



Full wwPDB X-ray Structure Validation Report ⓘ

May 16, 2020 – 02:53 am BST

PDB ID : 6HLZ
Title : Structure in C2 form of the PBP AgtB from *A.tumefaciens* R10 in complex with agropinic acid
Authors : Morera, S.; Marty, L.; Vigouroux, A.
Deposited on : 2018-09-11
Resolution : 1.89 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.11
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.11

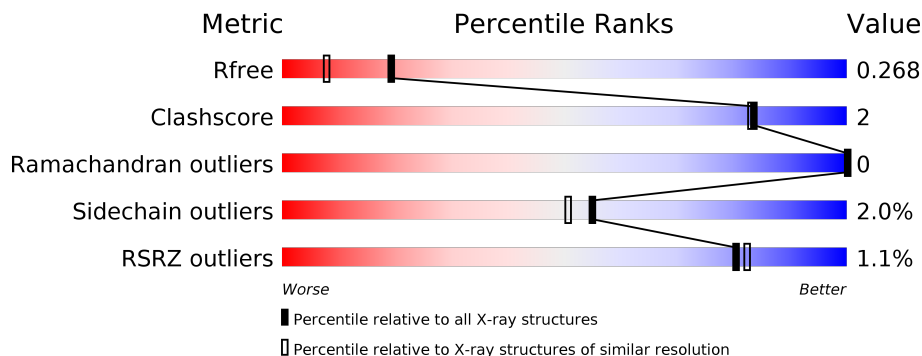
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.89 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	6207 (1.90-1.90)
Clashscore	141614	6847 (1.90-1.90)
Ramachandran outliers	138981	6760 (1.90-1.90)
Sidechain outliers	138945	6760 (1.90-1.90)
RSRZ outliers	127900	6082 (1.90-1.90)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	341	 86% 7% 7%
1	B	341	 2% 85% 8% 7%

2 Entry composition i

There are 7 unique types of molecules in this entry. The entry contains 5870 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Agropine permease.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	316	2429	1558	401	462	8	0	0	0
1	B	316	2429	1558	401	462	8	0	0	0

There are 56 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	8	MET	-	initiating methionine	UNP W8FRA6
A	9	GLY	-	expression tag	UNP W8FRA6
A	10	SER	-	expression tag	UNP W8FRA6
A	11	SER	-	expression tag	UNP W8FRA6
A	12	HIS	-	expression tag	UNP W8FRA6
A	13	HIS	-	expression tag	UNP W8FRA6
A	14	HIS	-	expression tag	UNP W8FRA6
A	15	HIS	-	expression tag	UNP W8FRA6
A	16	HIS	-	expression tag	UNP W8FRA6
A	17	HIS	-	expression tag	UNP W8FRA6
A	18	SER	-	expression tag	UNP W8FRA6
A	19	SER	-	expression tag	UNP W8FRA6
A	20	GLY	-	expression tag	UNP W8FRA6
A	21	LEU	-	expression tag	UNP W8FRA6
A	22	VAL	-	expression tag	UNP W8FRA6
A	23	PRO	-	expression tag	UNP W8FRA6
A	24	ARG	-	expression tag	UNP W8FRA6
A	25	GLY	-	expression tag	UNP W8FRA6
A	26	SER	-	expression tag	UNP W8FRA6
A	27	HIS	-	expression tag	UNP W8FRA6
A	28	MET	-	expression tag	UNP W8FRA6
A	29	MET	-	expression tag	UNP W8FRA6
A	343	HIS	-	expression tag	UNP W8FRA6
A	344	HIS	-	expression tag	UNP W8FRA6
A	345	HIS	-	expression tag	UNP W8FRA6

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Chain	Residue	Modelled	Actual	Comment	Reference
A	346	HIS	-	expression tag	UNP W8FRA6
A	347	HIS	-	expression tag	UNP W8FRA6
A	348	HIS	-	expression tag	UNP W8FRA6
B	8	MET	-	initiating methionine	UNP W8FRA6
B	9	GLY	-	expression tag	UNP W8FRA6
B	10	SER	-	expression tag	UNP W8FRA6
B	11	SER	-	expression tag	UNP W8FRA6
B	12	HIS	-	expression tag	UNP W8FRA6
B	13	HIS	-	expression tag	UNP W8FRA6
B	14	HIS	-	expression tag	UNP W8FRA6
B	15	HIS	-	expression tag	UNP W8FRA6
B	16	HIS	-	expression tag	UNP W8FRA6
B	17	HIS	-	expression tag	UNP W8FRA6
B	18	SER	-	expression tag	UNP W8FRA6
B	19	SER	-	expression tag	UNP W8FRA6
B	20	GLY	-	expression tag	UNP W8FRA6
B	21	LEU	-	expression tag	UNP W8FRA6
B	22	VAL	-	expression tag	UNP W8FRA6
B	23	PRO	-	expression tag	UNP W8FRA6
B	24	ARG	-	expression tag	UNP W8FRA6
B	25	GLY	-	expression tag	UNP W8FRA6
B	26	SER	-	expression tag	UNP W8FRA6
B	27	HIS	-	expression tag	UNP W8FRA6
B	28	MET	-	expression tag	UNP W8FRA6
B	29	MET	-	expression tag	UNP W8FRA6
B	343	HIS	-	expression tag	UNP W8FRA6
B	344	HIS	-	expression tag	UNP W8FRA6
B	345	HIS	-	expression tag	UNP W8FRA6
B	346	HIS	-	expression tag	UNP W8FRA6
B	347	HIS	-	expression tag	UNP W8FRA6
B	348	HIS	-	expression tag	UNP W8FRA6

- Molecule 2 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0

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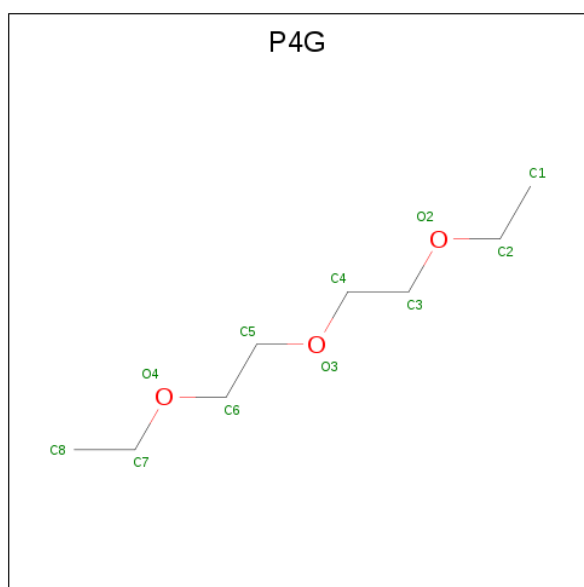
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	B	1	Total 4	C 2	O 2	0	0
2	B	1	Total 4	C 2	O 2	0	0
2	B	1	Total 4	C 2	O 2	0	0
2	B	1	Total 4	C 2	O 2	0	0
2	B	1	Total 4	C 2	O 2	0	0
2	B	1	Total 4	C 2	O 2	0	0
2	B	1	Total 4	C 2	O 2	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	B	1	Total	C	O	0	0
			4	2	2		
2	B	1	Total	C	O	0	0
			4	2	2		
2	B	1	Total	C	O	0	0
			4	2	2		
2	B	1	Total	C	O	0	0
			4	2	2		
2	B	1	Total	C	O	0	0
			4	2	2		
2	B	1	Total	C	O	0	0
			4	2	2		
2	B	1	Total	C	O	0	0
			4	2	2		

- Molecule 3 is 1-ETHOXY-2-(2-ETHOXYETHOXY)ETHANE (three-letter code: P4G) (formula: C₈H₁₈O₃).



