Full wwPDB X-ray Structure Validation Report (i)

Feb 1, 2016 – 05:56 AM GMT

PDB ID	:	2VCY
Title	:	CRYSTAL STRUCTURE OF 2-ENOYL THIOESTER REDUCTASE OF HUMAN FAS II
Authors	:	Haapalainen, A.M.; Pudas, R.; Smart, O.S.; Wierenga, R.K.
Deposited on	:	2007-09-28
Resolution	:	2.41 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
http://wwpdb.org/validation/2016/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The following versions of software and data (see references (1)) were used in the production of this report:

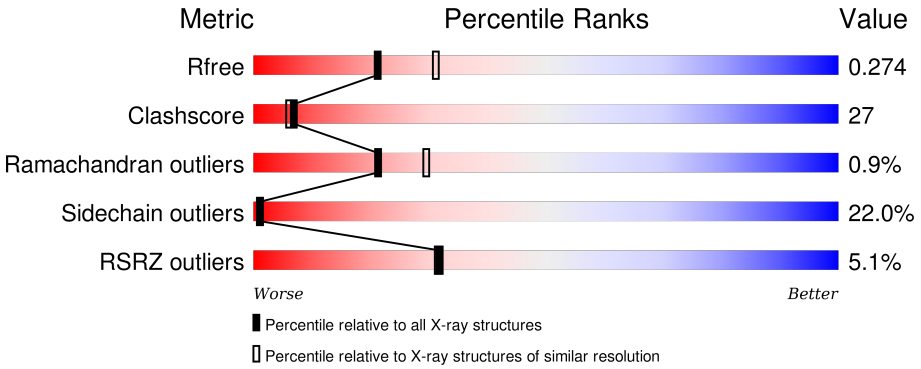
MolProbity	:	4.02b-467
Mogul	:	1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix)	:	1.9-1692
EDS	:	rb-20026688
Percentile statistics	:	20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac	:	5.8.0135
CCP4	:	6.5.0
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	trunk26865

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 2.41 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}	91344	3386 (2.44-2.40)
Clashscore	102246	3897 (2.44-2.40)
Ramachandran outliers	100387	3837 (2.44-2.40)
Sidechain outliers	100360	3838 (2.44-2.40)
RSRZ outliers	91569	3396 (2.44-2.40)

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. 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	344	4% 51% 35% 10% ·
1	B	344	6% 53% 34% 10% ·

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
2	SO4	A	1378	-	-	X	-

2 Entry composition

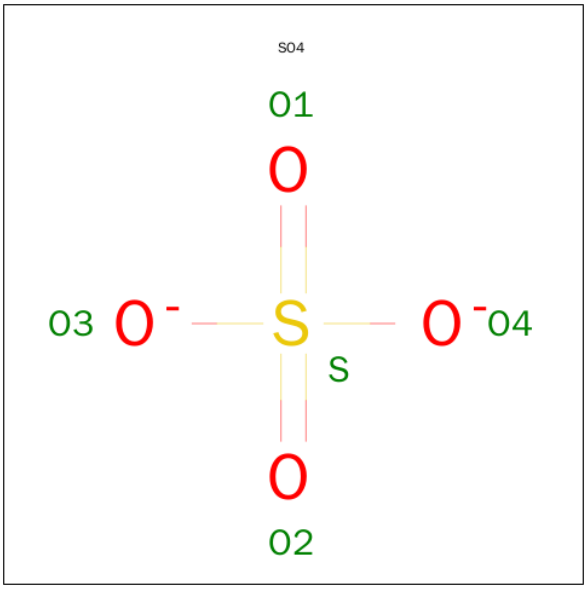
There are 3 unique types of molecules in this entry. The entry contains 5401 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 TRANS-2-ENOYL-COA REDUCTASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	332	Total	C	N	O	S	0	0	0
			2528	1596	448	470	14			
1	B	332	Total	C	N	O	S	0	0	0
			2528	1596	448	470	14			

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	O	S	0	0
			5	4	1		
2	A	1	Total	O	S	0	0
			5	4	1		
2	A	1	Total	O	S	0	0
			5	4	1		
2	A	1	Total	O	S	0	0
			5	4	1		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0

- Molecule 3 is water.

