V1

Data Sheet

The ANGSTROM Additive Screen
Optimisation, Additive Screen

The ANGSTROM Additive Screen HT-96 and FX-96 Pre-Filled Plate
MD1-100 and MD1-100-FX

Key Info

The ANGSTROM Additive Screen is a 96-condition additive screen incorporating 30 different polyols to aid protein crystallization optimization and flash-cooling of protein crystals. MD1-100 is presented as 96 x 1 mL conditions and MD1-100-FX is presented as 96 x 100 µL.

- For easy optimization of crystal conditions.
- Contains 30 different polyols at three different concentrations.
- Cryoprotect and enhance the stability of your protein and improve crystal quality.
- Suitable for both hand and robotic dispensing.

Introduction

The ANGSTROM Additive Screen provides an easy way to optimize your crystallization condition. Once initial hits have been obtained, test out an extensive array of 30 polyols facilitated to improve the quality of your crystals and give you optimum control over your optimization experiment.

The traditional method of cryoprotection by soaking a crystal in cryoprotectant can result in damaged or lost crystals; The ANGSTROM Additive Screen contains derivatives of glycols (Figure 1, a), carbohydrates and PEGs that will be integrated to the condition early to help with cryoprotection.

The concentrations of cryoprotectant required to provide adequate cryoprotection have been marked on the Table of screen contents (page 3). Some cryoprotectants found in the ANGSTROM screen are as potent as glycerol (Figure 1).

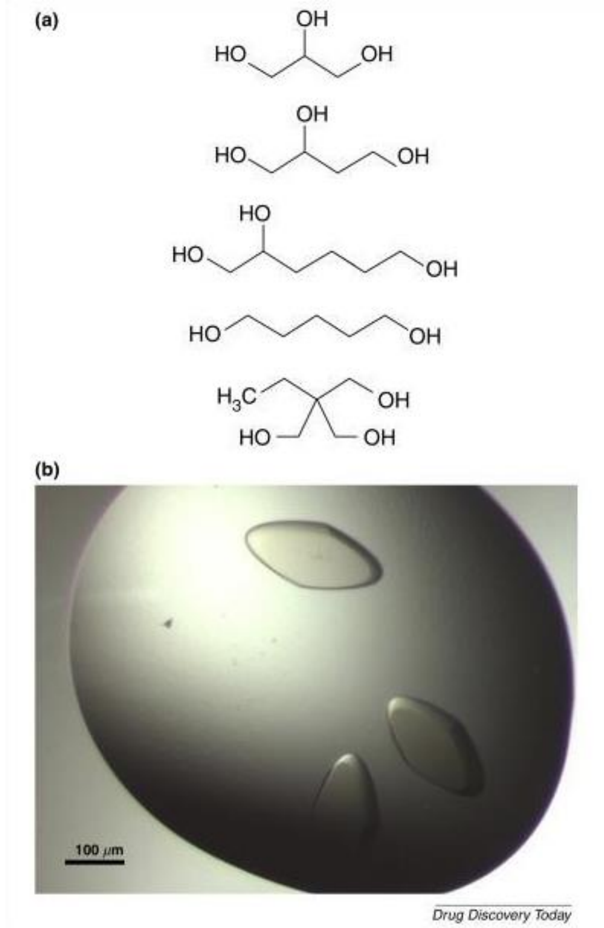

Figure 1. (a) Glycol derivatives. From top to bottom: 1,2,3-propanetriol (glycerol), 1,2,4-butanetriol, 1,2,6-hexanetriol, 1,5- pentanediol and 1,1,1-tris(hydroxymethyl)propane. In addition to being well-suited as crystallization reagents, these five polyols are cryo-protectants when used at concentrations as low as 20–25% (w/v). (b) Crystals of endosomal sorting complex required for transport (ESCRT)-I. Ten percent of the ANGSTROM screen was added to the reservoirs of a crystallization plate pre-filled with 96 repeats of the initial condition. Several hits were observed including the one shown here with glucose as additive (final conc. 3%, w/v). Unpublished results obtained during the early stage of the ANGSTROM screen development. Work of Nicolas Soler (LMB).

