PEG 4000
C4	0.2 M	Lithium sulfate	0.1 M	MES	6.0	20 % w/v	PEG 4000
C5			0.1 M	Tris	8.0	20 % w/v	PEG 4000
C6	0.15 M	Ammonium sulfate	0.1 M	Sodium HEPES	7.0	20 % w/v	PEG 4000
C7			0.1 M	Sodium citrate	5.6	20 % w/v	PEG 4000
						20 % v/v	2-Propanol
C8	0.2 M	Sodium chloride	0.1 M	Tris	8.0	20 % w/v	PEG 4000
C9			0.1 M	MES	5.5	25 % w/v	PEG 4000
C10	0.15 M	Ammonium sulfate	0.1 M	MES	5.5	25 % w/v	PEG 4000
C11			0.1 M	MES	6.5	25 % w/v	PEG 4000
C12	0.2 M	Potassium iodide	0.1 M	MES	6.5	25 % w/v	PEG 4000
D1	0.2 M	Sodium chloride	0.1 M	Sodium HEPES	7.5	25 % w/v	PEG 4000
D2			0.1 M	MES	6.5	10 % w/v	PEG 5000 MME
						12 % v/v	1-Propanol
D3	0.1 M	Potassium chloride	0.1 M	Sodium HEPES	7.0	15 % w/v	PEG 5000 MME
D4	0.2 M	Ammonium sulfate	0.1 M	Tris	7.5	20 % w/v	PEG 5000 MME
D5	0.1 M	Magnesium chloride hexahydrate	0.1 M	MES	6.0	8 % w/v	PEG 6000
D6	0.15 M	Sodium chloride	0.1 M	Tris	8.0	8 % w/v	PEG 6000
D7			0.1 M	Sodium citrate	5.5	15 % w/v	PEG 6000
D8	0.1 M	Magnesium acetate tetrahydrate	0.1 M	MES	6.5	15 % w/v	PEG 6000
D9			0.1 M	MES	6.5	15 % w/v	PEG 6000
						5 % v/v	MPD
D10	0.1 M	Potassium chloride	0.1 M	Sodium HEPES	7.5	15 % w/v	PEG 6000
D11			0.1 M	Tris	8.5	15 % w/v	PEG 6000
D12			0.1 M	Tris	8.5	20 % w/v	PEG 6000



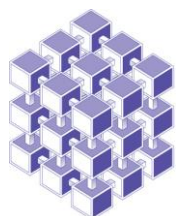
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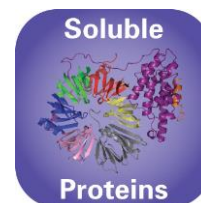
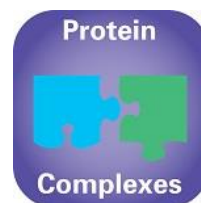
## ProPlex™ HT-96 Eco Screen Conditions E1- H12

