



# wwPDB X-ray Structure Validation Summary Report ⓘ

Aug 20, 2020 – 07:24 PM BST

PDB ID : 4DZ4  
Title : X-ray crystal structure of a hypothetical Agmatinase from Burkholderia thailandensis  
Authors : Seattle Structural Genomics Center for Infectious Disease (SSGCID)  
Deposited on : 2012-02-29  
Resolution : 1.70 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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.

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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	:	2.13.1
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)	:	2.13.1

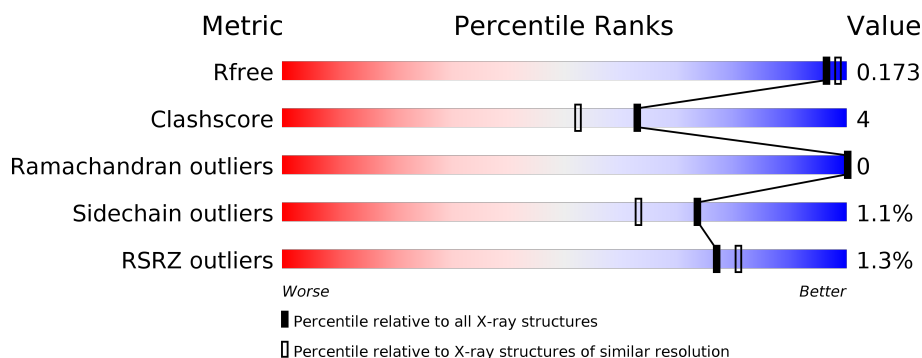
# 1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.70 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	4298 (1.70-1.70)
Clashscore	141614	4695 (1.70-1.70)
Ramachandran outliers	138981	4610 (1.70-1.70)
Sidechain outliers	138945	4610 (1.70-1.70)
RSRZ outliers	127900	4222 (1.70-1.70)

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  $\geq 3$ , 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	324	<div> <div>2%</div> <div>89%</div> <div>7%</div> <div>••</div> </div>
1	B	324	<div> <div>%</div> <div>93%</div> <div>7%</div> <div></div> </div>
1	C	324	<div> <div>2%</div> <div>93%</div> <div></div> <div>••</div> </div>
1	D	324	<div> <div>%</div> <div>92%</div> <div>6%</div> <div>•</div> </div>
1	E	324	<div> <div>%</div> <div>92%</div> <div>5%</div> <div>•</div> </div>
1	F	324	<div> <div>%</div> <div>90%</div> <div>6%</div> <div>••</div> </div>

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	EDO	A	403	-	-	X	-
3	EDO	B	408	-	-	X	-
3	EDO	B	410	-	-	X	-
3	EDO	C	405	-	-	X	-
3	EDO	D	407	-	-	X	-
3	EDO	D	408	-	-	X	-
3	EDO	E	407	-	-	X	-
3	EDO	F	407	-	-	X	-
3	EDO	F	408	-	-	X	-

## 2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 16345 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 Agmatinase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	313	Total	C	N	O	S	0	2	0
			2372	1510	409	445	8			
1	B	323	Total	C	N	O	S	0	0	0
			2423	1539	416	459	9			
1	C	315	Total	C	N	O	S	0	1	0
			2377	1513	412	444	8			
1	D	317	Total	C	N	O	S	0	4	0
			2405	1531	418	448	8			
1	E	317	Total	C	N	O	S	0	1	0
			2395	1523	415	449	8			
1	F	315	Total	C	N	O	S	0	1	0
			2375	1511	409	447	8			

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-3	GLY	-	EXPRESSION TAG	UNP Q2T3W4
A	-2	PRO	-	EXPRESSION TAG	UNP Q2T3W4
A	-1	GLY	-	EXPRESSION TAG	UNP Q2T3W4
A	0	SER	-	EXPRESSION TAG	UNP Q2T3W4
B	-3	GLY	-	EXPRESSION TAG	UNP Q2T3W4
B	-2	PRO	-	EXPRESSION TAG	UNP Q2T3W4
B	-1	GLY	-	EXPRESSION TAG	UNP Q2T3W4
B	0	SER	-	EXPRESSION TAG	UNP Q2T3W4
C	-3	GLY	-	EXPRESSION TAG	UNP Q2T3W4
C	-2	PRO	-	EXPRESSION TAG	UNP Q2T3W4
C	-1	GLY	-	EXPRESSION TAG	UNP Q2T3W4
C	0	SER	-	EXPRESSION TAG	UNP Q2T3W4
D	-3	GLY	-	EXPRESSION TAG	UNP Q2T3W4
D	-2	PRO	-	EXPRESSION TAG	UNP Q2T3W4
D	-1	GLY	-	EXPRESSION TAG	UNP Q2T3W4
D	0	SER	-	EXPRESSION TAG	UNP Q2T3W4
E	-3	GLY	-	EXPRESSION TAG	UNP Q2T3W4