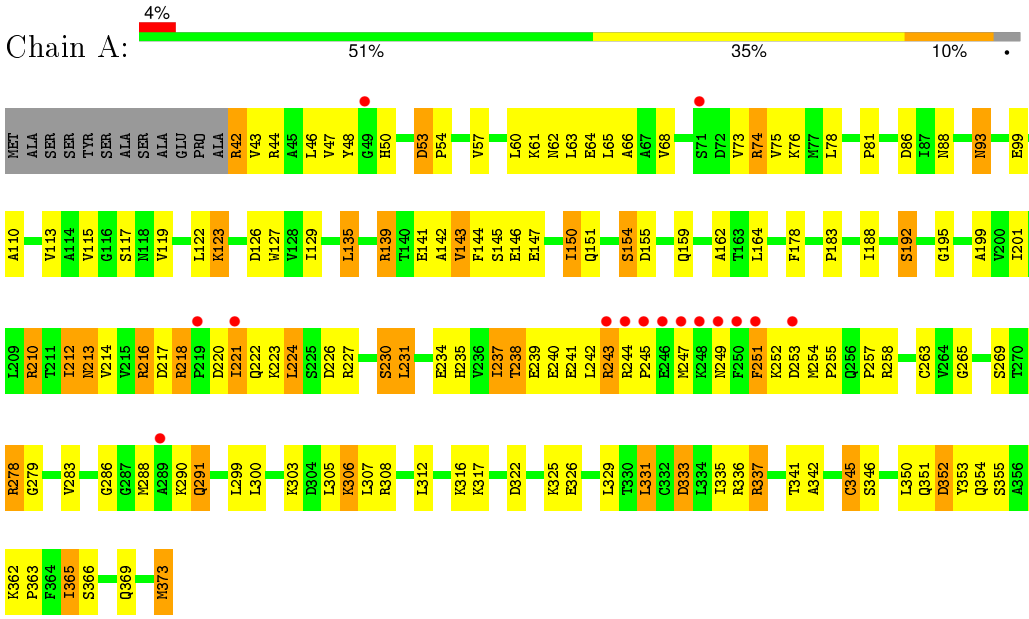
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	153	Total O 153 153	0	0
3	B	137	Total O 137 137	0	0

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 errors 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.

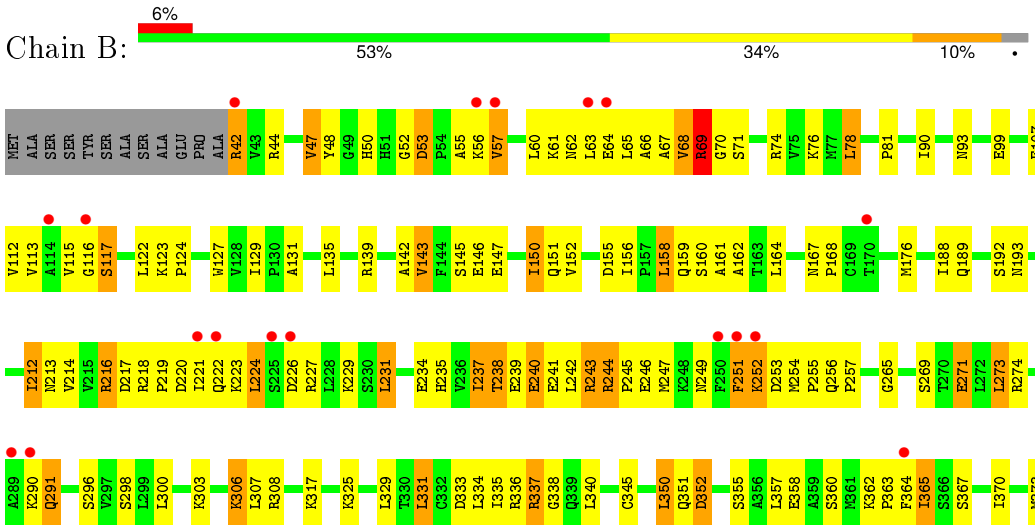
- Molecule 1: TRANS-2-ENOYL-COA REDUCTASE

Chain A:



- Molecule 1: TRANS-2-ENOYL-COA REDUCTASE

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 42 21 2	Depositor
Cell constants a, b, c, α, β, γ	104.62Å 104.62Å 146.56Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	33.79 – 2.41 31.49 – 2.41	Depositor EDS
% Data completeness (in resolution range)	84.4 (33.79-2.41) 84.6 (31.49-2.41)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.01 (at 2.42Å)	Xtriage
Refinement program	BUSTER-TNT 2.1.1	Depositor
R, R_{free}	0.207 , 0.267 0.212 , 0.274	Depositor DCC
R_{free} test set	1391 reflections (5.39%)	DCC
Wilson B-factor (Å^2)	49.9	Xtriage
Anisotropy	0.208	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 60.2	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.34$	Xtriage
Outliers	0 of 27176 reflections	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	5401	wwPDB-VP
Average B, all atoms (Å^2)	56.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.42% 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, 0.375 respectively for untwinned datasets, and 0.333, 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: SO4

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	0.40	1/2572 (0.0%)	0.61	1/3486 (0.0%)
1	B	0.40	0/2572	0.61	0/3486
All	All	0.40	1/5144 (0.0%)	0.61	1/6972 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	345	CYS	CB-SG	5.76	1.92	1.82

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	342	ALA	C-N-CD	-5.64	108.19	120.60

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	2528	0	2596	145	0
1	B	2528	0	2596	133	0
2	A	25	0	0	3	0
2	B	30	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	153	0	0	12	0
3	B	137	0	0	12	0
All	All	5401	0	5192	275	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 27.