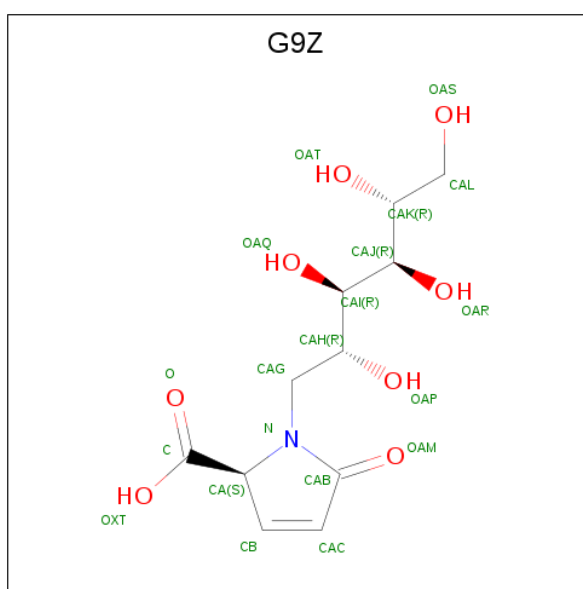
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			11	8	3		
3	A	1	Total	C	O	0	0
			11	8	3		

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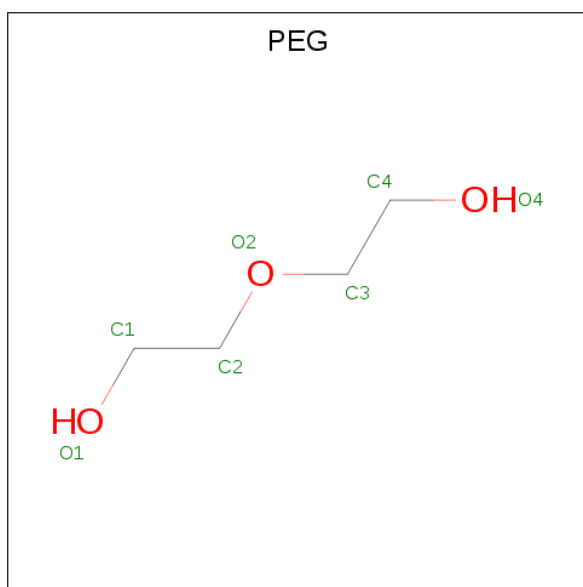
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			11	8	3		
3	B	1	Total	C	O	0	0
			11	8	3		
3	B	1	Total	C	O	0	0
			11	8	3		
3	B	1	Total	C	O	0	0
			11	8	3		

- Molecule 4 is agropinic acid (three-letter code: G9Z) (formula: C₁₁H₁₇NO₈).



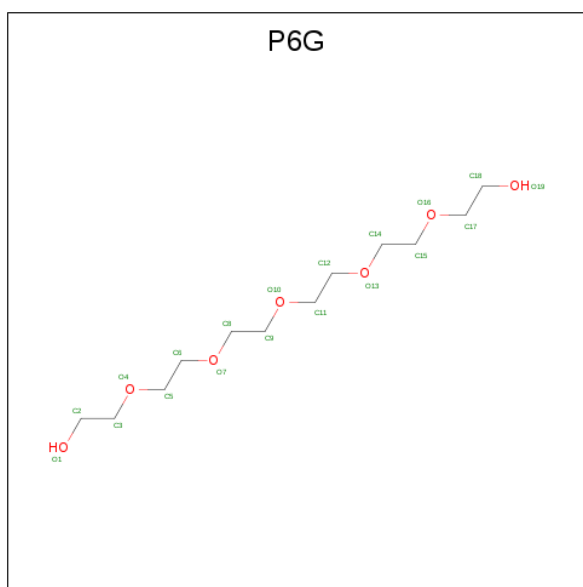
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	N	O	0	0
			20	11	1	8		
4	B	1	Total	C	N	O	0	0
			20	11	1	8		

- Molecule 5 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: C₄H₁₀O₃).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 7 4 3	0	0
5	A	1	Total C O 7 4 3	0	0
5	A	1	Total C O 7 4 3	0	0
5	A	1	Total C O 7 4 3	0	0
5	A	1	Total C O 7 4 3	0	0
5	A	1	Total C O 7 4 3	0	0
5	A	1	Total C O 7 4 3	0	0
5	A	1	Total C O 7 4 3	0	0
5	A	1	Total C O 7 4 3	0	0
5	B	1	Total C O 7 4 3	0	0
5	B	1	Total C O 7 4 3	0	0
5	B	1	Total C O 7 4 3	0	0
5	B	1	Total C O 7 4 3	0	0

- Molecule 6 is HEXAETHYLENE GLYCOL (three-letter code: P6G) (formula: C₁₂H₂₆O₇).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	1	Total	C O	0	0
			19	12 7		

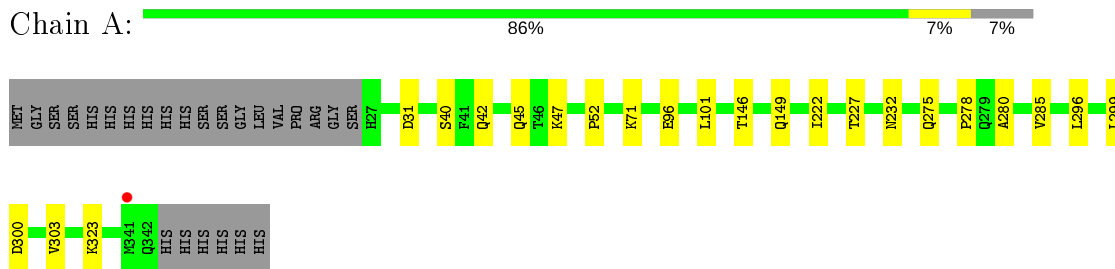
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	338	Total	O	0	0
			338	338		
7	B	282	Total	O	0	0
			282	282		

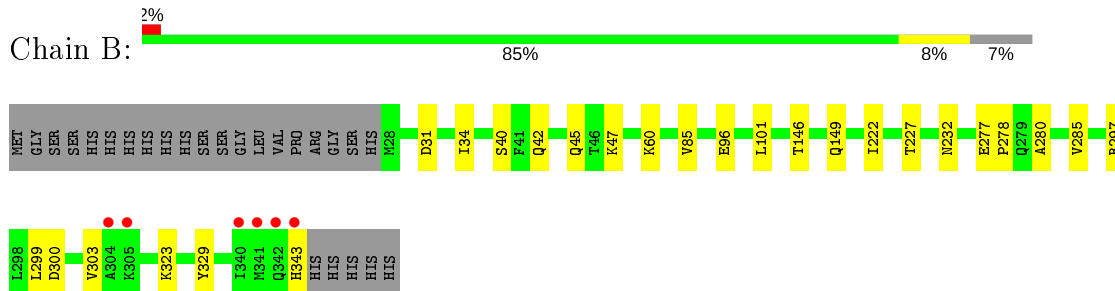
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Agropine permease