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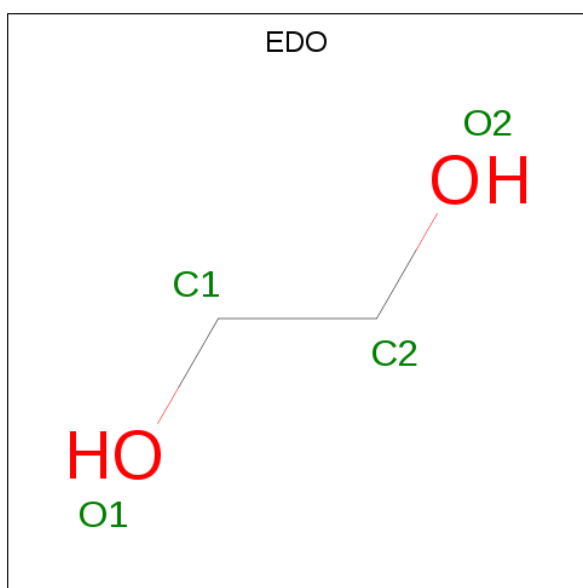
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Chain	Residue	Modelled	Actual	Comment	Reference
E	-2	PRO	-	EXPRESSION TAG	UNP Q2T3W4
E	-1	GLY	-	EXPRESSION TAG	UNP Q2T3W4
E	0	SER	-	EXPRESSION TAG	UNP Q2T3W4
F	-3	GLY	-	EXPRESSION TAG	UNP Q2T3W4
F	-2	PRO	-	EXPRESSION TAG	UNP Q2T3W4
F	-1	GLY	-	EXPRESSION TAG	UNP Q2T3W4
F	0	SER	-	EXPRESSION TAG	UNP Q2T3W4

- Molecule 2 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	D	2	Total Mn 2 2	0	0
2	E	2	Total Mn 2 2	0	0
2	B	2	Total Mn 2 2	0	0
2	C	2	Total Mn 2 2	0	0
2	A	2	Total Mn 2 2	0	0
2	F	2	Total Mn 2 2	0	0

- Molecule 3 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>).



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

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	D	1	Total 4	C 2	O 2	0	0
3	D	1	Total 4	C 2	O 2	0	0
3	D	1	Total 4	C 2	O 2	0	0
3	D	1	Total 4	C 2	O 2	0	0
3	D	1	Total 4	C 2	O 2	0	0
3	D	1	Total 4	C 2	O 2	0	0
3	D	1	Total 4	C 2	O 2	0	0
3	D	1	Total 4	C 2	O 2	0	0
3	E	1	Total 4	C 2	O 2	0	0
3	E	1	Total 4	C 2	O 2	0	0
3	E	1	Total 4	C 2	O 2	0	0
3	E	1	Total 4	C 2	O 2	0	0
3	E	1	Total 4	C 2	O 2	0	0
3	E	1	Total 4	C 2	O 2	0	0
3	E	1	Total 4	C 2	O 2	0	0
3	E	1	Total 4	C 2	O 2	0	0
3	E	1	Total 4	C 2	O 2	0	0
3	F	1	Total 4	C 2	O 2	0	0
3	F	1	Total 4	C 2	O 2	0	0
3	F	1	Total 4	C 2	O 2	0	0
3	F	1	Total 4	C 2	O 2	0	0

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

- Molecule 4 is UNKNOWN (three-letter code: UNK) (formula: C<sub>4</sub>H<sub>9</sub>NO<sub>2</sub>).