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Tips for Use

The ANGSTROM Additive Screen is stored frozen at -20˚C. Thaw additive screen prior to use and spin down ~1000G. Use the ANGSTROM Additive Screen from either the deep-well block or the Costar (FX) plates. The deep-well blocks contain approx. 1mL of additive screen and the Costar FX plates contain 100 µL of additive screen. We recommend aliquoting from the deep-well block into smaller volumes or directly into the reservoirs of MRC plates for example. This is to avoid repeated freeze-thaw cycles and contamination (especially if working in a multi- user lab).

Use of the ANGSTROM additive MD1-100 Deep-well block screen.
Dispense directly from the deep-well block into a storage plate to use on your robot, or directly from the block if using by hand.

Add The ANGSTROM Additive Screen into the reservoir of a crystallization plate.
If starting from a crystallization plate (e.g. MRC plate) it is recommended that you pre-dispense 8 µL of The Angstrom Additive Screen into the reservoir and then dispense 72 µL of your crystallization screen on top. Place plate on orbital shaker to mix prior to setting protein.
Then continue with dispensing your protein etc.

Add The ANGSTROM Additive Screen directly into the drop.
Dispense directly into the sample well of a crystallization plate, for example, 500 nL of protein + 500 nL crystallization condition + 100 nL of the additive screen. You can vary the ratios of protein drop to crystallization drop and additive drop.

Enquiries regarding The ANGSTROM Additive Screen formulation, interpretation of results or optimization strategies are welcome. Please e-mail 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 from our website.

The conditions shown on this datasheet may differ from those shown on previous versions of the datasheet due to the discontinuation for raw material supply for the following: Pentaerythritol ethoxylate (3/4 EO/OH)

References

1. Gorrec, F. Protein crystallization screens developed at the MRC Laboratory of Molecular Biology, Drug Discov Today (2016), http://dx.doi.org/10.1016/j.drudis.2016.03.008

The ANGSTROM Additive Screen has been designed and developed by Fabrice GORREC, in collaboration with the scientists at the Medical Research Council Laboratory of Molecular Biology (LMB) at Cambridge and is manufactured exclusively under license by Molecular Dimensions Limited.

Formulation Notes

The Angstrom Additive Screen 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.

Ordering Information

PN:	Description:	Pack Size:
MD1-100	ANGSTROM HT-96	96 x 1 mL
MD1-100-FX	ANGSTROM FX-96 pre-filled plate	96 x 100 µL
Single Reagents		
MDSR-100-well number	ANGSTROM HT-96 single reagent	100 mL

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The ANGSTROM Additive Screen HT-96 and FX-96 Pre-Filled Plate
HT-96 MD1-100 | MD1-100 FX | Conditions A1 to H12

Well #	Conc.	Units	Reagent	Cryoprotecting
A1	100	%	Ultrapure water	-
A2	100	%	Ultrapure water	-
A3	100	%	Ultrapure water	-
A4	0.5	M	Lithium sulphate	-
A5	1	M	Lithium sulphate	-
A6	2	M	Lithium sulphate	Partial
A7	20	% v/v	Ethylene glycol	-
A8	40	% v/v	Ethylene glycol	Yes
A9	80	% v/v	Ethylene glycol	Yes
A10	15	% v/v	1,2-Propandiol	-
A11	30	% v/v	1,2-Propandiol	Partial
A12	60	% v/v	1,2-Propandiol	Yes
B1	15	% v/v	Glycerol	-
B2	30	% v/v	Glycerol	Partial
B3	60	% v/v	Glycerol	Yes
B4	15	% v/v	1,5-Pentanediol	-
B5	30	% v/v	1,5-Pentanediol	Partial
B6	60	% v/v	1,5-Pentanediol	Yes
B7	20	% v/v	1,2,4-Butanetriol	-
B8	40	% v/v	1,2,4-Butanetriol	Yes
B9	80	% v/v	1,2,4-Butanetriol	Yes
B10	20	% v/v	1,2-Hexanediol	-
B11	40	% v/v	1,2-Hexanediol	-
B12	80	% v/v	1,2-Hexanediol	-
C1	20	% w/v	1,6-Hexanediol	-
C2	40	% w/v	1,6-Hexanediol	Partial
C3	80	% w/v	1,6-Hexanediol	Yes
C4	20	% v/v	MPD	-
C5	40	% v/v	MPD	Yes
C6	80	% v/v	MPD	Yes
C7	12	% w/v	*meso*-Erythritol	-
C8	25	% w/v	*meso*-Erythritol	-
C9	50	% w/v	*meso*-Erythritol	Yes
C10	20	% w/v	Trimethylolpropane	-
C11	40	% w/v	Trimethylolpropane	Yes
C12	80	% w/v	Trimethylolpropane	Yes
D1	20	% v/v	1,2,6-Hexanetriol	-
D2	40	% v/v	1,2,6-Hexanetriol	Yes
D3	80	% v/v	1,2,6-Hexanetriol	Yes
D4	20	% w/v	D-Lyxose	-
D5	40	% w/v	D-Lyxose	-
D6	80	% w/v	D-Lyxose	Yes
D7	10	% w/v	Xylitol	-
D8	20	% w/v	Xylitol	-
D9	40	% w/v	Xylitol	Yes
D10	20	% w/v	D-Fructose	-
D11	40	% w/v	D-Fructose	Yes
D12	80	% w/v	D-Fructose	Yes