- Molecule 1: Agropine permease



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	170.83Å 40.93Å 117.42Å 90.00° 115.07° 90.00°	Depositor
Resolution (Å)	42.61 – 1.89 42.61 – 1.89	Depositor EDS
% Data completeness (in resolution range)	99.1 (42.61-1.89) 98.9 (42.61-1.89)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.15	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.19 (at 1.89Å)	Xtrriage
Refinement program	BUSTER 2.10.3	Depositor
R, R_{free}	0.206 , 0.254 0.218 , 0.268	Depositor DCC
R_{free} test set	2949 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	32.2	Xtrriage
Anisotropy	0.453	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 54.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.45$, $\langle L^2 \rangle = 0.27$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	5870	wwPDB-VP
Average B, all atoms (Å ²)	36.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.75% of the height of the origin peak. No significant pseudotranslation is detected.*

¹ Intensities estimated from amplitudes.

² Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: P4G, PEG, EDO, P6G, G9Z

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.51	0/2491	0.65	0/3392
1	B	0.51	0/2491	0.65	0/3392
All	All	0.51	0/4982	0.65	0/6784

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2429	0	2376	10	0
1	B	2429	0	2376	12	0
2	A	112	0	168	1	0
2	B	64	0	96	3	0
3	A	33	0	54	1	0
3	B	33	0	54	0	0
4	A	20	0	0	0	0
4	B	20	0	0	0	0
5	A	63	0	90	2	0
5	B	28	0	40	0	0
6	A	19	0	26	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	A	338	0	0	0	0
7	B	282	0	0	1	0
All	All	5870	0	5280	25	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 2.

All (25) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:42:GLN:HA	1:B:45:GLN:HE21	1.57	0.69
1:A:42:GLN:HA	1:A:45:GLN:HE21	1.57	0.67
1:A:52:PRO:HB3	5:A:435:PEG:H12	1.79	0.64
1:B:329:TYR:CD1	2:B:402:EDO:H21	2.32	0.64
1:A:280:ALA:O	1:A:299:LEU:HD21	2.05	0.56
2:A:426:EDO:H11	3:A:431:P4G:H72	1.89	0.54
1:B:329:TYR:CE1	2:B:402:EDO:H21	2.43	0.53
1:A:47:LYS:HD3	1:A:285:VAL:HG11	1.92	0.52
1:B:47:LYS:HD3	1:B:285:VAL:HG11	1.93	0.50
1:B:146:THR:H	1:B:149:GLN:HE21	1.60	0.50
1:A:146:THR:H	1:A:149:GLN:HE21	1.60	0.49
1:A:96:GLU:HA	1:A:101:LEU:HD12	1.94	0.49
1:B:96:GLU:HA	1:B:101:LEU:HD12	1.94	0.48
1:A:296:LEU:HA	1:A:299:LEU:HD12	1.96	0.47
1:B:277:GLU:HB2	1:B:278:PRO:HD3	1.97	0.46
2:B:402:EDO:H11	7:B:510:HOH:O	2.15	0.45
1:B:280:ALA:O	1:B:299:LEU:HD21	2.17	0.45
5:A:437:PEG:H42	6:A:442:P6G:H21	1.97	0.45
1:A:40:SER:HB2	1:A:232:ASN:HD22	1.82	0.44
1:B:300:ASP:HB3	1:B:303:VAL:HG13	1.99	0.44
1:B:31:ASP:HB3	1:B:60:LYS:HD3	1.99	0.43
1:A:275:GLN:O	1:A:278:PRO:HD2	2.18	0.42
1:B:34:ILE:HG12	1:B:85:VAL:HB	2.01	0.42
1:A:300:ASP:HB3	1:A:303:VAL:HG13	2.01	0.41
1:B:40:SER:HB2	1:B:232:ASN:HD22	1.86	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	314/341 (92%)	308 (98%)	6 (2%)	0	100	100
1	B	314/341 (92%)	308 (98%)	6 (2%)	0	100	100
All	All	628/682 (92%)	616 (98%)	12 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	248/270 (92%)	243 (98%)	5 (2%)	55	51
1	B	248/270 (92%)	243 (98%)	5 (2%)	55	51
All	All	496/540 (92%)	486 (98%)	10 (2%)	55	51

All (10) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	31	ASP
1	A	71	LYS
1	A	222	ILE
1	A	227	THR
1	A	323	LYS
1	B	222	ILE
1	B	227	THR
1	B	297	ARG

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Mol	Chain	Res	Type
1	B	323	LYS
1	B	343	HIS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	45	GLN
1	A	149	GLN
1	A	232	ASN
1	A	275	GLN
1	A	326	ASN
1	A	328	ASN
1	B	45	GLN
1	B	149	GLN
1	B	275	GLN
1	B	326	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