All (275) 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:A:42:ARG:HD3	1:A:62:ASN:HB3	1.28	1.10
1:B:74:ARG:HE	1:B:113:VAL:HG21	1.14	1.05
1:A:188:ILE:HG13	1:A:212:ILE:HG13	1.37	1.04
1:A:74:ARG:HE	1:A:113:VAL:HG21	1.27	0.95
1:B:288:MET:HB2	1:B:291:GLN:HB2	1.45	0.94
1:A:288:MET:HB2	1:A:291:GLN:HB2	1.49	0.93
1:B:251:PHE:CZ	1:B:257:PRO:HD3	2.04	0.93
1:A:188:ILE:HG13	1:A:212:ILE:CG1	1.99	0.91
1:A:48:TYR:HB2	1:A:57:VAL:HG12	1.54	0.88
1:A:350:LEU:HD22	1:A:373:MET:CE	2.04	0.87
1:A:308:ARG:HD2	1:B:306:LYS:HG3	1.58	0.85
1:A:237:ILE:HD11	1:A:242:LEU:HB2	1.58	0.85
1:A:42:ARG:HD3	1:A:62:ASN:CB	2.06	0.85
1:A:242:LEU:HD21	1:A:271:GLU:HB3	1.59	0.83
1:A:150:ILE:HD12	1:A:151:GLN:N	1.94	0.81
1:B:237:ILE:HD11	1:B:242:LEU:HB2	1.62	0.81
1:B:150:ILE:HD12	1:B:151:GLN:N	1.95	0.81
1:A:42:ARG:HG3	1:A:43:VAL:N	1.95	0.80
1:B:66:ALA:HB3	1:B:143:VAL:HG11	1.64	0.80
1:A:234:GLU:HG2	1:A:235:HIS:CD2	2.16	0.80
1:B:193:ASN:OD1	1:B:224:LEU:HD21	1.82	0.80
1:B:249:ASN:O	1:B:252:LYS:HB2	1.81	0.79
1:A:249:ASN:O	1:A:252:LYS:HB2	1.83	0.79
1:B:254:MET:HB2	1:B:255:PRO:HD2	1.62	0.79
1:B:127:TRP:CH2	1:B:158:LEU:HB2	2.18	0.78
1:B:333:ASP:O	1:B:337:ARG:HG3	1.83	0.78
1:B:188:ILE:HG13	1:B:212:ILE:HG13	1.65	0.78
1:B:81:PRO:CG	1:B:107:GLU:HG2	2.14	0.78
1:B:242:LEU:O	1:B:247:MET:HG3	1.84	0.77
1:B:74:ARG:HB3	1:B:113:VAL:HG22	1.66	0.77
1:B:109:VAL:HG22	1:B:162:ALA:HB2	1.67	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:308:ARG:CD	1:B:306:LYS:HG3	2.15	0.76
1:B:74:ARG:HE	1:B:113:VAL:CG2	1.97	0.76
1:A:123:LYS:HE2	1:A:126:ASP:OD1	1.87	0.75
1:B:288:MET:HE2	3:B:2094:HOH:O	1.87	0.74
1:A:251:PHE:CE2	1:A:257:PRO:HD3	2.22	0.74
1:B:192:SER:OG	1:B:213:ASN:HB3	1.88	0.73
1:B:78:LEU:HD23	1:B:158:LEU:HD12	1.71	0.73
1:A:150:ILE:HD13	1:A:325:LYS:HE2	1.71	0.72
1:A:254:MET:HB2	1:A:255:PRO:HD2	1.71	0.72
1:B:192:SER:CB	1:B:213:ASN:HB3	2.19	0.72
1:B:338:GLY:HA2	3:B:2121:HOH:O	1.89	0.70
1:A:48:TYR:HB2	1:A:57:VAL:CG1	2.21	0.70
1:A:46:LEU:HD23	1:A:60:LEU:HD12	1.72	0.70
1:A:81:PRO:CG	1:A:107:GLU:HG2	2.23	0.69
1:A:74:ARG:HE	1:A:113:VAL:CG2	2.05	0.69
1:B:220:ASP:OD2	1:B:223:LYS:HG3	1.92	0.69
1:A:66:ALA:HB3	1:A:143:VAL:HG11	1.75	0.69
1:B:242:LEU:HD21	1:B:271:GLU:HB3	1.75	0.68
1:B:300:LEU:HD21	1:B:307:LEU:CD1	2.23	0.68
1:B:352:ASP:OD1	1:B:352:ASP:N	2.25	0.68
1:B:139:ARG:HD2	1:B:142:ALA:HB2	1.76	0.68
1:A:62:ASN:O	1:A:63:LEU:HD12	1.93	0.68
1:A:333:ASP:O	1:A:337:ARG:HG3	1.93	0.68
1:B:62:ASN:O	1:B:63:LEU:HD12	1.93	0.67
1:A:239:GLU:O	1:A:243:ARG:HG2	1.95	0.67
