Full wwPDB X-ray Structure Validation Report ⓘ

Feb 11, 2024 – 08:19 AM EST

PDB ID	:	3BV6
Title	:	Crystal structure of uncharacterized metallo protein from Vibrio cholerae with beta-lactamase like fold
Authors	:	Minasov, G.; Shuvalova, L.; Brunzelle, J.S.; Yang, X.; Collart, F.R.; Joachimiak, A.; Anderson, W.F.; Midwest Center for Structural Genomics (MCSG)
Deposited on	:	2008-01-04
Resolution	:	1.80 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 types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

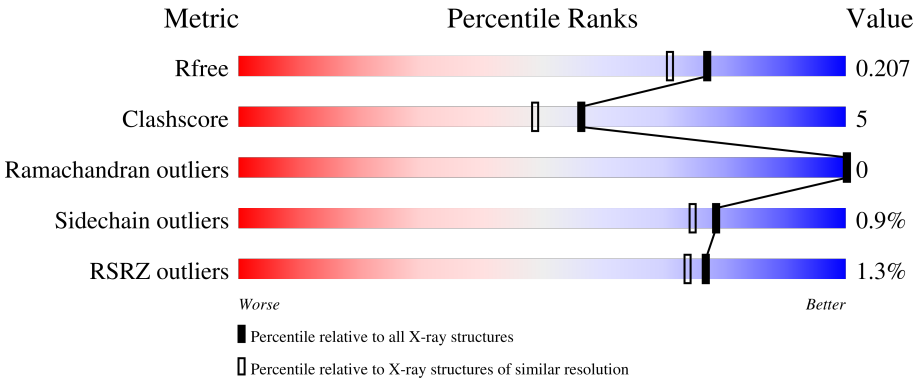
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 1.80 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	5950 (1.80-1.80)
Clashscore	141614	6793 (1.80-1.80)
Ramachandran outliers	138981	6697 (1.80-1.80)
Sidechain outliers	138945	6696 (1.80-1.80)
RSRZ outliers	127900	5850 (1.80-1.80)

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 of 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 <=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	379	82% 11% 7%
1	B	379	% 83% 10% • 7%
1	C	379	% 80% 12% 7%
1	D	379	% 83% 10% 7%
1	E	379	2% 83% 10% 7%

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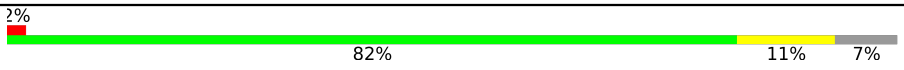
Mol	Chain	Length	Quality of chain
1	F	379	

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 20576 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 Metal-dependent hydrolase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	353	Total	C	N	O	S	0	18	0
			2998	1902	514	565	17			
1	B	354	Total	C	N	O	S	0	15	0
			2982	1896	514	556	16			
1	C	353	Total	C	N	O	S	0	28	0
			3056	1941	530	568	17			
1	D	354	Total	C	N	O	S	0	20	0
			3018	1915	521	566	16			
1	E	354	Total	C	N	O	S	0	23	0
			3043	1931	526	571	15			
1	F	354	Total	C	N	O	S	0	15	0
			2979	1892	517	555	15			

There are 144 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-23	MET	-	expression tag	UNP A6A5N8
A	-22	HIS	-	expression tag	UNP A6A5N8
A	-21	HIS	-	expression tag	UNP A6A5N8
A	-20	HIS	-	expression tag	UNP A6A5N8
A	-19	HIS	-	expression tag	UNP A6A5N8
A	-18	HIS	-	expression tag	UNP A6A5N8
A	-17	HIS	-	expression tag	UNP A6A5N8
A	-16	SER	-	expression tag	UNP A6A5N8
A	-15	SER	-	expression tag	UNP A6A5N8
A	-14	GLY	-	expression tag	UNP A6A5N8
A	-13	VAL	-	expression tag	UNP A6A5N8
A	-12	ASP	-	expression tag	UNP A6A5N8
A	-11	LEU	-	expression tag	UNP A6A5N8
A	-10	GLY	-	expression tag	UNP A6A5N8
A	-9	THR	-	expression tag	UNP A6A5N8
A	-8	GLU	-	expression tag	UNP A6A5N8
A	-7	ASN	-	expression tag	UNP A6A5N8