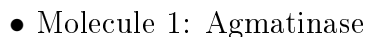
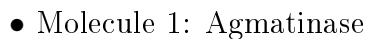
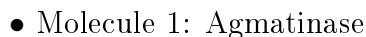
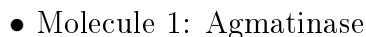
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	D	3	Total	O	0	0
			3	3		
4	E	2	Total	O	0	0
			2	2		
4	B	2	Total	O	0	0
			2	2		
4	C	2	Total	O	0	0
			2	2		
4	A	3	Total	O	0	0
			3	3		
4	F	2	Total	O	0	0
			2	2		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	289	Total	O	0	0
			289	289		
5	B	310	Total	O	0	0
			310	310		
5	C	259	Total	O	0	0
			259	259		
5	D	321	Total	O	0	0
			321	321		
5	E	328	Total	O	0	0
			328	328		
5	F	277	Total	O	0	0
			277	277		

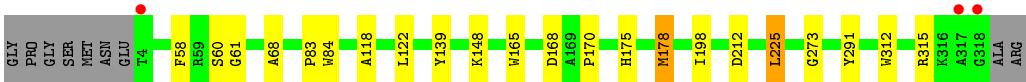
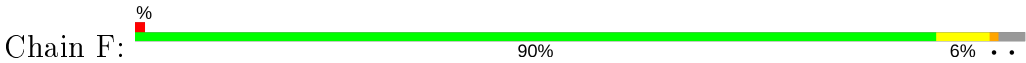
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- Molecule 1: Agmatinase





● Molecule 1: Agmatinase



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	99.08Å 101.25Å 102.99Å 90.00° 97.09° 90.00°	Depositor
Resolution (Å)	50.00 – 1.70 47.82 – 1.70	Depositor EDS
% Data completeness (in resolution range)	99.4 (50.00-1.70) 99.4 (47.82-1.70)	Depositor EDS
$R_{merge}$	0.06	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.66 (at 1.70Å)	Xtriage
Refinement program	REFMAC 5.6.0117	Depositor
R, $R_{free}$	0.152 , 0.175 0.151 , 0.173	Depositor DCC
$R_{free}$ test set	11047 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	14.9	Xtriage
Anisotropy	0.316	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.37 , 49.2	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	0.007 for l,-k,h	Xtriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	16345	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	17.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.97% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>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: MN, EDO

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	0.66	3/2437 (0.1%)	0.72	2/3331 (0.1%)
1	B	0.69	6/2485 (0.2%)	0.72	0/3398
1	C	0.65	1/2441 (0.0%)	0.69	0/3341
1	D	0.71	4/2476 (0.2%)	0.73	1/3382 (0.0%)
1	E	0.70	3/2459 (0.1%)	0.75	2/3362 (0.1%)
1	F	0.69	3/2439 (0.1%)	0.72	2/3338 (0.1%)
All	All	0.68	20/14737 (0.1%)	0.72	7/20152 (0.0%)

The worst 5 of 20 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	101	TRP	CD2-CE2	5.83	1.48	1.41
1	B	312	TRP	CD2-CE2	5.73	1.48	1.41
1	B	165	TRP	CD2-CE2	5.57	1.48	1.41
1	D	215	TRP	CD2-CE2	5.56	1.48	1.41
1	F	84	TRP	CD2-CE2	5.50	1.48	1.41

The worst 5 of 7 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	70	ARG	NE-CZ-NH1	7.36	123.98	120.30
1	D	34	ARG	NE-CZ-NH2	-7.16	116.72	120.30
1	E	70	ARG	NE-CZ-NH2	-5.67	117.47	120.30
1	F	225	LEU	CB-CG-CD2	-5.60	101.48	111.00
1	F	225	LEU	CA-CB-CG	5.31	127.52	115.30

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	2372	0	2299	22	0
1	B	2423	0	2334	18	0
1	C	2377	0	2299	12	0
1	D	2405	0	2338	24	0
1	E	2395	0	2319	12	0
1	F	2375	0	2293	20	0
2	A	2	0	0	0	0
2	B	2	0	0	0	0
2	C	2	0	0	0	0
2	D	2	0	0	0	0
2	E	2	0	0	0	0
2	F	2	0	0	0	0
3	A	16	0	24	12	0
3	B	40	0	60	19	0
3	C	32	0	48	12	0
3	D	32	0	48	14	0
3	E	36	0	54	7	0
3	F	32	0	48	16	0
4	A	3	0	0	0	0
4	B	2	0	0	1	0
4	C	2	0	0	1	0
4	D	3	0	0	0	0
4	E	2	0	0	0	0
4	F	2	0	0	0	0
5	A	289	0	0	0	0
5	B	310	0	0	8	0
5	C	259	0	0	4	0
5	D	321	0	0	3	0
5	E	328	0	0	2	0
5	F	277	0	0	3	0
All	All	16345	0	14164	124	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 4.