66 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	EDO	B	403	-	3,3,3	0.62	0	2,2,2	0.14	0
2	EDO	B	414	-	3,3,3	0.61	0	2,2,2	0.21	0
6	P6G	A	442	-	18,18,18	0.90	0	17,17,17	0.50	0
2	EDO	A	411	-	3,3,3	0.61	0	2,2,2	0.38	0
2	EDO	B	415	-	3,3,3	0.62	0	2,2,2	0.31	0
2	EDO	A	425	-	3,3,3	0.49	0	2,2,2	0.37	0
2	EDO	A	406	-	3,3,3	0.51	0	2,2,2	0.38	0
3	P4G	B	417	-	10,10,10	0.57	0	9,9,9	0.34	0
2	EDO	A	410	-	3,3,3	0.60	0	2,2,2	0.32	0
2	EDO	B	405	-	3,3,3	0.68	0	2,2,2	0.28	0
2	EDO	A	409	-	3,3,3	0.70	0	2,2,2	0.14	0
5	PEG	A	438	-	6,6,6	0.13	0	5,5,5	0.05	0
2	EDO	A	413	-	3,3,3	0.53	0	2,2,2	0.28	0
2	EDO	B	413	-	3,3,3	0.54	0	2,2,2	0.44	0
2	EDO	A	401	-	3,3,3	0.59	0	2,2,2	0.29	0
2	EDO	A	404	-	3,3,3	0.67	0	2,2,2	0.25	0
2	EDO	A	424	-	3,3,3	0.63	0	2,2,2	0.19	0
2	EDO	A	416	-	3,3,3	0.62	0	2,2,2	0.33	0
2	EDO	A	426	-	3,3,3	0.59	0	2,2,2	0.23	0
2	EDO	B	411	-	3,3,3	0.53	0	2,2,2	0.35	0
5	PEG	A	433	-	6,6,6	0.12	0	5,5,5	0.12	0
3	P4G	A	430	-	10,10,10	0.63	0	9,9,9	0.41	0
3	P4G	A	429	-	10,10,10	0.61	0	9,9,9	0.54	0
5	PEG	A	436	-	6,6,6	0.09	0	5,5,5	0.09	0
2	EDO	B	412	-	3,3,3	0.61	0	2,2,2	0.24	0
5	PEG	A	434	-	6,6,6	0.18	0	5,5,5	0.10	0
2	EDO	A	408	-	3,3,3	0.60	0	2,2,2	0.32	0
2	EDO	A	422	-	3,3,3	0.53	0	2,2,2	0.48	0
5	PEG	A	440	-	6,6,6	0.23	0	5,5,5	0.10	0
5	PEG	B	424	-	6,6,6	0.12	0	5,5,5	0.03	0
5	PEG	A	439	-	6,6,6	0.18	0	5,5,5	0.15	0
4	G9Z	B	420	-	16,20,20	2.90	2 (12%)	19,28,28	2.96	4 (21%)
2	EDO	A	428	-	3,3,3	0.58	0	2,2,2	0.42	0
2	EDO	A	414	-	3,3,3	0.62	0	2,2,2	0.13	0
2	EDO	B	410	-	3,3,3	0.62	0	2,2,2	0.15	0
2	EDO	A	420	-	3,3,3	0.62	0	2,2,2	0.38	0
3	P4G	B	418	-	10,10,10	0.57	0	9,9,9	0.35	0
2	EDO	B	407	-	3,3,3	0.57	0	2,2,2	0.41	0
2	EDO	A	402	-	3,3,3	0.58	0	2,2,2	0.29	0
2	EDO	B	406	-	3,3,3	0.60	0	2,2,2	0.29	0
2	EDO	A	418	-	3,3,3	0.56	0	2,2,2	0.35	0
2	EDO	A	415	-	3,3,3	0.52	0	2,2,2	0.38	0
2	EDO	A	421	-	3,3,3	0.62	0	2,2,2	0.22	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	PEG	A	435	-	6,6,6	0.21	0	5,5,5	0.12	0
2	EDO	A	403	-	3,3,3	0.61	0	2,2,2	0.22	0
2	EDO	B	416	-	3,3,3	0.54	0	2,2,2	0.37	0
2	EDO	B	409	-	3,3,3	0.58	0	2,2,2	0.30	0
4	G9Z	A	432	-	16,20,20	2.83	2 (12%)	19,28,28	3.27	5 (26%)
2	EDO	A	412	-	3,3,3	0.53	0	2,2,2	0.31	0
2	EDO	A	417	-	3,3,3	0.57	0	2,2,2	0.32	0
2	EDO	B	404	-	3,3,3	0.77	0	2,2,2	0.07	0
2	EDO	A	419	-	3,3,3	0.50	0	2,2,2	0.43	0
2	EDO	A	405	-	3,3,3	0.68	0	2,2,2	0.21	0
5	PEG	A	437	-	6,6,6	0.34	0	5,5,5	0.22	0
2	EDO	B	402	-	3,3,3	0.66	0	2,2,2	0.07	0
5	PEG	B	421	-	6,6,6	0.14	0	5,5,5	0.09	0
5	PEG	B	422	-	6,6,6	0.17	0	5,5,5	0.12	0
5	PEG	A	441	-	6,6,6	0.17	0	5,5,5	0.06	0
2	EDO	B	401	-	3,3,3	0.57	0	2,2,2	0.33	0
3	P4G	A	431	-	10,10,10	0.60	0	9,9,9	0.40	0
2	EDO	A	427	-	3,3,3	0.61	0	2,2,2	0.14	0
2	EDO	A	407	-	3,3,3	0.67	0	2,2,2	0.14	0
2	EDO	A	423	-	3,3,3	0.63	0	2,2,2	0.26	0
5	PEG	B	423	-	6,6,6	0.24	0	5,5,5	0.46	0
2	EDO	B	408	-	3,3,3	0.60	0	2,2,2	0.38	0
3	P4G	B	419	-	10,10,10	0.59	0	9,9,9	0.33	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	EDO	B	403	-	-	0/1/1/1	-
2	EDO	B	414	-	-	0/1/1/1	-
6	P6G	A	442	-	-	9/16/16/16	-
2	EDO	A	411	-	-	0/1/1/1	-
2	EDO	B	415	-	-	0/1/1/1	-
2	EDO	A	425	-	-	0/1/1/1	-
2	EDO	A	406	-	-	1/1/1/1	-
3	P4G	B	417	-	-	6/8/8/8	-
2	EDO	A	410	-	-	0/1/1/1	-
2	EDO	B	405	-	-	0/1/1/1	-
2	EDO	A	409	-	-	0/1/1/1	-
5	PEG	A	438	-	-	2/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	EDO	A	413	-	-	1/1/1/1	-
2	EDO	B	413	-	-	0/1/1/1	-
2	EDO	A	401	-	-	1/1/1/1	-
2	EDO	A	404	-	-	0/1/1/1	-
2	EDO	A	424	-	-	0/1/1/1	-
2	EDO	A	416	-	-	0/1/1/1	-
2	EDO	A	426	-	-	0/1/1/1	-
2	EDO	B	411	-	-	0/1/1/1	-
5	PEG	A	433	-	-	1/4/4/4	-
3	P4G	A	430	-	-	7/8/8/8	-
3	P4G	A	429	-	-	3/8/8/8	-
5	PEG	A	436	-	-	2/4/4/4	-
2	EDO	B	412	-	-	0/1/1/1	-
5	PEG	A	434	-	-	1/4/4/4	-
2	EDO	A	408	-	-	0/1/1/1	-
2	EDO	A	422	-	-	0/1/1/1	-
5	PEG	A	440	-	-	0/4/4/4	-
5	PEG	B	424	-	-	4/4/4/4	-
5	PEG	A	439	-	-	1/4/4/4	-
4	G9Z	B	420	-	-	3/18/35/35	0/1/1/1
2	EDO	A	428	-	-	1/1/1/1	-
2	EDO	A	414	-	-	0/1/1/1	-
2	EDO	B	410	-	-	0/1/1/1	-
2	EDO	A	420	-	-	1/1/1/1	-
3	P4G	B	418	-	-	5/8/8/8	-
2	EDO	B	407	-	-	0/1/1/1	-
2	EDO	A	402	-	-	0/1/1/1	-
2	EDO	B	406	-	-	1/1/1/1	-
2	EDO	A	418	-	-	1/1/1/1	-
2	EDO	A	415	-	-	0/1/1/1	-
2	EDO	A	421	-	-	0/1/1/1	-
5	PEG	A	435	-	-	3/4/4/4	-
2	EDO	A	403	-	-	0/1/1/1	-
2	EDO	B	416	-	-	1/1/1/1	-
2	EDO	B	409	-	-	0/1/1/1	-
4	G9Z	A	432	-	-	3/18/35/35	0/1/1/1
2	EDO	A	412	-	-	0/1/1/1	-
2	EDO	A	417	-	-	0/1/1/1	-
2	EDO	B	404	-	-	1/1/1/1	-
2	EDO	A	419	-	-	0/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	EDO	A	405	-	-	0/1/1/1	-
5	PEG	A	437	-	-	2/4/4/4	-
2	EDO	B	402	-	-	0/1/1/1	-
5	PEG	B	421	-	-	2/4/4/4	-
5	PEG	B	422	-	-	1/4/4/4	-
5	PEG	A	441	-	-	1/4/4/4	-
2	EDO	B	401	-	-	0/1/1/1	-
3	P4G	A	431	-	-	4/8/8/8	-
2	EDO	A	427	-	-	0/1/1/1	-
2	EDO	A	407	-	-	0/1/1/1	-
2	EDO	A	423	-	-	0/1/1/1	-
5	PEG	B	423	-	-	4/4/4/4	-
2	EDO	B	408	-	-	0/1/1/1	-
3	P4G	B	419	-	-	5/8/8/8	-