1:B:155:ASP:OD2	1:B:336:ARG:NH1	2.28	0.67
1:B:238:THR:OG1	1:B:241:GLU:HG3	1.95	0.66
1:B:193:ASN:HB2	1:B:224:LEU:HD11	1.77	0.66
1:A:74:ARG:NE	1:A:113:VAL:HG21	2.08	0.65
1:B:78:LEU:HD23	1:B:158:LEU:CD1	2.25	0.65
1:A:155:ASP:OD2	1:A:336:ARG:NH1	2.29	0.65
1:A:258:ARG:HG2	3:A:2094:HOH:O	1.95	0.65
1:B:306:LYS:NZ	3:B:2100:HOH:O	2.30	0.65
1:A:243:ARG:NH1	1:A:243:ARG:HG3	2.12	0.65
1:A:192:SER:CB	1:A:213:ASN:HB3	2.26	0.65
1:A:150:ILE:HD12	1:A:151:GLN:H	1.62	0.64
1:A:150:ILE:HD13	1:A:325:LYS:CE	2.27	0.64
1:A:312:LEU:HG	1:A:316:LYS:HE3	1.80	0.64
1:B:76:LYS:HD3	3:B:2014:HOH:O	1.98	0.64
1:B:156:ILE:CD1	1:B:161:ALA:HB2	2.28	0.63
1:A:61:LYS:NZ	3:A:2011:HOH:O	2.30	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:150:ILE:HD12	1:B:151:GLN:H	1.61	0.63
1:B:74:ARG:NE	1:B:113:VAL:HG21	2.00	0.63
1:A:86:ASP:OD1	1:A:106:ASN:ND2	2.30	0.63
1:B:135:LEU:HB2	3:B:2044:HOH:O	1.99	0.63
1:A:192:SER:OG	1:A:213:ASN:HB3	1.97	0.63
1:A:369:GLN:HB2	3:A:2146:HOH:O	1.98	0.63
1:B:156:ILE:HD11	1:B:161:ALA:HB2	1.79	0.62
1:A:117:SER:HB2	3:A:2039:HOH:O	1.99	0.62
1:B:240:GLU:HG3	1:B:241:GLU:N	2.14	0.62
1:A:50:HIS:O	1:A:57:VAL:HG11	1.98	0.62
1:B:42:ARG:HD2	1:B:62:ASN:HB3	1.79	0.62
1:B:351:GLN:HB3	1:B:352:ASP:OD1	1.99	0.62
1:B:61:LYS:NZ	3:B:2005:HOH:O	2.29	0.62
1:A:109:VAL:HG22	1:A:162:ALA:HA	1.81	0.62
1:A:242:LEU:HD21	1:A:271:GLU:CB	2.28	0.62
1:A:243:ARG:HG3	1:A:243:ARG:HH11	1.65	0.62
1:A:42:ARG:CD	1:A:62:ASN:HB3	2.18	0.61
1:B:251:PHE:CE2	1:B:257:PRO:HD3	2.34	0.61
1:A:242:LEU:O	1:A:247:MET:HG3	2.00	0.61
1:A:242:LEU:CD2	1:A:271:GLU:HB3	2.30	0.61
1:A:278:ARG:NH1	3:A:2099:HOH:O	2.29	0.60
1:A:127:TRP:CE3	1:A:154:SER:HA	2.36	0.60
1:B:129:ILE:HG13	1:B:150:ILE:HG23	1.84	0.60
1:B:239:GLU:O	1:B:243:ARG:HG2	2.03	0.59
1:A:306:LYS:HD3	3:B:2135:HOH:O	2.02	0.59
1:A:195:GLY:N	2:A:1377:SO4:O2	2.29	0.59
1:A:352:ASP:OD1	1:A:352:ASP:N	2.36	0.59
1:B:66:ALA:HA	3:B:2010:HOH:O	2.02	0.58
1:A:48:TYR:CB	1:A:57:VAL:HG12	2.28	0.58
1:A:188:ILE:HD13	1:A:272:LEU:CD2	2.33	0.58
1:B:78:LEU:HB3	1:B:158:LEU:HD11	1.86	0.58
1:B:243:ARG:NH1	1:B:243:ARG:HG3	2.19	0.58
1:A:254:MET:HB2	1:A:255:PRO:CD	2.34	0.58
1:A:155:ASP:CG	1:A:336:ARG:HH12	2.06	0.58
1:A:325:LYS:O	1:A:329:LEU:HG	2.04	0.57
1:A:210:ARG:HB3	1:A:234:GLU:OE1	2.04	0.57
1:A:244:ARG:HB3	1:A:245:PRO:CD	2.34	0.57
1:A:331:LEU:O	1:A:335:ILE:HG13	2.04	0.57
1:A:258:ARG:NH1	3:A:2095:HOH:O	2.30	0.57
1:B:265:GLY:HA2	1:B:269:SER:HB3	1.86	0.57
1:A:46:LEU:HD23	1:A:60:LEU:CD1	2.34	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:350:LEU:HD22	1:A:373:MET:HE2	1.85	0.56