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-6	LEU	-	expression tag	UNP A6A5N8
A	-5	TYR	-	expression tag	UNP A6A5N8
A	-4	PHE	-	expression tag	UNP A6A5N8
A	-3	GLN	-	expression tag	UNP A6A5N8
A	-2	SER	-	expression tag	UNP A6A5N8
A	-1	ASN	-	expression tag	UNP A6A5N8
A	0	ALA	-	expression tag	UNP A6A5N8
B	-23	MET	-	expression tag	UNP A6A5N8
B	-22	HIS	-	expression tag	UNP A6A5N8
B	-21	HIS	-	expression tag	UNP A6A5N8
B	-20	HIS	-	expression tag	UNP A6A5N8
B	-19	HIS	-	expression tag	UNP A6A5N8
B	-18	HIS	-	expression tag	UNP A6A5N8
B	-17	HIS	-	expression tag	UNP A6A5N8
B	-16	SER	-	expression tag	UNP A6A5N8
B	-15	SER	-	expression tag	UNP A6A5N8
B	-14	GLY	-	expression tag	UNP A6A5N8
B	-13	VAL	-	expression tag	UNP A6A5N8
B	-12	ASP	-	expression tag	UNP A6A5N8
B	-11	LEU	-	expression tag	UNP A6A5N8
B	-10	GLY	-	expression tag	UNP A6A5N8
B	-9	THR	-	expression tag	UNP A6A5N8
B	-8	GLU	-	expression tag	UNP A6A5N8
B	-7	ASN	-	expression tag	UNP A6A5N8
B	-6	LEU	-	expression tag	UNP A6A5N8
B	-5	TYR	-	expression tag	UNP A6A5N8
B	-4	PHE	-	expression tag	UNP A6A5N8
B	-3	GLN	-	expression tag	UNP A6A5N8
B	-2	SER	-	expression tag	UNP A6A5N8
B	-1	ASN	-	expression tag	UNP A6A5N8
B	0	ALA	-	expression tag	UNP A6A5N8
C	-23	MET	-	expression tag	UNP A6A5N8
C	-22	HIS	-	expression tag	UNP A6A5N8
C	-21	HIS	-	expression tag	UNP A6A5N8
C	-20	HIS	-	expression tag	UNP A6A5N8
C	-19	HIS	-	expression tag	UNP A6A5N8
C	-18	HIS	-	expression tag	UNP A6A5N8
C	-17	HIS	-	expression tag	UNP A6A5N8
C	-16	SER	-	expression tag	UNP A6A5N8
C	-15	SER	-	expression tag	UNP A6A5N8
C	-14	GLY	-	expression tag	UNP A6A5N8
C	-13	VAL	-	expression tag	UNP A6A5N8

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-12	ASP	-	expression tag	UNP A6A5N8
C	-11	LEU	-	expression tag	UNP A6A5N8
C	-10	GLY	-	expression tag	UNP A6A5N8
C	-9	THR	-	expression tag	UNP A6A5N8
C	-8	GLU	-	expression tag	UNP A6A5N8
C	-7	ASN	-	expression tag	UNP A6A5N8
C	-6	LEU	-	expression tag	UNP A6A5N8
C	-5	TYR	-	expression tag	UNP A6A5N8
C	-4	PHE	-	expression tag	UNP A6A5N8
C	-3	GLN	-	expression tag	UNP A6A5N8
C	-2	SER	-	expression tag	UNP A6A5N8
C	-1	ASN	-	expression tag	UNP A6A5N8
C	0	ALA	-	expression tag	UNP A6A5N8
D	-23	MET	-	expression tag	UNP A6A5N8
D	-22	HIS	-	expression tag	UNP A6A5N8
D	-21	HIS	-	expression tag	UNP A6A5N8
D	-20	HIS	-	expression tag	UNP A6A5N8
D	-19	HIS	-	expression tag	UNP A6A5N8
D	-18	HIS	-	expression tag	UNP A6A5N8
D	-17	HIS	-	expression tag	UNP A6A5N8
D	-16	SER	-	expression tag	UNP A6A5N8
D	-15	SER	-	expression tag	UNP A6A5N8
D	-14	GLY	-	expression tag	UNP A6A5N8
D	-13	VAL	-	expression tag	UNP A6A5N8
D	-12	ASP	-	expression tag	UNP A6A5N8
D	-11	LEU	-	expression tag	UNP A6A5N8
D	-10	GLY	-	expression tag	UNP A6A5N8
D	-9	THR	-	expression tag	UNP A6A5N8
D	-8	GLU	-	expression tag	UNP A6A5N8
D	-7	ASN	-	expression tag	UNP A6A5N8
D	-6	LEU	-	expression tag	UNP A6A5N8
D	-5	TYR	-	expression tag	UNP A6A5N8
D	-4	PHE	-	expression tag	UNP A6A5N8
D	-3	GLN	-	expression tag	UNP A6A5N8
D	-2	SER	-	expression tag	UNP A6A5N8
D	-1	ASN	-	expression tag	UNP A6A5N8
D	0	ALA	-	expression tag	UNP A6A5N8
E	-23	MET	-	expression tag	UNP A6A5N8
E	-22	HIS	-	expression tag	UNP A6A5N8
E	-21	HIS	-	expression tag	UNP A6A5N8
E	-20	HIS	-	expression tag	UNP A6A5N8
E	-19	HIS	-	expression tag	UNP A6A5N8