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	420	G9Z	CAC-CB	9.87	1.53	1.33
4	A	432	G9Z	CAC-CB	9.65	1.53	1.33
4	A	432	G9Z	CAC-CAB	-5.02	1.39	1.48
4	B	420	G9Z	CAC-CAB	-4.57	1.40	1.48

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	432	G9Z	CAC-CAB-N	11.19	113.42	106.37
4	B	420	G9Z	CAC-CAB-N	10.86	113.21	106.37
4	A	432	G9Z	CB-CAC-CAB	-6.45	105.48	110.09
4	B	420	G9Z	CA-N-CAB	-4.25	110.08	113.31
4	A	432	G9Z	CA-N-CAB	-3.78	110.43	113.31
4	B	420	G9Z	OAM-CAB-CAC	-3.33	122.35	128.56
4	B	420	G9Z	CB-CAC-CAB	-3.23	107.78	110.09
4	A	432	G9Z	OAM-CAB-CAC	-2.88	123.18	128.56
4	A	432	G9Z	OAM-CAB-N	-2.38	122.77	125.06

There are no chirality outliers.

All (78) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	420	G9Z	CAG-CAH-CAI-CAJ
4	A	432	G9Z	CAG-CAH-CAI-CAJ
5	B	423	PEG	O1-C1-C2-O2
3	A	430	P4G	O2-C3-C4-O3
3	A	431	P4G	O3-C5-C6-O4
6	A	442	P6G	O1-C2-C3-O4
4	B	420	G9Z	OAP-CAH-CAI-CAJ
4	A	432	G9Z	OAP-CAH-CAI-CAJ
2	A	401	EDO	O1-C1-C2-O2
6	A	442	P6G	C5-C6-O7-C8
3	A	430	P4G	O3-C5-C6-O4
5	A	438	PEG	O2-C3-C4-O4
5	A	436	PEG	O1-C1-C2-O2
5	B	424	PEG	O1-C1-C2-O2
5	B	424	PEG	O2-C3-C4-O4
5	A	437	PEG	O1-C1-C2-O2
5	B	423	PEG	C1-C2-O2-C3
3	A	429	P4G	C8-C7-O4-C6
3	A	429	P4G	C1-C2-O2-C3
3	B	417	P4G	C1-C2-O2-C3
3	B	418	P4G	C1-C2-O2-C3
2	A	413	EDO	O1-C1-C2-O2
3	B	419	P4G	C8-C7-O4-C6
3	A	430	P4G	C6-C5-O3-C4
5	A	436	PEG	C1-C2-O2-C3
3	A	430	P4G	C5-C6-O4-C7
5	A	435	PEG	C4-C3-O2-C2
3	B	418	P4G	C6-C5-O3-C4
6	A	442	P6G	C18-C17-O16-C15
5	A	434	PEG	C4-C3-O2-C2
5	B	424	PEG	C1-C2-O2-C3
5	A	441	PEG	C4-C3-O2-C2
3	B	419	P4G	C6-C5-O3-C4
6	A	442	P6G	O13-C14-C15-O16
5	B	424	PEG	C4-C3-O2-C2
5	B	421	PEG	C4-C3-O2-C2
5	A	437	PEG	C1-C2-O2-C3
3	A	431	P4G	C1-C2-O2-C3
5	A	438	PEG	C1-C2-O2-C3
6	A	442	P6G	C8-C9-O10-C11
5	A	433	PEG	C1-C2-O2-C3
3	B	418	P4G	C8-C7-O4-C6
3	A	431	P4G	C4-C3-O2-C2

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Mol	Chain	Res	Type	Atoms
3	A	430	P4G	C3-C4-O3-C5
2	A	420	EDO	O1-C1-C2-O2
5	B	421	PEG	C1-C2-O2-C3
5	B	422	PEG	C1-C2-O2-C3
6	A	442	P6G	C2-C3-O4-C5
3	B	417	P4G	O3-C5-C6-O4
3	B	419	P4G	O3-C5-C6-O4
3	B	419	P4G	C3-C4-O3-C5
3	B	417	P4G	C8-C7-O4-C6
6	A	442	P6G	C11-C12-O13-C14
3	A	429	P4G	C5-C6-O4-C7
3	A	430	P4G	C8-C7-O4-C6
5	A	439	PEG	O1-C1-C2-O2
3	A	430	P4G	C4-C3-O2-C2
3	B	417	P4G	C6-C5-O3-C4
4	B	420	G9Z	OAP-CAH-CAI-OAQ
2	A	418	EDO	O1-C1-C2-O2
3	B	418	P4G	O3-C5-C6-O4
3	B	417	P4G	O2-C3-C4-O3
5	B	423	PEG	C4-C3-O2-C2
6	A	442	P6G	C9-C8-O7-C6
2	A	406	EDO	O1-C1-C2-O2
2	B	406	EDO	O1-C1-C2-O2
2	B	416	EDO	O1-C1-C2-O2
3	B	418	P4G	C5-C6-O4-C7
5	A	435	PEG	C1-C2-O2-C3
6	A	442	P6G	C15-C14-O13-C12
2	A	428	EDO	O1-C1-C2-O2
2	B	404	EDO	O1-C1-C2-O2
4	A	432	G9Z	OAP-CAH-CAI-OAQ
3	B	419	P4G	C1-C2-O2-C3
3	A	431	P4G	C8-C7-O4-C6
5	A	435	PEG	O1-C1-C2-O2
5	B	423	PEG	O2-C3-C4-O4
3	B	417	P4G	C5-C6-O4-C7

There are no ring outliers.

6 monomers are involved in 6 short contacts:

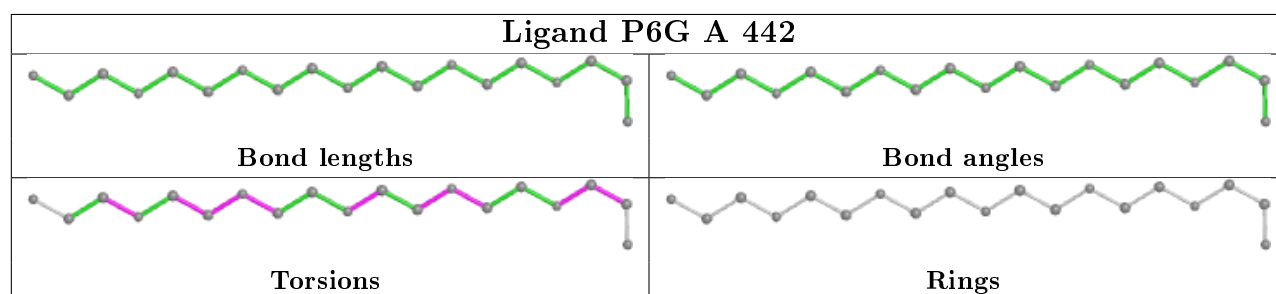
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	442	P6G	1	0
2	A	426	EDO	1	0