## MD1-42-ECO

Well #	Conc.	Salt	Conc.	Buffer	pH	Conc.	Precipitant
E1	0.1 M	Magnesium acetate tetrahydrate	0.1 M	Sodium acetate	4.5	8 % w/v	PEG 8000
E2			0.1 M	Sodium citrate	5.0	8 % w/v	PEG 8000
E3	0.2 M	Sodium chloride	0.1 M	MES	6.0	8 % w/v	PEG 8000
E4			0.1 M	Sodium HEPES	7.0	8 % w/v	PEG 8000
E5			0.1 M	Tris	8.0	8 % w/v	PEG 8000
E6	0.1 M	Calcium acetate hydrate	0.1 M	MES	5.5	12 % w/v	PEG 8000
E7			0.1 M	Sodium phosphate	6.5	12 % w/v	PEG 8000
E8	0.1 M	Magnesium acetate tetrahydrate	0.1 M	MOPS	7.5	12 % w/v	PEG 8000
E9	0.2 M	Sodium chloride	0.1 M	Sodium HEPES	7.5	12 % w/v	PEG 8000
E10	0.2 M	Ammonium sulfate	0.1 M	Tris	8.5	12 % w/v	PEG 8000
E11			0.1 M	Sodium citrate	5.0	20 % w/v	PEG 8000
E12	0.2 M	Ammonium sulfate	0.1 M	MES	6.5	20 % w/v	PEG 8000
F1			0.1 M	Sodium HEPES	7.0	20 % w/v	PEG 8000
F2	0.2 M	Lithium chloride	0.1 M	Tris	8.0	20 % w/v	PEG 8000
F3	0.1 M	Magnesium acetate tetrahydrate	0.1 M	MES	6.5	10 % w/v	PEG 10,000
F4			0.1 M	Sodium HEPES	7.0	18 % w/v	PEG 12,000
F5	0.1 M	Sodium chloride	0.1 M	Tris	8.0	8 % w/v	PEG 20,000
F6			0.1 M	Sodium HEPES	7.0	15 % w/v	PEG 20,000
F7	0.5 M	Ammonium sulfate	0.1 M	MES	6.5		
F8	1.0 M	Ammonium sulfate	0.1 M	Sodium acetate	5.0		
F9	1.0 M	Ammonium sulfate	0.1 M	MES	6.5		
F10	1.0 M	Ammonium sulfate	0.1 M	Tris	8.0		
F11	1.5 M	Ammonium sulfate	0.1 M	Sodium acetate	5.0		
F12	1.5 M	Ammonium sulfate	0.1 M	Sodium HEPES	7.0		
G1	1.5 M	Ammonium sulfate	0.1 M	Tris	8.0		
G2	2.0 M	Ammonium sulfate	0.1 M	Sodium acetate	5.0		
G3	2.0 M	Ammonium sulfate	0.1 M	Sodium HEPES	7.0		
G4	2.0 M	Ammonium sulfate	0.1 M	Tris	8.0		
G5	1.0 M	Ammonium sulfate	0.1 M	Sodium HEPES	7.0		
		1.0 M Potassium chloride					
G6	2.0 M	Sodium formate	0.1 M	Sodium acetate	5.0		
G7	3.0 M	Sodium formate	0.1 M	Tris	7.5		
G8			0.8 M	Sodium/potassium phosphate	7.5		
G9			1.3 M	Sodium/potassium phosphate	7.0		
G10			1.6 M	Sodium/potassium phosphate	6.5		
G11	1.0 M	Sodium acetate trihydrate	0.1 M	Sodium HEPES	7.5		
G12	1.0 M	Sodium citrate tribasic dihydrate	0.1 M	Sodium HEPES	7.0		
H1	2.0 M	Sodium chloride	0.1 M	Sodium citrate	6.0		
H2	1.0 M	Lithium sulfate	0.1 M	MES	6.5		
H3	1.6 M	Lithium sulfate	0.1 M	Tris	8.0		
H4			1.4 M	Sodium malonate dibasic monohydrate	6.0		
H5	1.2 M	Potassium sodium tartrate tetrahydrate	0.1 M	Tris	8.0		
H6	1.6 M	Magnesium sulfate heptahydrate	0.1 M	MES	6.5		
H7			0.1 M	Sodium acetate	5.0	2 % w/v	PEG 4000
						15 % v/v	MPD
H8	0.05 M	Calcium acetate hydrate	0.1 M	MES	6.0	25 % v/v	MPD
H9			0.1 M	Imidazole	7.0	50 % v/v	MPD
H10	0.05 M	Magnesium chloride hexahydrate	0.1 M	MES	6.5	5 % w/v	PEG 4000
						10 % v/v	2-Propanol
H11	0.2 M	Ammonium acetate	0.1 M	Sodium HEPES	7.5	25 % v/v	2-Propanol
H12	0.1 M	Sodium chloride	0.1 M	Tris	8.0	15 % v/v	Ethanol
						5 % v/v	MPD



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**Abbreviations:**

**Sodium HEPES**; N-(2-hydroxyethyl)-piperazine-N'-2-ethanesulfonic acid Sodium Salt, **MES**; 2-(N-morpholino)ethanesulfonic acid, **MME**; Monomethylether, **PEG**; Polyethylene glycol, **Tris**; 2-Amino-2-(hydroxymethyl)propane-1,3-diol, **MOPS**; 3-(N-Morpholino)-propanesulfonic acid.

Manufacturer's safety data sheets are available from our website or by scanning the QR code here:



**Re-Ordering details:**

**Catalogue Description**

**Catalogue Code**

ProPlex™	96 x 10 mL	MD1-38
ProPlex™ HT-96	96 x 1 mL	MD1-42

**Eco Screens**

ProPlex™ Eco Screen	96 x 10 mL	MD1-38-ECO
ProPlex™ HT-96 Eco Screen	96 x 1 mL	MD1-42-ECO

**Single Reagents**

ProPlex™ single reagent	100 mL	MDSR-38-tube number
ProPlex™ HT-96 single reagent	100 mL	MDSR-42-well number

For ProPlex™ stock reagents visit our Optimization page on our website.