1:B:131:ALA:HB3	3:B:2046:HOH:O	2.05	0.56
1:A:109:VAL:HG22	1:A:162:ALA:CA	2.36	0.56
1:A:115:VAL:HG11	1:A:122:LEU:O	2.06	0.56
1:B:350:LEU:O	1:B:350:LEU:HD12	2.06	0.56
1:A:139:ARG:HD2	1:A:142:ALA:HB2	1.88	0.56
1:A:322:ASP:O	1:A:326:GLU:HG3	2.06	0.55
1:A:222:GLN:O	1:A:226:ASP:OD1	2.24	0.55
1:B:278:ARG:HA	1:B:303:LYS:HG3	1.88	0.55
1:A:220:ASP:OD2	1:A:223:LYS:HG3	2.07	0.55
1:A:238:THR:OG1	1:A:241:GLU:HG3	2.07	0.55
1:A:129:ILE:HG13	1:A:150:ILE:HG23	1.89	0.54
1:B:336:ARG:HG3	1:B:336:ARG:HH11	1.71	0.54
1:B:164:LEU:HD11	1:B:331:LEU:HB3	1.90	0.54
1:B:237:ILE:HG12	1:B:238:THR:N	2.20	0.54
1:A:188:ILE:CG1	1:A:212:ILE:HG13	2.25	0.53
1:B:81:PRO:HG2	1:B:107:GLU:HG2	1.88	0.53
1:B:336:ARG:HG3	1:B:336:ARG:NH1	2.24	0.53
1:A:243:ARG:CG	1:A:243:ARG:HH11	2.21	0.53
1:B:53:ASP:O	1:B:57:VAL:HG22	2.09	0.53
1:A:288:MET:HG3	3:A:2096:HOH:O	2.08	0.53
1:B:112:VAL:HG12	1:B:124:PRO:HA	1.91	0.53
1:B:222:GLN:O	1:B:226:ASP:OD1	2.27	0.53
1:A:212:ILE:C	1:A:212:ILE:HD12	2.29	0.53
1:B:188:ILE:HG13	1:B:212:ILE:CG1	2.36	0.52
1:B:109:VAL:HG22	1:B:162:ALA:CB	2.38	0.52
1:A:213:ASN:N	1:A:213:ASN:ND2	2.58	0.52
1:A:150:ILE:HD11	1:A:325:LYS:CG	2.40	0.52
1:A:44:ARG:HD2	3:A:2003:HOH:O	2.10	0.52
1:A:46:LEU:HG	1:A:350:LEU:HD11	1.91	0.51
1:A:216:ARG:N	2:A:1378:SO4:O2	2.34	0.51
1:B:300:LEU:HD21	1:B:307:LEU:HD11	1.91	0.51
1:B:243:ARG:CG	1:B:243:ARG:HH11	2.22	0.51
1:A:192:SER:HB3	1:A:213:ASN:HB3	1.92	0.51
1:A:265:GLY:HA2	1:A:269:SER:HB3	1.93	0.51
1:B:109:VAL:CG2	1:B:162:ALA:HB2	2.39	0.51
1:B:50:HIS:O	1:B:57:VAL:HG11	2.11	0.51
1:B:335:ILE:HG13	1:B:340:LEU:HD23	1.93	0.51
1:B:325:LYS:O	1:B:329:LEU:HG	2.11	0.50
1:B:234:GLU:OE2	1:B:235:HIS:NE2	2.44	0.50
1:B:127:TRP:HH2	1:B:158:LEU:HB2	1.71	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:127:TRP:HB3	1:B:152:VAL:CG2	2.42	0.50
1:B:192:SER:HB3	1:B:213:ASN:HB3	1.93	0.50
1:B:47:VAL:HG23	1:B:48:TYR:N	2.27	0.50
1:B:256:GLN:HB3	1:B:277:ALA:HB2	1.92	0.50
1:B:242:LEU:CD2	1:B:271:GLU:HB3	2.42	0.50
1:A:75:VAL:O	1:A:141:GLU:HG3	2.12	0.50
1:B:245:PRO:HD2	1:B:246:GLU:H	1.76	0.49
1:B:214:VAL:HG22	1:B:237:ILE:HD13	1.93	0.49
1:B:244:ARG:HB3	1:B:245:PRO:CD	2.43	0.49
1:A:336:ARG:CG	1:A:336:ARG:HH11	2.25	0.49
1:B:243:ARG:HG3	1:B:243:ARG:HH11	1.77	0.49
1:A:201:ILE:HG21	1:A:231:LEU:HB3	1.94	0.49
1:A:150:ILE:CD1	1:A:325:LYS:HG3	2.43	0.48
1:B:127:TRP:HB3	1:B:152:VAL:HG22	1.95	0.48
1:B:278:ARG:HG3	1:B:303:LYS:HE3	1.95	0.48
1:B:212:ILE:C	1:B:212:ILE:HD12	2.33	0.48