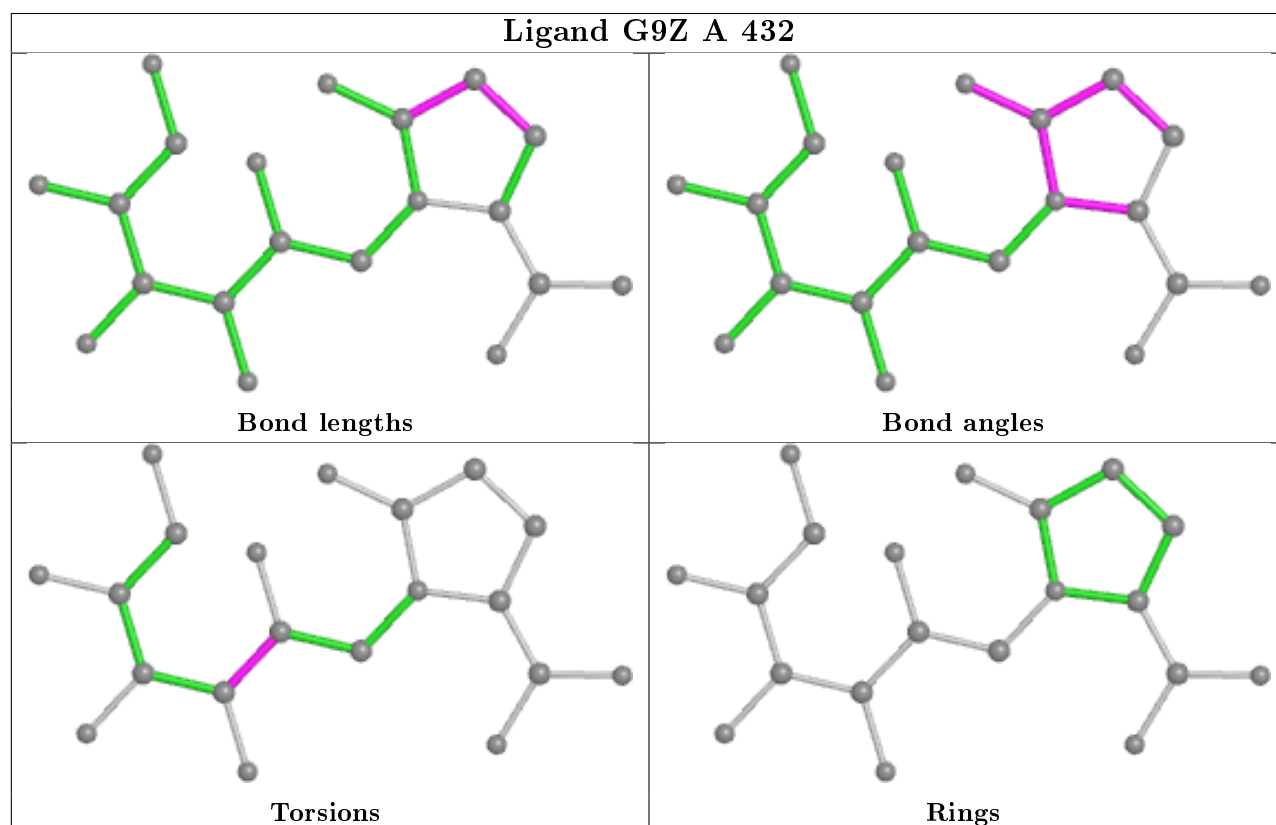
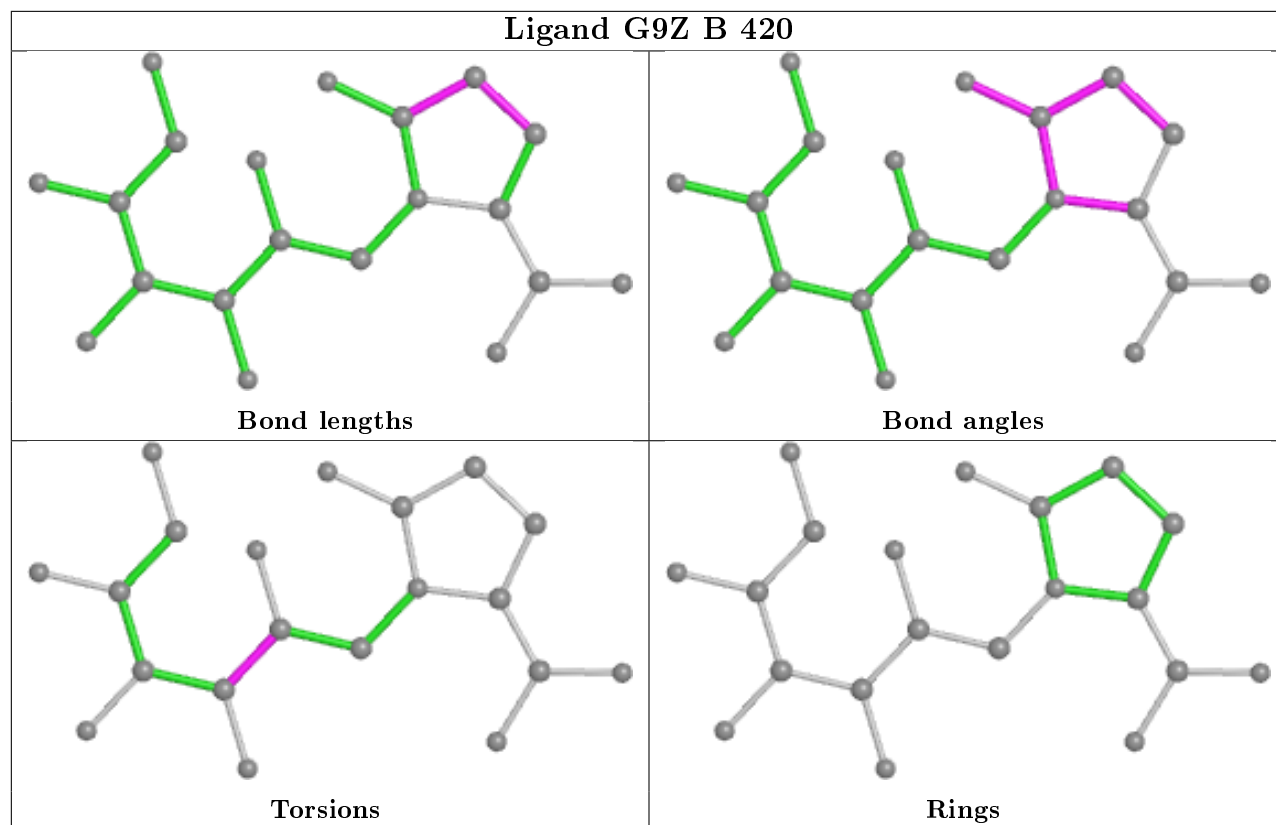
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Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	435	PEG	1	0
5	A	437	PEG	1	0
2	B	402	EDO	3	0
3	A	431	P4G	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	316/341 (92%)	-0.09	1 (0%) 94 94	23, 32, 47, 84	3 (0%)
1	B	316/341 (92%)	-0.07	6 (1%) 66 69	25, 32, 50, 102	3 (0%)
All	All	632/682 (92%)	-0.08	7 (1%) 80 82	23, 32, 49, 102	6 (0%)