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Chain	Residue	Modelled	Actual	Comment	Reference
E	-18	HIS	-	expression tag	UNP A6A5N8
E	-17	HIS	-	expression tag	UNP A6A5N8
E	-16	SER	-	expression tag	UNP A6A5N8
E	-15	SER	-	expression tag	UNP A6A5N8
E	-14	GLY	-	expression tag	UNP A6A5N8
E	-13	VAL	-	expression tag	UNP A6A5N8
E	-12	ASP	-	expression tag	UNP A6A5N8
E	-11	LEU	-	expression tag	UNP A6A5N8
E	-10	GLY	-	expression tag	UNP A6A5N8
E	-9	THR	-	expression tag	UNP A6A5N8
E	-8	GLU	-	expression tag	UNP A6A5N8
E	-7	ASN	-	expression tag	UNP A6A5N8
E	-6	LEU	-	expression tag	UNP A6A5N8
E	-5	TYR	-	expression tag	UNP A6A5N8
E	-4	PHE	-	expression tag	UNP A6A5N8
E	-3	GLN	-	expression tag	UNP A6A5N8
E	-2	SER	-	expression tag	UNP A6A5N8
E	-1	ASN	-	expression tag	UNP A6A5N8
E	0	ALA	-	expression tag	UNP A6A5N8
F	-23	MET	-	expression tag	UNP A6A5N8
F	-22	HIS	-	expression tag	UNP A6A5N8
F	-21	HIS	-	expression tag	UNP A6A5N8
F	-20	HIS	-	expression tag	UNP A6A5N8
F	-19	HIS	-	expression tag	UNP A6A5N8
F	-18	HIS	-	expression tag	UNP A6A5N8
F	-17	HIS	-	expression tag	UNP A6A5N8
F	-16	SER	-	expression tag	UNP A6A5N8
F	-15	SER	-	expression tag	UNP A6A5N8
F	-14	GLY	-	expression tag	UNP A6A5N8
F	-13	VAL	-	expression tag	UNP A6A5N8
F	-12	ASP	-	expression tag	UNP A6A5N8
F	-11	LEU	-	expression tag	UNP A6A5N8
F	-10	GLY	-	expression tag	UNP A6A5N8
F	-9	THR	-	expression tag	UNP A6A5N8
F	-8	GLU	-	expression tag	UNP A6A5N8
F	-7	ASN	-	expression tag	UNP A6A5N8
F	-6	LEU	-	expression tag	UNP A6A5N8
F	-5	TYR	-	expression tag	UNP A6A5N8
F	-4	PHE	-	expression tag	UNP A6A5N8
F	-3	GLN	-	expression tag	UNP A6A5N8
F	-2	SER	-	expression tag	UNP A6A5N8
F	-1	ASN	-	expression tag	UNP A6A5N8

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Chain	Residue	Modelled	Actual	Comment	Reference
F	0	ALA	-	expression tag	UNP A6A5N8

- Molecule 2 is FE (III) ION (three-letter code: FE) (formula: Fe).

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

- Molecule 3 is water.

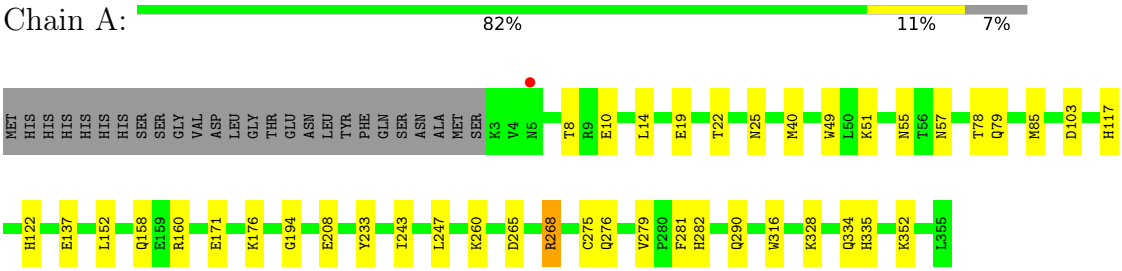
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	409	Total O 415 415	0	12
3	B	413	Total O 423 423	0	17
3	C	429	Total O 432 432	0	13
3	D	427	Total O 432 432	0	10
3	E	396	Total O 400 400	0	12
3	F	381	Total O 386 386	0	8

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide 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.

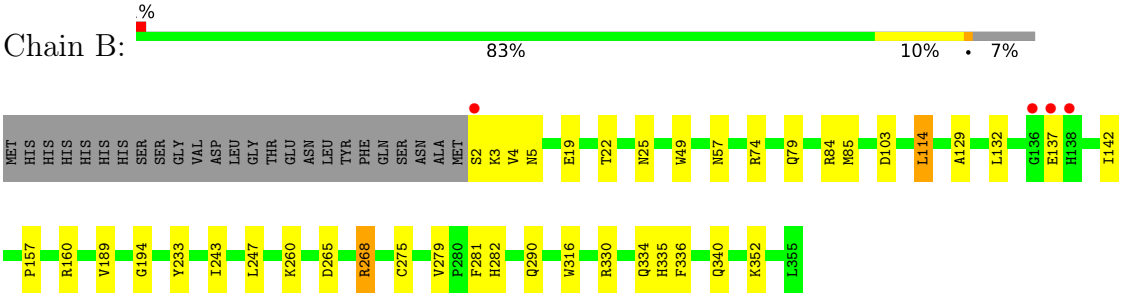
• Molecule 1: Metal-dependent hydrolase

Chain A:



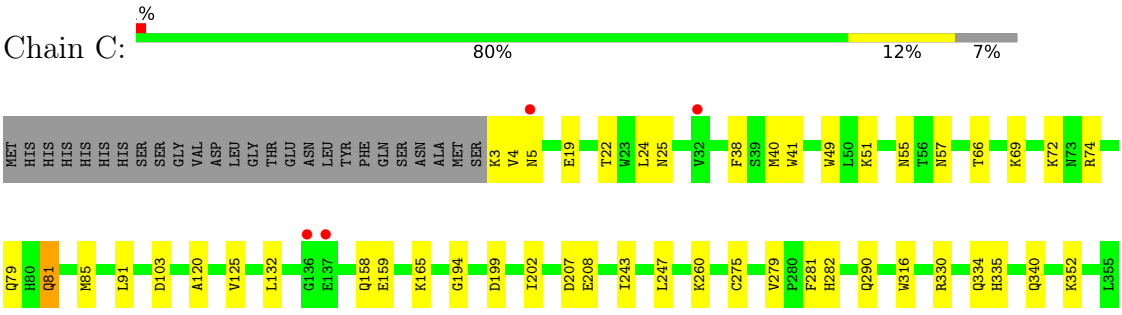
• Molecule 1: Metal-dependent hydrolase

Chain B:



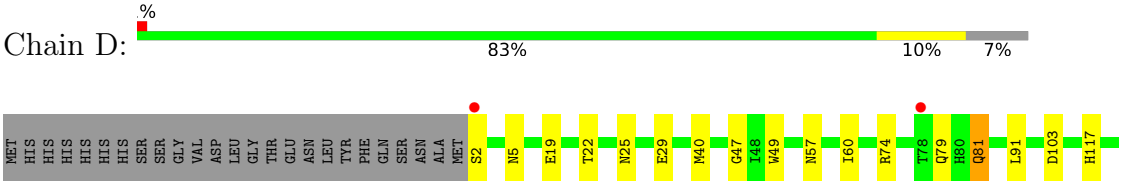
• Molecule 1: Metal-dependent hydrolase

Chain C:

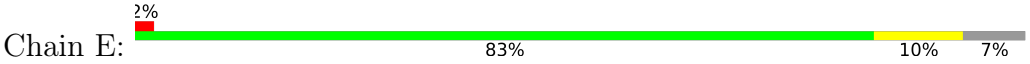


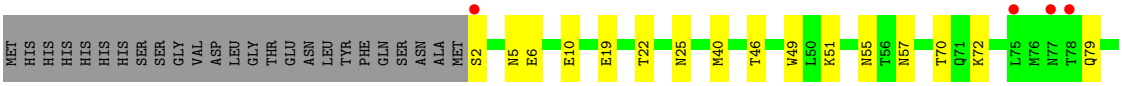
• Molecule 1: Metal-dependent hydrolase

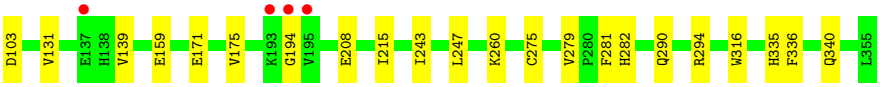
Chain D:



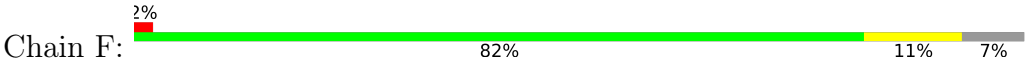
• Molecule 1: Metal-dependent hydrolase

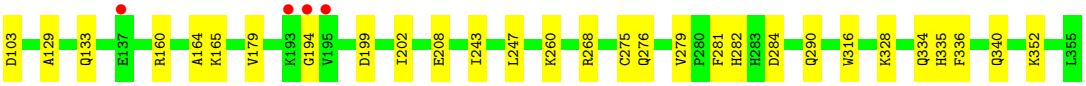






• Molecule 1: Metal-dependent hydrolase





4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	83.43Å 94.84Å 94.59Å 99.69° 97.90° 116.13°	Depositor
Resolution (Å)	25.00 – 1.80 24.48 – 1.80	Depositor EDS
% Data completeness (in resolution range)	97.4 (25.00-1.80) 97.1 (24.48-1.80)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.12 (at 1.80Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.167 , 0.208 0.167 , 0.207	Depositor DCC
R_{free} test set	11274 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	22.0	Xtriage
Anisotropy	0.420	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 52.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	20576	wwPDB-VP
Average B, all atoms (Å^2)	27.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.45% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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: FE

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	0.76	0/3077	0.85	2/4174 (0.0%)
1	B	0.79	0/3061	0.84	3/4150 (0.1%)
1	C	1.01	2/3161 (0.1%)	0.84	4/4281 (0.1%)
1	D	0.76	0/3101	0.82	0/4205
1	E	0.72	0/3123	0.78	0/4236
1	F	0.74	0/3058	0.79	0/4147
All	All	0.80	2/18581 (0.0%)	0.82	9/25193 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	158[B]	GLN	CB-CG	26.21	2.23	1.52
1	C	158[A]	GLN	CB-CG	26.21	2.23	1.52

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	268	ARG	NE-CZ-NH1	12.05	126.33	120.30
1	A	268	ARG	NE-CZ-NH1	11.98	126.29	120.30
1	A	268	ARG	NE-CZ-NH2	-10.49	115.05	120.30
1	C	158[B]	GLN	CB-CG-CD	-10.40	84.55	111.60
1	C	158[A]	GLN	CB-CG-CD	-10.40	84.55	111.60
1	B	268	ARG	NE-CZ-NH2	-9.52	115.54	120.30
1	B	114	LEU	CA-CB-CG	5.06	126.93	115.30
1	C	158[B]	GLN	CA-CB-CG	5.04	124.49	113.40
1	C	158[A]	GLN	CA-CB-CG	5.04	124.49	113.40

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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	2998	0	2853	35	0
1	B	2982	0	2860	35	0
1	C	3056	0	2937	44	0
1	D	3018	0	2884	31	0
1	E	3043	0	2909	28	0
1	F	2979	0	2856	33	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	415	0	0	6	0
3	B	423	0	0	2	0
3	C	432	0	0	9	0
3	D	432	0	0	9	0
3	E	400	0	0	4	0
3	F	386	0	0	3	0
All	All	20576	0	17299	179	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 5.