The worst 5 of 124 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)
3:B:410:EDO:H12	5:B:545:HOH:O	1.42	1.16
3:B:408:EDO:H12	1:D:61:GLY:HA2	1.26	1.15
1:F:60:SER:N	3:F:408:EDO:H22	1.62	1.12
1:F:60:SER:H	3:F:408:EDO:H22	0.97	1.06
1:B:78:GLU:HB2	3:B:410:EDO:H22	1.42	1.02

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	311/324 (96%)	306 (98%)	5 (2%)	0	100	100
1	B	321/324 (99%)	314 (98%)	7 (2%)	0	100	100
1	C	314/324 (97%)	307 (98%)	7 (2%)	0	100	100
1	D	317/324 (98%)	311 (98%)	6 (2%)	0	100	100
1	E	316/324 (98%)	308 (98%)	8 (2%)	0	100	100
1	F	314/324 (97%)	307 (98%)	7 (2%)	0	100	100
All	All	1893/1944 (97%)	1853 (98%)	40 (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	242/252 (96%)	239 (99%)	3 (1%)	71	59
1	B	246/252 (98%)	243 (99%)	3 (1%)	71	59
1	C	241/252 (96%)	237 (98%)	4 (2%)	60	46
1	D	244/252 (97%)	242 (99%)	2 (1%)	81	74
1	E	243/252 (96%)	241 (99%)	2 (1%)	81	74
1	F	242/252 (96%)	240 (99%)	2 (1%)	81	74
All	All	1458/1512 (96%)	1442 (99%)	16 (1%)	73	63

5 of 16 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	135	HIS
1	C	175	HIS
1	E	175	HIS
1	C	36	TYR
1	E	178	MET

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	147	GLN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

## 5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

## 5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

## 5.6 Ligand geometry

Of 73 ligands modelled in this entry, 14 are unknown and 12 are monoatomic - leaving 47 for Mogul analysis.