Well #	Conc.	Units	Reagent	Cryoprotecting
E1	15	% w/v	D-Glucose	-
E2	30	% w/v	D-Glucose	-
E3	60	% w/v	D-Glucose	Yes
E4	2.5	% w/v	*myo*-Inositol	-
E5	5	% w/v	*myo*-Inositol	-
E6	10	% w/v	*myo*-Inositol	-
E7	6	% w/v	L-Rhamnose monohydrate	-
E8	12	% w/v	L-Rhamnose monohydrate	-
E9	25	% w/v	L-Rhamnose monohydrate	-
E10	20	% v/v	Tetraethylene glycol (TTEG)	-
E11	40	% v/v	Tetraethylene glycol (TTEG)	Partial
E12	80	% v/v	Tetraethylene glycol (TTEG)	Yes
F1	20	% v/v	PEG 200	-
F2	40	% v/v	PEG 200	Yes
F3	80	% v/v	PEG 200	Yes
F4	20	% v/v	Pentaethylene glycol	-
F5	40	% v/v	Pentaethylene glycol	Yes
F6	80	% v/v	Pentaethylene glycol	Yes
F7	20	% w/v	D-Sorbitol	-
F8	40	% w/v	D-Sorbitol	-
F9	60	% w/v	D-Sorbitol	-
F10	20	% v/v	Hexaethylene glycol	-
F11	40	% v/v	Hexaethylene glycol	-
F12	80	% v/v	Hexaethylene glycol	Yes
G1	20	% v/v	PEG 300	-
G2	40	% v/v	PEG 300	Partial
G3	80	% v/v	PEG 300	Yes
G4	15	% w/v	Sucrose	-
G5	30	% w/v	Sucrose	-
G6	60	% w/v	Sucrose	Yes
G7	20	% w/v	Maltitol	-
G8	40	% w/v	Maltitol	-
G9	80	% w/v	Maltitol	Yes
G10	12	% w/v	D-Trehalose	-
G11	25	% w/v	D-Trehalose	-
G12	50	% w/v	D-Trehalose	Yes
H1	20	% v/v	PEG 400	-
H2	40	% v/v	PEG 400	Partial
H3	80	% v/v	PEG 400	Yes
H4	20	% v/v	Pentaerythritol propoxylate (5/4 PO/OH)	-
H5	40	% v/v	Pentaerythritol propoxylate (5/4 PO/OH)	Partial
H6	80	% v/v	Pentaerythritol propoxylate (5/4 PO/OH)	Yes
H7	15	% v/v	PEG 500 MME	-
H8	30	% v/v	PEG 500 MME	-
H9	60	% v/v	PEG 500 MME	Yes
H10	15	% v/v	PEG 600	-
H11	30	% v/v	PEG 600	Partial
H12	60	% v/v	PEG 600	Yes

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