All (179) 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:D:330[B]:ARG:HD2	3:D:858:HOH:O	1.60	1.01
1:C:81:GLN:HE21	1:C:81:GLN:H	0.98	0.91
1:A:49:TRP:HE1	1:A:57:ASN:HD22	1.20	0.86
1:E:79:GLN:HE22	1:E:194:GLY:H	1.22	0.85
1:D:49:TRP:HE1	1:D:57:ASN:HD22	1.21	0.85
1:C:79:GLN:HE22	1:C:194:GLY:H	1.26	0.84
1:A:79:GLN:HE22	1:A:194:GLY:H	1.22	0.83
1:B:49:TRP:HE1	1:B:57:ASN:HD22	1.26	0.83
1:D:79:GLN:HE22	1:D:194:GLY:H	1.24	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:49:TRP:HE1	1:E:57:ASN:HD22	1.28	0.80
1:F:79:GLN:HE22	1:F:194:GLY:H	1.29	0.79
1:B:79:GLN:HE22	1:B:194:GLY:H	1.28	0.79
1:C:49:TRP:HE1	1:C:57:ASN:HD22	1.30	0.77
1:D:81:GLN:HE21	1:D:81:GLN:H	1.33	0.77
1:D:79:GLN:NE2	1:D:194:GLY:H	1.83	0.77
1:C:81:GLN:HE21	1:C:81:GLN:N	1.81	0.76
1:E:79:GLN:NE2	1:E:194:GLY:H	1.84	0.75
1:D:158[B]:GLN:HG3	1:D:159[B]:GLU:N	2.01	0.74
1:F:25:ASN:HD21	1:F:103:ASP:H	1.35	0.74
1:D:208[B]:GLU:HG2	3:D:962:HOH:O	1.88	0.73
1:C:81:GLN:H	1:C:81:GLN:NE2	1.80	0.72
1:F:49:TRP:HE1	1:F:57:ASN:HD22	1.39	0.69
1:F:79:GLN:NE2	1:F:194:GLY:H	1.89	0.69
1:A:79:GLN:NE2	1:A:194:GLY:H	1.90	0.69
1:B:79:GLN:NE2	1:B:194:GLY:H	1.91	0.68
1:C:208[A]:GLU:HG3	3:C:578:HOH:O	1.94	0.68
1:B:25:ASN:HD21	1:B:103:ASP:H	1.42	0.67
1:C:25:ASN:HD21	1:C:103:ASP:H	1.42	0.67
1:B:132:LEU:HD12	1:C:4:VAL:HG21	1.78	0.65
1:C:79:GLN:NE2	1:C:194:GLY:H	1.95	0.65
1:C:74[B]:ARG:HA	1:C:91[B]:LEU:HG	1.80	0.64
1:A:208[A]:GLU:HG2	3:A:597:HOH:O	1.97	0.64
1:C:55[B]:ASN:ND2	3:C:618:HOH:O	2.30	0.64
1:B:74[B]:ARG:NH2	3:B:596:HOH:O	2.31	0.63
1:D:25:ASN:HD21	1:D:103:ASP:H	1.46	0.63
1:B:3:LYS:HE3	1:B:5:ASN:HB2	1.80	0.63
1:C:340[A]:GLN:HG3	3:C:730[A]:HOH:O	1.99	0.63
1:C:22:THR:HA	1:C:25:ASN:HD22	1.64	0.63
1:E:25:ASN:HD21	1:E:103:ASP:H	1.49	0.61
1:A:171:GLU:OE2	1:A:176:LYS:HE2	2.00	0.61
1:F:208:GLU:HG2	3:F:589:HOH:O	2.01	0.60
1:F:160[A]:ARG:HD2	3:F:495:HOH:O	2.01	0.60
1:D:158[B]:GLN:HG3	1:D:159[B]:GLU:H	1.65	0.59
1:C:120:ALA:HB1	3:C:813:HOH:O	2.03	0.58
1:A:85:MET:HE1	3:A:777:HOH:O	2.03	0.58
1:E:10[B]:GLU:HG3	3:E:871:HOH:O	2.02	0.58
1:B:129:ALA:HA	1:C:4:VAL:HG22	1.87	0.57
1:D:290:GLN:NE2	1:E:335:HIS:H	2.02	0.56
1:F:336:PHE:HZ	1:F:340[B]:GLN:HG3	1.70	0.56
1:E:2:SER:HA	1:E:5:ASN:HB2	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:260:LYS:HE3	1:C:282:HIS:CD2	2.40	0.56
1:A:25:ASN:HD21	1:A:103:ASP:H	1.53	0.55
1:F:247:LEU:HD23	1:F:279:VAL:HB	1.87	0.55
1:C:72[B]:LYS:HD2	3:C:727:HOH:O	2.06	0.55
1:D:260:LYS:HE3	1:D:282:HIS:CD2	2.41	0.55
1:C:247:LEU:HD23	1:C:279:VAL:HB	1.88	0.54
1:D:22:THR:HA	1:D:25:ASN:HD22	1.72	0.54
1:D:208[A]:GLU:HG2	3:D:806:HOH:O	2.08	0.53
1:E:159[A]:GLU:H	1:E:159[A]:GLU:CD	2.11	0.53
1:C:38:PHE:HE1	1:C:40[B]:MET:HE2	1.73	0.53
1:A:8[B]:THR:HG23	1:A:10[B]:GLU:N	2.24	0.53
1:F:199:ASP:O	1:F:202:ILE:HG12	2.08	0.53
1:D:74[A]:ARG:HG2	3:D:921:HOH:O	2.09	0.52
1:D:335:HIS:H	1:E:290:GLN:NE2	2.07	0.52
1:A:247:LEU:HD23	1:A:279:VAL:HB	1.91	0.52
1:E:208[A]:GLU:HG2	3:E:931:HOH:O	2.09	0.52
1:A:290:GLN:NE2	1:F:335:HIS:H	2.07	0.52
1:C:51:LYS:HE3	1:C:55[A]:ASN:ND2	2.25	0.52
3:D:1016:HOH:O	1:E:72[A]:LYS:HE2	2.10	0.52
1:E:260:LYS:HE3	1:E:282:HIS:CD2	2.45	0.52
1:B:330[B]:ARG:HG2	3:D:920:HOH:O	2.09	0.52
1:B:330[B]:ARG:HH21	1:D:308[B]:GLN:HG2	1.75	0.52
1:E:171[B]:GLU:HG2	3:E:1074:HOH:O	2.10	0.51
1:A:335:HIS:H	1:F:290:GLN:NE2	2.08	0.51
1:B:4:VAL:HG11	1:C:132:LEU:HD12	1.92	0.51
1:B:335:HIS:H	1:C:290:GLN:NE2	2.09	0.51
1:E:243:ILE:O	1:E:275:CYS:HA	2.11	0.51
1:A:22:THR:HA	1:A:25:ASN:HD22	1.76	0.51
1:D:25:ASN:O	1:D:29:GLU:HG3	2.11	0.50
1:C:199:ASP:O	1:C:202:ILE:HG12	2.11	0.50
1:E:22:THR:HA	1:E:25:ASN:HD22	1.76	0.50
1:B:137[A]:GLU:H	1:B:137[A]:GLU:CD	2.14	0.50
1:B:290:GLN:NE2	1:C:335:HIS:H	2.09	0.50
1:C:38:PHE:HE1	1:C:40[B]:MET:CE	2.25	0.50
1:D:40:MET:HA	1:D:49:TRP:O	2.12	0.50
1:D:81:GLN:H	1:D:81:GLN:NE2	2.05	0.50
1:F:74[B]:ARG:NE	1:F:74[B]:ARG:HA	2.27	0.49
1:B:260:LYS:HE3	1:B:282:HIS:CD2	2.47	0.49
1:B:290:GLN:HE22	1:C:334:GLN:HA	1.78	0.49
1:B:334:GLN:HA	1:C:290:GLN:HE22	1.76	0.49
1:B:85:MET:HE1	3:B:788:HOH:O	2.13	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:19:GLU:OE2	1:F:19:GLU:OE2	2.31	0.49
1:A:51:LYS:HE3	1:A:55:ASN:ND2	2.28	0.48
1:A:78:THR:O	3:A:636:HOH:O	2.20	0.48
1:D:243:ILE:O	1:D:275:CYS:HA	2.13	0.48
1:B:22:THR:HA	1:B:25:ASN:HD22	1.78	0.48
1:C:159[A]:GLU:HB2	3:C:628[A]:HOH:O	2.12	0.48