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	$\# Z  > 2$
3	EDO	D	408	-	3,3,3	0.58	0	2,2,2	0.42	0
3	EDO	B	410	-	3,3,3	0.42	0	2,2,2	0.19	0
3	EDO	E	411	-	3,3,3	0.37	0	2,2,2	0.62	0
3	EDO	B	406	-	3,3,3	0.36	0	2,2,2	0.72	0
3	EDO	E	410	-	3,3,3	0.40	0	2,2,2	0.55	0
3	EDO	B	411	-	3,3,3	0.47	0	2,2,2	0.73	0
3	EDO	B	404	-	3,3,3	0.45	0	2,2,2	0.65	0
3	EDO	F	405	-	3,3,3	0.44	0	2,2,2	0.51	0
3	EDO	C	405	-	3,3,3	0.30	0	2,2,2	0.91	0
3	EDO	B	409	-	3,3,3	0.55	0	2,2,2	0.35	0
3	EDO	B	407	-	3,3,3	0.60	0	2,2,2	0.12	0
3	EDO	D	410	-	3,3,3	0.70	0	2,2,2	0.25	0
3	EDO	A	405	-	3,3,3	0.62	0	2,2,2	0.25	0
3	EDO	F	407	-	3,3,3	0.55	0	2,2,2	0.53	0
3	EDO	D	407	-	3,3,3	0.52	0	2,2,2	1.21	0
3	EDO	E	405	-	3,3,3	0.63	0	2,2,2	0.42	0
3	EDO	D	406	-	3,3,3	0.46	0	2,2,2	0.34	0
3	EDO	F	406	-	3,3,3	0.48	0	2,2,2	0.28	0
3	EDO	B	405	-	3,3,3	0.46	0	2,2,2	0.63	0
3	EDO	C	408	-	3,3,3	0.62	0	2,2,2	0.09	0
3	EDO	C	410	-	3,3,3	0.48	0	2,2,2	0.41	0
3	EDO	D	409	-	3,3,3	0.49	0	2,2,2	0.55	0
3	EDO	F	409	-	3,3,3	0.53	0	2,2,2	0.22	0
3	EDO	E	409	-	3,3,3	0.41	0	2,2,2	0.56	0
3	EDO	E	404	-	3,3,3	0.57	0	2,2,2	0.24	0
3	EDO	D	404	-	3,3,3	0.38	0	2,2,2	0.60	0
3	EDO	F	410	-	3,3,3	0.51	0	2,2,2	0.29	0
3	EDO	B	403	-	3,3,3	0.76	0	2,2,2	0.22	0
3	EDO	C	406	-	3,3,3	0.42	0	2,2,2	0.44	0
3	EDO	E	403	-	3,3,3	0.50	0	2,2,2	0.46	0
3	EDO	E	406	-	3,3,3	0.44	0	2,2,2	0.60	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	EDO	E	408	-	3,3,3	0.58	0	2,2,2	0.45	0
3	EDO	E	407	-	3,3,3	0.32	0	2,2,2	0.76	0
3	EDO	C	407	-	3,3,3	0.52	0	2,2,2	0.45	0
3	EDO	A	404	-	3,3,3	0.41	0	2,2,2	0.50	0
3	EDO	F	404	-	3,3,3	0.49	0	2,2,2	0.46	0
3	EDO	C	404	-	3,3,3	0.67	0	2,2,2	0.10	0
3	EDO	B	408	-	3,3,3	0.55	0	2,2,2	1.26	0
3	EDO	D	403	-	3,3,3	0.48	0	2,2,2	0.45	0
3	EDO	A	406	-	3,3,3	0.56	0	2,2,2	0.31	0
3	EDO	A	403	-	3,3,3	0.30	0	2,2,2	1.06	0
3	EDO	D	405	-	3,3,3	0.47	0	2,2,2	0.30	0
3	EDO	B	412	-	3,3,3	0.60	0	2,2,2	0.44	0
3	EDO	C	403	-	3,3,3	0.47	0	2,2,2	0.44	0
3	EDO	C	409	-	3,3,3	0.56	0	2,2,2	0.22	0
3	EDO	F	408	-	3,3,3	0.34	0	2,2,2	0.69	0
3	EDO	F	403	-	3,3,3	0.59	0	2,2,2	0.12	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
3	EDO	D	408	-	-	1/1/1/1	-
3	EDO	B	410	-	-	1/1/1/1	-
3	EDO	E	411	-	-	1/1/1/1	-
3	EDO	B	406	-	-	0/1/1/1	-
3	EDO	E	410	-	-	1/1/1/1	-
3	EDO	B	411	-	-	0/1/1/1	-
3	EDO	B	404	-	-	0/1/1/1	-
3	EDO	F	405	-	-	1/1/1/1	-
3	EDO	C	405	-	-	1/1/1/1	-
3	EDO	B	409	-	-	0/1/1/1	-
3	EDO	B	407	-	-	0/1/1/1	-
3	EDO	D	410	-	-	0/1/1/1	-
3	EDO	A	405	-	-	1/1/1/1	-
3	EDO	F	407	-	-	1/1/1/1	-
3	EDO	D	407	-	-	1/1/1/1	-
3	EDO	E	405	-	-	1/1/1/1	-
3	EDO	D	406	-	-	0/1/1/1	-
3	EDO	F	406	-	-	0/1/1/1	-
3	EDO	B	405	-	-	0/1/1/1	-
3	EDO	C	408	-	-	0/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	EDO	C	410	-	-	0/1/1/1	-
3	EDO	D	409	-	-	0/1/1/1	-
3	EDO	F	409	-	-	1/1/1/1	-
3	EDO	E	409	-	-	1/1/1/1	-
3	EDO	E	404	-	-	0/1/1/1	-
3	EDO	D	404	-	-	1/1/1/1	-
3	EDO	F	410	-	-	0/1/1/1	-
3	EDO	B	403	-	-	1/1/1/1	-
3	EDO	C	406	-	-	1/1/1/1	-
3	EDO	E	403	-	-	0/1/1/1	-
3	EDO	E	406	-	-	1/1/1/1	-
3	EDO	E	408	-	-	1/1/1/1	-
3	EDO	E	407	-	-	1/1/1/1	-
3	EDO	C	407	-	-	1/1/1/1	-
3	EDO	A	404	-	-	1/1/1/1	-
3	EDO	F	404	-	-	0/1/1/1	-
3	EDO	C	404	-	-	0/1/1/1	-
3	EDO	B	408	-	-	1/1/1/1	-
3	EDO	D	403	-	-	0/1/1/1	-
3	EDO	A	406	-	-	0/1/1/1	-
3	EDO	A	403	-	-	1/1/1/1	-
3	EDO	D	405	-	-	0/1/1/1	-
3	EDO	B	412	-	-	1/1/1/1	-
3	EDO	C	403	-	-	0/1/1/1	-
3	EDO	C	409	-	-	0/1/1/1	-
3	EDO	F	408	-	-	1/1/1/1	-
3	EDO	F	403	-	-	1/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 25 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	F	409	EDO	O1-C1-C2-O2
3	D	408	EDO	O1-C1-C2-O2
3	B	410	EDO	O1-C1-C2-O2
3	A	405	EDO	O1-C1-C2-O2
3	F	407	EDO	O1-C1-C2-O2