1:A:218:ARG:H	1:A:221:ILE:HD13	1.76	0.48
1:B:265:GLY:CA	1:B:269:SER:HB3	2.44	0.48
1:A:188:ILE:HD13	1:A:272:LEU:HD23	1.94	0.48
1:B:254:MET:HB2	1:B:255:PRO:CD	2.37	0.48
1:A:231:LEU:HD12	1:A:231:LEU:HA	1.78	0.48
1:A:135:LEU:HA	1:A:135:LEU:HD23	1.72	0.47
1:A:336:ARG:HD2	3:A:2131:HOH:O	2.13	0.47
1:A:234:GLU:HB2	3:A:2086:HOH:O	2.13	0.47
1:B:193:ASN:CG	1:B:224:LEU:HD21	2.35	0.47
1:A:81:PRO:HG3	1:A:107:GLU:HG2	1.96	0.47
1:A:242:LEU:HA	1:A:247:MET:HG3	1.95	0.47
1:B:212:ILE:O	1:B:212:ILE:HG13	2.13	0.47
1:B:78:LEU:HD21	1:B:127:TRP:NE1	2.29	0.47
1:A:242:LEU:HA	1:A:247:MET:CG	2.44	0.47
1:A:336:ARG:HG2	1:A:336:ARG:HH11	1.80	0.47
1:B:216:ARG:HE	1:B:216:ARG:HB2	1.52	0.47
1:A:243:ARG:H	1:A:243:ARG:HG2	1.59	0.47
1:A:217:ASP:HA	1:A:221:ILE:HD13	1.96	0.46
1:B:217:ASP:OD1	1:B:238:THR:HG21	2.15	0.46
1:B:245:PRO:CD	1:B:246:GLU:H	2.29	0.46
1:A:50:HIS:O	1:A:57:VAL:CG1	2.62	0.46
1:A:214:VAL:HG22	1:A:237:ILE:HD13	1.98	0.46
1:B:129:ILE:HG23	1:B:152:VAL:HG11	1.96	0.46
1:A:359:ALA:O	1:A:365:ILE:HG13	2.15	0.46
1:A:224:LEU:HD23	1:A:224:LEU:HA	1.73	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:263:CYS:SG	1:A:286:GLY:HA3	2.56	0.46
1:B:231:LEU:HA	1:B:231:LEU:HD12	1.67	0.46
1:A:299:LEU:HB3	1:A:305:LEU:HD12	1.98	0.46
1:B:188:ILE:CG1	1:B:212:ILE:HG13	2.40	0.45
1:B:234:GLU:HB2	3:B:2073:HOH:O	2.15	0.45
1:B:365:ILE:HD11	1:B:367:SER:O	2.17	0.45
1:A:243:ARG:CD	1:A:271:GLU:HG3	2.47	0.45
1:A:115:VAL:HB	1:A:119:VAL:HB	1.99	0.45
1:B:244:ARG:CB	1:B:245:PRO:CD	2.95	0.45
1:B:189:GLN:OE1	1:B:197:GLY:HA2	2.17	0.45
1:B:193:ASN:CB	1:B:224:LEU:HD11	2.44	0.45
1:B:243:ARG:CG	1:B:243:ARG:NH1	2.78	0.45
1:B:52:GLY:O	1:B:57:VAL:HG21	2.16	0.45
1:A:353:TYR:CE2	1:A:354:GLN:HG2	2.52	0.45
1:A:199:ALA:O	1:A:203:ILE:HD12	2.16	0.45
1:A:265:GLY:CA	1:A:269:SER:HB3	2.47	0.44
1:A:252:LYS:HE3	3:A:2091:HOH:O	2.17	0.44
1:A:243:ARG:HD3	1:A:271:GLU:HG3	2.00	0.44
1:B:224:LEU:HD23	1:B:224:LEU:HA	1.65	0.44
1:B:81:PRO:HG3	1:B:107:GLU:HG2	1.97	0.44
1:B:167:ASN:HB2	1:B:168:PRO:HD3	1.99	0.44
1:B:155:ASP:CG	1:B:336:ARG:HH12	2.20	0.44
1:B:67:ALA:O	1:B:69:ARG:HG3	2.18	0.44
1:A:53:ASP:HA	1:A:54:PRO:HD3	1.88	0.44
1:B:65:LEU:HD11	1:B:143:VAL:HG12	1.99	0.44
1:A:361:MET:HB3	1:A:361:MET:HE2	1.86	0.44
1:A:88:ASN:HB3	1:A:93:ASN:O	2.17	0.44
1:B:158:LEU:HD23	3:B:2051:HOH:O	2.18	0.44
1:B:81:PRO:CD	1:B:107:GLU:HG2	2.48	0.44
1:A:365:ILE:O	1:A:365:ILE:HG23	2.18	0.43
1:B:109:VAL:HG11	1:B:161:ALA:CB	2.48	0.43
1:A:279:GLY:O	1:A:306:LYS:HE2	2.19	0.43
1:B:65:LEU:CD1	1:B:143:VAL:HG12	2.49	0.43