1:F:243:ILE:O	1:F:275:CYS:HA	2.12	0.48
1:A:290:GLN:HE22	1:F:334:GLN:HA	1.79	0.48
1:B:247:LEU:HD23	1:B:279:VAL:HB	1.95	0.48
1:C:55[B]:ASN:HD22	1:C:55[B]:ASN:N	2.12	0.48
1:D:290:GLN:HE22	1:E:335:HIS:H	1.61	0.48
1:B:114:LEU:HD22	1:B:142:ILE:HB	1.96	0.48
1:B:330[B]:ARG:HB3	1:B:330[B]:ARG:CZ	2.44	0.48
1:D:19:GLU:OE2	1:E:19:GLU:OE2	2.33	0.47
1:C:74[B]:ARG:HB2	1:C:74[B]:ARG:HH11	1.80	0.47
1:A:243:ILE:O	1:A:275:CYS:HA	2.15	0.46
1:B:129:ALA:HA	1:C:4:VAL:CG2	2.44	0.46
1:A:260:LYS:HE3	1:A:282:HIS:CG	2.50	0.46
1:B:265:ASP:OD1	1:B:268:ARG:HD3	2.15	0.46
1:F:22:THR:HA	1:F:25:ASN:HD22	1.79	0.46
1:C:243:ILE:O	1:C:275:CYS:HA	2.15	0.46
1:F:129:ALA:O	1:F:133:GLN:HG3	2.15	0.46
1:C:330[B]:ARG:HH21	1:C:330[B]:ARG:HB3	1.81	0.46
1:A:137[B]:GLU:HA	1:A:160:ARG:NH2	2.31	0.45
1:A:276[A]:GLN:HE22	1:A:328:LYS:NZ	2.14	0.45
1:E:2:SER:O	1:E:6:GLU:HG3	2.15	0.45
3:D:1029:HOH:O	1:E:294[B]:ARG:HD2	2.15	0.45
1:E:336:PHE:CZ	1:E:340[A]:GLN:HG2	2.51	0.45
1:D:117:HIS:CE1	1:D:122:HIS:CG	3.05	0.45
1:F:74[B]:ARG:HA	1:F:74[B]:ARG:HE	1.80	0.45
1:F:336:PHE:CZ	1:F:340[B]:GLN:HG3	2.51	0.45
1:B:2:SER:HB3	1:C:125:VAL:HG21	1.98	0.45
1:B:157:PRO:HB2	1:B:160:ARG:HG2	1.99	0.44
1:F:260:LYS:HE3	1:F:282:HIS:CD2	2.53	0.44
1:C:66:THR:CG2	1:C:69:LYS:HD3	2.47	0.44
1:B:84:ARG:HD2	1:B:189:VAL:O	2.18	0.44
1:D:2:SER:HA	1:D:5:ASN:HB2	1.99	0.44
1:B:260:LYS:HE3	1:B:282:HIS:CG	2.53	0.44
1:B:19:GLU:OE2	1:C:19:GLU:OE2	2.36	0.44
1:B:352[A]:LYS:HD3	1:D:233:TYR:CE2	2.53	0.44
1:E:51:LYS:HE3	1:E:55:ASN:ND2	2.33	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:24:LEU:HD11	1:F:41:TRP:CD1	2.54	0.43
1:A:152:LEU:HD21	1:A:158[B]:GLN:HA	2.00	0.43
1:A:352:LYS:HE2	3:A:793:HOH:O	2.19	0.43
1:E:131:VAL:HG11	1:E:139:VAL:HG11	1.99	0.43
1:D:330[B]:ARG:CD	3:D:858:HOH:O	2.40	0.43
1:D:169:VAL:HG11	1:D:176:LYS:HE2	2.01	0.43
1:E:247:LEU:HD23	1:E:279:VAL:HB	2.00	0.43
1:C:208[B]:GLU:HB3	3:C:512:HOH:O	2.19	0.43
1:C:260:LYS:HE3	1:C:282:HIS:CG	2.54	0.43
1:A:233:TYR:CE2	1:C:352[B]:LYS:HD3	2.54	0.42
1:D:247:LEU:HD23	1:D:279:VAL:HB	2.00	0.42
1:A:334:GLN:HA	1:F:290:GLN:HE22	1.85	0.42
1:D:334:GLN:HA	1:E:290:GLN:HE22	1.83	0.42
1:E:175[B]:VAL:CG1	1:E:215:ILE:HG23	2.49	0.42
1:F:46:THR:HG23	1:F:282:HIS:CD2	2.54	0.42
1:F:51:LYS:HE3	1:F:55:ASN:ND2	2.35	0.42
1:B:334:GLN:HA	1:C:290:GLN:NE2	2.34	0.42
1:A:260:LYS:HE3	1:A:282:HIS:CD2	2.54	0.42
1:E:46:THR:HG23	1:E:282:HIS:CD2	2.55	0.42
1:F:160[A]:ARG:HA	3:F:673:HOH:O	2.19	0.42
3:E:739:HOH:O	1:F:268[B]:ARG:HD2	2.19	0.42
1:A:290:GLN:HE22	1:F:335:HIS:H	1.68	0.42
1:C:85:MET:HE1	3:C:809:HOH:O	2.19	0.42
1:D:47:GLY:HA2	1:D:60:ILE:O	2.20	0.42
1:F:165:LYS:HE2	1:F:165:LYS:HB2	1.91	0.41
1:C:207:ASP:HB3	3:C:632:HOH:O	2.19	0.41
1:E:70:THR:OG1	1:E:72[A]:LYS:HG2	2.20	0.41
1:A:8[B]:THR:HG21	3:A:708:HOH:O	2.20	0.41
1:C:24:LEU:HD11	1:C:41:TRP:CD1	2.56	0.41
1:A:117:HIS:CE1	1:A:122:HIS:CG	3.08	0.41
1:B:336:PHE:CZ	1:B:340[A]:GLN:HG2	2.55	0.41
1:D:207:ASP:HB3	3:D:883:HOH:O	2.20	0.41
1:E:40:MET:HA	1:E:49:TRP:O	2.20	0.41
1:F:98[B]:SER:OG	1:F:284:ASP:HB2	2.20	0.41
1:A:208[A]:GLU:HG3	3:A:763:HOH:O	2.20	0.41
1:F:276[A]:GLN:HE22	1:F:328[A]:LYS:NZ	2.18	0.41
1:A:14:LEU:HD21	1:F:10[B]:GLU:HG3	2.03	0.41
1:B:137[B]:GLU:OE2	1:B:160:ARG:NH1	2.53	0.41
1:B:233:TYR:CE1	1:F:352[B]:LYS:HD2	2.55	0.41
1:B:243:ILE:O	1:B:275:CYS:HA	2.21	0.41
1:F:164:ALA:HB1	1:F:179:VAL:HG21	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:265:ASP:OD1	1:A:268:ARG:HD3	2.20	0.40
1:C:165:LYS:HE2	1:C:165:LYS:HB2	1.94	0.40
1:A:40[A]:MET:HA	1:A:49:TRP:O	2.22	0.40
1:A:8[B]:THR:HG23	1:A:10[B]:GLU:H	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	369/379 (97%)	362 (98%)	7 (2%)	0	100	100
1	B	367/379 (97%)	358 (98%)	9 (2%)	0	100	100
1	C	379/379 (100%)	375 (99%)	4 (1%)	0	100	100
1	D	372/379 (98%)	365 (98%)	7 (2%)	0	100	100
1	E	375/379 (99%)	367 (98%)	8 (2%)	0	100	100
1	F	367/379 (97%)	363 (99%)	4 (1%)	0	100	100
All	All	2229/2274 (98%)	2190 (98%)	39 (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	324/329 (98%)	322 (99%)	2 (1%)	86	84
1	B	322/329 (98%)	320 (99%)	2 (1%)	86	84
1	C	333/329 (101%)	328 (98%)	5 (2%)	65	56
1	D	327/329 (99%)	322 (98%)	5 (2%)	65	56
1	E	330/329 (100%)	328 (99%)	2 (1%)	86	84
1	F	321/329 (98%)	319 (99%)	2 (1%)	86	84
All	All	1957/1974 (99%)	1939 (99%)	18 (1%)	78	75