There are no ring outliers.

21 monomers are involved in 80 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	408	EDO	6	0
3	B	410	EDO	7	0
3	B	411	EDO	1	0
3	F	405	EDO	1	0
3	C	405	EDO	8	0
3	B	409	EDO	1	0
3	B	407	EDO	1	0
3	A	405	EDO	2	0
3	F	407	EDO	6	0
3	D	407	EDO	6	0
3	C	410	EDO	1	0
3	D	409	EDO	1	0
3	E	408	EDO	3	0
3	E	407	EDO	4	0
3	C	407	EDO	3	0
3	A	404	EDO	2	0
3	B	408	EDO	6	0
3	A	403	EDO	8	0
3	D	405	EDO	1	0
3	B	412	EDO	3	0
3	F	408	EDO	9	0

## 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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	313/324 (96%)	-0.23	5 (1%) 72 76	8, 15, 27, 59	0
1	B	323/324 (99%)	-0.35	2 (0%) 89 91	8, 14, 27, 49	0
1	C	315/324 (97%)	-0.09	6 (1%) 66 70	9, 18, 32, 71	0
1	D	317/324 (97%)	-0.28	4 (1%) 77 81	7, 13, 25, 54	0
1	E	317/324 (97%)	-0.35	4 (1%) 77 81	7, 13, 23, 45	0
1	F	315/324 (97%)	-0.33	3 (0%) 82 85	8, 15, 27, 37	0
All	All	1900/1944 (97%)	-0.27	24 (1%) 77 81	7, 14, 28, 71	0

The worst 5 of 24 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	319	ALA	5.9
1	A	173	LEU	3.6
1	A	318	GLY	3.5
1	F	4	THR	3.4
1	D	3	GLU	3.2