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	342	GLN	4.9
1	B	343	HIS	4.5
1	B	305	LYS	3.0
1	B	341	MET	3.0
1	B	304	ALA	2.9
1	A	341	MET	2.8
1	B	340	ILE	2.4

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q< 0.9’ lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
5	PEG	A	435	7/7	0.46	0.28	47,55,61,61	0
3	P4G	A	430	11/11	0.57	0.17	47,53,60,60	0
6	P6G	A	442	19/19	0.57	0.22	58,62,64,64	0
2	EDO	B	416	4/4	0.59	0.20	63,65,66,67	0
2	EDO	B	409	4/4	0.59	0.15	53,55,56,58	0
3	P4G	A	431	11/11	0.59	0.16	44,57,62,62	0
2	EDO	B	414	4/4	0.63	0.24	64,64,64,65	0
2	EDO	B	405	4/4	0.64	0.14	50,52,54,54	0
2	EDO	A	403	4/4	0.67	0.20	71,72,73,74	0
5	PEG	A	436	7/7	0.68	0.26	71,72,74,75	0
2	EDO	A	407	4/4	0.70	0.29	51,54,55,56	0
5	PEG	A	437	7/7	0.71	0.12	43,46,49,49	0
2	EDO	A	415	4/4	0.72	0.21	74,74,74,74	0
2	EDO	A	428	4/4	0.73	0.16	45,45,48,50	0
5	PEG	B	421	7/7	0.73	0.16	62,63,64,64	0
2	EDO	B	415	4/4	0.73	0.19	66,66,66,67	0
5	PEG	A	439	7/7	0.73	0.17	54,55,56,56	0
2	EDO	A	416	4/4	0.74	0.18	64,65,66,66	0
2	EDO	A	426	4/4	0.75	0.22	64,64,64,65	0
2	EDO	A	414	4/4	0.76	0.18	58,59,59,59	0
2	EDO	A	412	4/4	0.77	0.12	47,48,49,50	0
2	EDO	A	405	4/4	0.77	0.15	40,40,42,42	0
2	EDO	A	427	4/4	0.77	0.16	57,57,58,60	0
3	P4G	B	418	11/11	0.77	0.27	74,75,78,78	0
2	EDO	B	413	4/4	0.79	0.14	56,57,57,57	0
2	EDO	B	406	4/4	0.79	0.09	44,44,47,47	0
5	PEG	B	422	7/7	0.80	0.17	59,59,62,62	0
5	PEG	A	441	7/7	0.80	0.19	50,52,54,54	0
2	EDO	B	412	4/4	0.80	0.14	59,60,61,61	0
2	EDO	A	413	4/4	0.80	0.11	49,51,51,52	0
2	EDO	A	418	4/4	0.80	0.16	46,47,48,49	0
3	P4G	B	419	11/11	0.80	0.18	58,59,61,61	0
2	EDO	A	409	4/4	0.81	0.15	44,46,49,52	0
2	EDO	A	401	4/4	0.81	0.28	48,52,55,56	0
5	PEG	A	433	7/7	0.81	0.20	70,70,70,71	0
2	EDO	A	419	4/4	0.82	0.16	49,52,53,54	0
2	EDO	A	406	4/4	0.82	0.12	43,43,44,45	0
2	EDO	A	417	4/4	0.83	0.16	47,47,49,49	0
2	EDO	B	401	4/4	0.83	0.14	45,46,46,46	0
2	EDO	A	410	4/4	0.83	0.14	65,67,67,67	0
2	EDO	B	404	4/4	0.85	0.12	40,40,41,41	0
3	P4G	A	429	11/11	0.85	0.20	54,56,59,60	0
2	EDO	A	422	4/4	0.85	0.14	53,56,58,60	0

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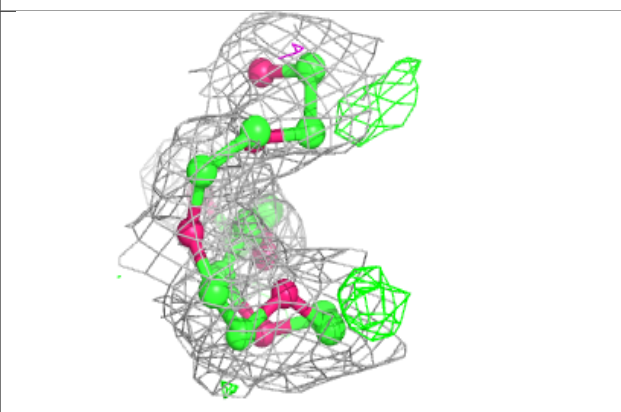
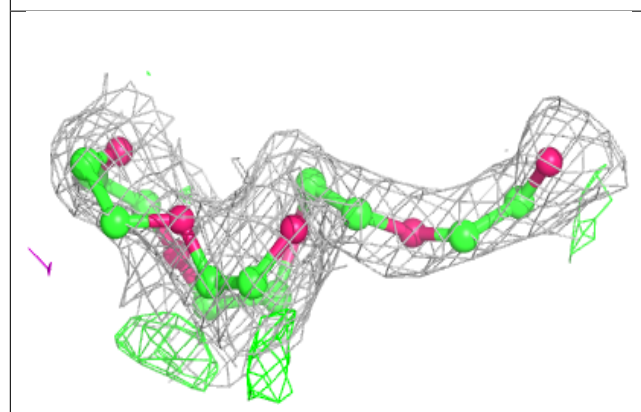
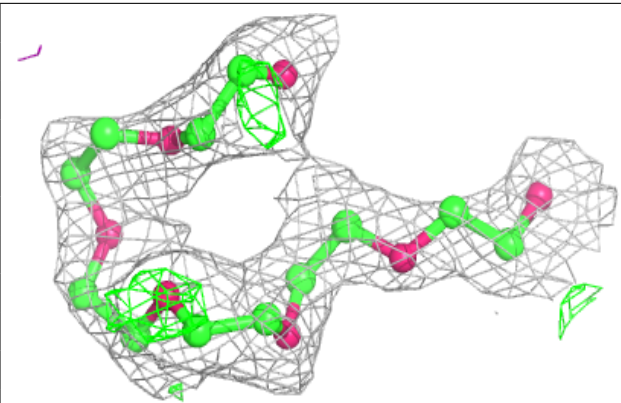
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	EDO	A	423	4/4	0.85	0.16	52,52,53,53	0
2	EDO	B	408	4/4	0.85	0.11	45,46,47,49	0
2	EDO	A	425	4/4	0.85	0.12	34,38,42,43	0
5	PEG	A	434	7/7	0.86	0.10	42,44,47,49	0
5	PEG	A	438	7/7	0.86	0.16	53,54,55,55	0
5	PEG	B	423	7/7	0.86	0.18	46,49,50,51	0
5	PEG	A	440	7/7	0.86	0.11	39,42,43,44	0
2	EDO	B	410	4/4	0.86	0.18	51,51,51,52	0
2	EDO	A	420	4/4	0.87	0.15	44,45,45,45	0
3	P4G	B	417	11/11	0.87	0.20	47,51,64,64	0
2	EDO	B	403	4/4	0.88	0.15	54,54,54,56	0
5	PEG	B	424	7/7	0.88	0.12	43,44,45,45	0
2	EDO	A	424	4/4	0.89	0.10	53,54,54,54	0
2	EDO	A	411	4/4	0.90	0.10	49,50,50,51	0
2	EDO	A	404	4/4	0.91	0.11	43,43,44,46	0
2	EDO	A	421	4/4	0.91	0.11	42,42,42,43	0
2	EDO	B	402	4/4	0.91	0.20	35,36,38,39	0
4	G9Z	B	420	20/20	0.92	0.10	23,29,32,33	0
2	EDO	B	407	4/4	0.94	0.16	53,53,54,55	0
2	EDO	A	408	4/4	0.94	0.13	49,50,50,51	0
2	EDO	B	411	4/4	0.95	0.07	65,65,65,65	0
2	EDO	A	402	4/4	0.96	0.06	36,37,40,43	0
4	G9Z	A	432	20/20	0.97	0.08	26,28,31,34	0