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	281	PHE
1	A	316	TRP
1	B	281	PHE
1	B	316	TRP
1	C	3	LYS
1	C	5	ASN
1	C	81	GLN
1	C	281	PHE
1	C	316	TRP
1	D	81	GLN
1	D	91[A]	LEU
1	D	91[B]	LEU
1	D	281	PHE
1	D	316	TRP
1	E	281	PHE
1	E	316	TRP
1	F	281	PHE
1	F	316	TRP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (54) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	25	ASN
1	A	30	GLN
1	A	55	ASN
1	A	57	ASN
1	A	71	GLN
1	A	79	GLN
1	A	212	ASN

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Mol	Chain	Res	Type
1	A	290	GLN
1	A	301	ASN
1	B	25	ASN
1	B	55	ASN
1	B	57	ASN
1	B	71	GLN
1	B	79	GLN
1	B	290	GLN
1	C	5	ASN
1	C	25	ASN
1	C	57	ASN
1	C	71	GLN
1	C	79	GLN
1	C	81	GLN
1	C	133	GLN
1	C	212	ASN
1	C	290	GLN
1	D	25	ASN
1	D	30	GLN
1	D	55	ASN
1	D	57	ASN
1	D	71	GLN
1	D	79	GLN
1	D	81	GLN
1	D	212	ASN
1	D	290	GLN
1	D	301	ASN
1	E	25	ASN
1	E	30	GLN
1	E	55	ASN
1	E	57	ASN
1	E	71	GLN
1	E	79	GLN
1	E	133	GLN
1	E	212	ASN
1	E	290	GLN
1	E	301	ASN
1	F	25	ASN
1	F	55	ASN
1	F	57	ASN
1	F	71	GLN
1	F	79	GLN