### 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 monosaccharides in this entry.

## 6.4 Ligands ⓘ

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, 95<sup>th</sup> 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(Å <sup>2</sup> )	Q<0.9
4	UNK	F	412	1/-	0.79	0.24	33,33,33,33	0
3	EDO	A	405	4/4	0.80	0.24	26,27,34,36	0
3	EDO	F	406	4/4	0.80	0.20	38,40,41,41	0
3	EDO	D	410	4/4	0.80	0.20	29,29,30,30	0
3	EDO	B	410	4/4	0.81	0.33	26,27,29,36	0
3	EDO	F	404	4/4	0.81	0.17	41,42,44,47	0
3	EDO	C	404	4/4	0.81	0.14	30,33,33,34	0
4	UNK	B	414	1/-	0.81	0.23	31,31,31,31	0
3	EDO	F	405	4/4	0.81	0.20	35,38,38,43	0
3	EDO	E	406	4/4	0.83	0.14	36,37,39,39	0
3	EDO	C	407	4/4	0.83	0.23	31,34,35,37	0
4	UNK	C	411	1/-	0.84	0.20	32,32,32,32	0
3	EDO	A	406	4/4	0.84	0.20	25,27,30,35	0
4	UNK	D	412	1/-	0.84	0.19	32,32,32,32	0
3	EDO	B	404	4/4	0.85	0.14	41,41,42,42	0
3	EDO	B	411	4/4	0.85	0.31	32,32,36,40	0
3	EDO	D	408	4/4	0.86	0.19	25,25,30,31	0
3	EDO	F	409	4/4	0.86	0.21	31,32,33,34	0
4	UNK	D	411	1/-	0.87	0.25	37,37,37,37	0
3	EDO	C	410	4/4	0.87	0.22	33,33,33,34	0
3	EDO	F	407	4/4	0.88	0.20	25,27,30,33	0
4	UNK	A	409	1/-	0.88	0.17	39,39,39,39	0
3	EDO	D	404	4/4	0.88	0.36	35,36,37,37	0
3	EDO	E	410	4/4	0.88	0.14	45,45,46,46	0
3	EDO	B	403	4/4	0.89	0.11	23,25,25,26	0
3	EDO	E	405	4/4	0.89	0.20	26,27,28,29	0
3	EDO	B	405	4/4	0.89	0.16	26,28,30,34	0
3	EDO	D	405	4/4	0.89	0.22	26,29,33,37	0
4	UNK	E	412	1/-	0.90	0.23	35,35,35,35	0
4	UNK	F	411	1/-	0.90	0.14	23,23,23,23	0
3	EDO	E	404	4/4	0.90	0.19	21,23,26,28	0
3	EDO	B	406	4/4	0.90	0.11	36,37,39,42	0
3	EDO	B	412	4/4	0.90	0.15	29,30,31,35	0
3	EDO	C	403	4/4	0.90	0.19	28,29,32,35	0
4	UNK	D	413	1/-	0.91	0.14	35,35,35,35	0
4	UNK	A	408	1/-	0.91	0.23	40,40,40,40	0
3	EDO	E	411	4/4	0.91	0.11	30,33,34,35	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	EDO	F	408	4/4	0.91	0.26	21,21,23,27	0
3	EDO	C	409	4/4	0.92	0.20	23,27,27,32	0
3	EDO	E	408	4/4	0.93	0.15	21,23,27,29	0
3	EDO	B	409	4/4	0.93	0.16	17,24,25,29	0
3	EDO	D	406	4/4	0.93	0.24	34,35,35,36	0
3	EDO	B	408	4/4	0.93	0.28	19,20,21,21	0
4	UNK	B	413	1/-	0.94	0.10	23,23,23,23	0
3	EDO	A	404	4/4	0.94	0.12	18,19,20,21	0
3	EDO	A	403	4/4	0.94	0.18	21,22,24,25	0
3	EDO	B	407	4/4	0.94	0.11	20,21,22,23	0
3	EDO	F	410	4/4	0.94	0.14	20,23,23,24	0
3	EDO	C	408	4/4	0.94	0.10	22,23,23,24	0
3	EDO	E	407	4/4	0.94	0.29	18,19,21,23	0
4	UNK	C	412	1/-	0.94	0.15	30,30,30,30	0
3	EDO	E	403	4/4	0.95	0.07	23,24,26,26	0
3	EDO	D	407	4/4	0.95	0.20	18,19,20,20	0
3	EDO	C	405	4/4	0.95	0.21	21,21,23,23	0
3	EDO	C	406	4/4	0.95	0.19	36,38,38,41	0
3	EDO	D	409	4/4	0.96	0.11	18,19,19,20	0
4	UNK	E	413	1/-	0.96	0.09	33,33,33,33	0
4	UNK	A	407	1/-	0.96	0.08	30,30,30,30	0
3	EDO	E	409	4/4	0.96	0.10	17,18,18,19	0
3	EDO	F	403	4/4	0.96	0.12	24,25,26,26	0
3	EDO	D	403	4/4	0.98	0.04	24,26,26,27	0
2	MN	D	402	1/1	0.99	0.04	16,16,16,16	1
2	MN	A	402	1/1	0.99	0.03	21,21,21,21	1
2	MN	F	402	1/1	0.99	0.04	14,14,14,14	1
2	MN	C	402	1/1	0.99	0.03	22,22,22,22	1
2	MN	A	401	1/1	0.99	0.04	15,15,15,15	0
2	MN	E	401	1/1	0.99	0.03	16,16,16,16	1
2	MN	B	401	1/1	0.99	0.03	14,14,14,14	1
2	MN	B	402	1/1	1.00	0.03	13,13,13,13	0
2	MN	D	401	1/1	1.00	0.02	13,13,13,13	0
2	MN	E	402	1/1	1.00	0.03	14,14,14,14	0
2	MN	C	401	1/1	1.00	0.03	17,17,17,17	0
2	MN	F	401	1/1	1.00	0.03	13,13,13,13	0

## 6.5 Other polymers

There are no such residues in this entry.