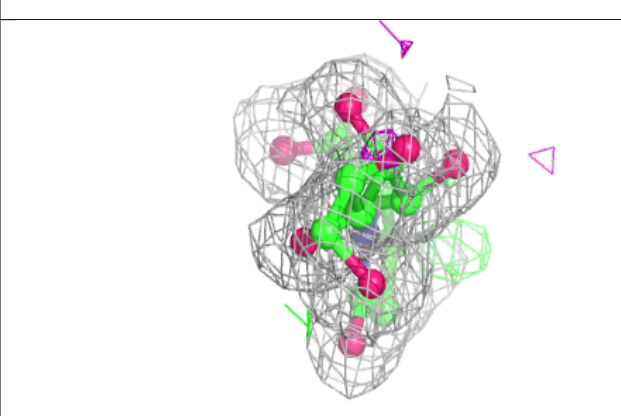
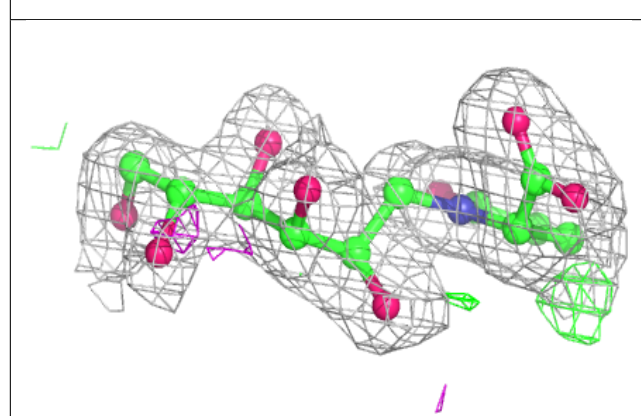
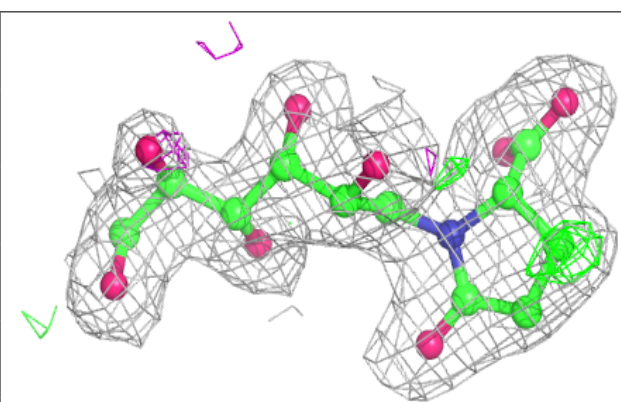
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

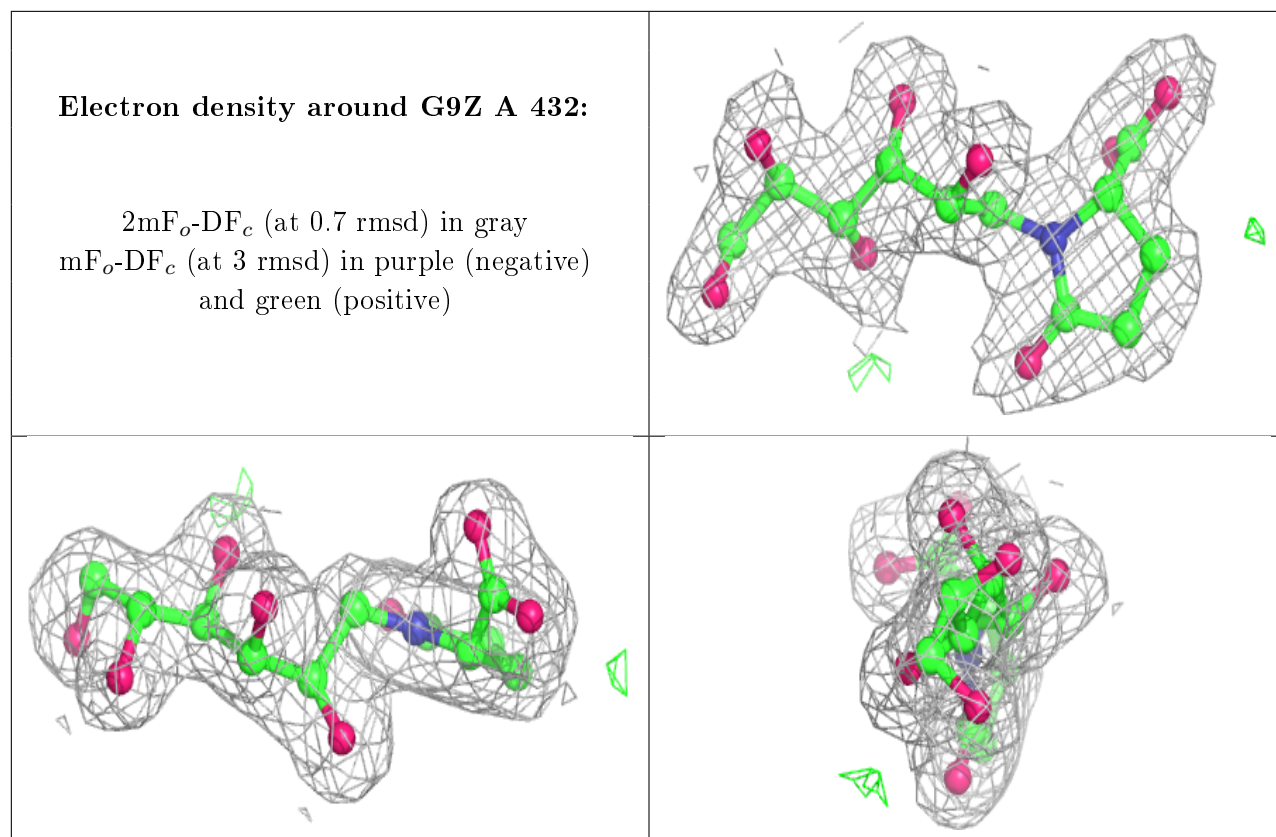
Electron density around P6G A 442:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

**Electron density around G9Z B 420:**

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





6.5 Other polymers [i](#)

There are no such residues in this entry.