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Mol	Chain	Res	Type
1	F	133	GLN
1	F	212	ASN
1	F	242	GLN
1	F	290	GLN
1	F	301	ASN

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 12 ligands modelled in this entry, 12 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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^{th} 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	353/379 (93%)	-0.40	1 (0%)	94	92	12, 24, 37, 57	0
1	B	354/379 (93%)	-0.36	4 (1%)	80	78	11, 25, 40, 61	0
1	C	353/379 (93%)	-0.36	4 (1%)	80	78	12, 25, 39, 57	0
1	D	354/379 (93%)	-0.37	3 (0%)	86	84	12, 25, 37, 61	0
1	E	354/379 (93%)	-0.25	8 (2%)	60	56	13, 26, 42, 52	0
1	F	354/379 (93%)	-0.22	8 (2%)	60	56	13, 27, 46, 58	0
All	All	2122/2274 (93%)	-0.33	28 (1%)	77	74	11, 25, 41, 61	0

All (28) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	2	SER	5.7
1	F	2	SER	5.6
1	B	2	SER	5.1
1	E	2	SER	3.8
1	F	195	VAL	3.2
1	C	136	GLY	3.1
1	E	194	GLY	3.0
1	E	77	ASN	2.8
1	E	78	THR	2.7
1	F	194	GLY	2.7
1	F	77	ASN	2.7
1	C	137[A]	GLU	2.6
1	A	5	ASN	2.5
1	E	195	VAL	2.5
1	F	193	LYS	2.5
1	B	137[A]	GLU	2.4
1	C	5	ASN	2.4
1	D	78	THR	2.3
1	F	137	GLU	2.3

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Mol	Chain	Res	Type	RSRZ
1	F	32	VAL	2.3
1	C	32	VAL	2.3
1	F	91	LEU	2.2
1	E	137[A]	GLU	2.2
1	E	75	LEU	2.1
1	B	138	HIS	2.1
1	E	193	LYS	2.0
1	B	136	GLY	2.0
1	D	194	GLY	2.0

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 (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, 95^{th} 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^2)	Q<0.9
2	FE	B	402	1/1	0.98	0.06	32,32,32,32	1
2	FE	F	401	1/1	0.98	0.12	38,38,38,38	1
2	FE	A	401	1/1	0.99	0.07	34,34,34,34	1
2	FE	C	401	1/1	0.99	0.06	34,34,34,34	1
2	FE	C	402	1/1	0.99	0.04	33,33,33,33	0
2	FE	D	401	1/1	0.99	0.06	30,30,30,30	1
2	FE	E	402	1/1	0.99	0.05	33,33,33,33	0
2	FE	B	401	1/1	0.99	0.04	32,32,32,32	0
2	FE	F	402	1/1	0.99	0.06	36,36,36,36	0
2	FE	A	402	1/1	1.00	0.02	30,30,30,30	0
2	FE	D	402	1/1	1.00	0.04	30,30,30,30	0
2	FE	E	401	1/1	1.00	0.16	37,37,37,37	1

6.5 Other polymers (i)

There are no such residues in this entry.