1:A:362:LYS:HA	1:A:363:PRO:HD2	1.84	0.43
1:A:150:ILE:HD12	1:A:150:ILE:C	2.39	0.43
1:B:115:VAL:HG11	1:B:122:LEU:O	2.18	0.43
1:A:278:ARG:HA	1:A:303:LYS:HG3	1.99	0.43
1:A:237:ILE:HG12	1:A:238:THR:N	2.28	0.43
1:A:230:SER:HB2	3:A:2085:HOH:O	2.19	0.43
1:A:42:ARG:HD3	1:A:62:ASN:CG	2.39	0.43
1:B:219:PRO:HB2	3:B:2074:HOH:O	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:308:ARG:NE	1:B:306:LYS:HG3	2.33	0.43
1:B:345:CYS:HB2	1:B:370:ILE:HG13	2.01	0.43
1:B:362:LYS:HA	1:B:363:PRO:HD2	1.87	0.43
1:A:251:PHE:CZ	1:A:257:PRO:HG3	2.54	0.42
1:A:183:PRO:HA	1:A:208:GLY:O	2.18	0.42
1:A:216:ARG:HB2	2:A:1378:SO4:O2	2.18	0.42
1:A:65:LEU:HD12	1:A:65:LEU:HA	1.83	0.42
1:B:69:ARG:H	1:B:69:ARG:HG3	1.52	0.42
1:A:123:LYS:HG3	1:A:126:ASP:OD2	2.19	0.42
1:B:151:GLN:HG3	1:B:152:VAL:N	2.33	0.42
1:B:78:LEU:CD2	1:B:158:LEU:CD1	2.96	0.42
1:B:109:VAL:HG11	1:B:161:ALA:HB1	2.00	0.42
1:A:159:GLN:HG2	1:A:159:GLN:H	1.63	0.41
1:A:73:VAL:N	1:A:144:PHE:O	2.48	0.41
1:A:178:PHE:CD2	1:A:283:VAL:HG21	2.56	0.41
1:B:70:GLY:O	1:B:116:GLY:HA3	2.20	0.41
1:A:251:PHE:CZ	1:A:257:PRO:HD3	2.56	0.41
1:B:243:ARG:HD2	1:B:271:GLU:HG2	2.02	0.41
1:B:78:LEU:CG	1:B:158:LEU:HD11	2.50	0.41
1:A:81:PRO:CD	1:A:107:GLU:HG2	2.50	0.41
1:A:164:LEU:HD11	1:A:331:LEU:HB3	2.01	0.41
1:B:112:VAL:CG1	1:B:124:PRO:HA	2.50	0.41
1:A:75:VAL:HB	1:A:110:ALA:HB1	2.02	0.41
1:A:188:ILE:HG13	1:A:212:ILE:CD1	2.48	0.41
1:A:214:VAL:HG22	1:A:237:ILE:CD1	2.51	0.41
1:A:336:ARG:NH1	1:A:336:ARG:CG	2.83	0.41
1:A:345:CYS:O	1:A:345:CYS:SG	2.79	0.41
1:B:176:MET:CE	1:B:207:LEU:HD21	2.50	0.41
1:A:150:ILE:HD11	1:A:325:LYS:HG2	2.03	0.40
1:A:251:PHE:CE2	1:A:257:PRO:CD	2.98	0.40
1:B:67:ALA:O	1:B:69:ARG:N	2.49	0.40
1:B:48:TYR:CE2	1:B:90:ILE:HA	2.55	0.40
1:A:300:LEU:HD21	1:A:307:LEU:CD1	2.51	0.40
1:B:135:LEU:HD23	1:B:135:LEU:HA	1.78	0.40
1:B:273:LEU:HD12	1:B:273:LEU:HA	1.82	0.40
1:A:150:ILE:CD1	1:A:325:LYS:CG	2.99	0.40
1:A:107:GLU:HG3	1:A:108:GLY:N	2.36	0.40
1:B:67:ALA:C	1:B:69:ARG:H	2.23	0.40
1:B:364:PHE:N	1:B:364:PHE:CD1	2.90	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	330/344 (96%)	307 (93%)	23 (7%)	0	100 100
1	B	330/344 (96%)	305 (92%)	19 (6%)	6 (2%)	11 12
All	All	660/688 (96%)	612 (93%)	42 (6%)	6 (1%)	21 29

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	68	VAL
1	B	69	ARG
1	B	117	SER
1	B	55	ALA
1	B	350	LEU
1	B	244	ARG

5.3.2 Protein sidechains

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	275/283 (97%)	217 (79%)	58 (21%)	1 1
1	B	275/283 (97%)	212 (77%)	63 (23%)	1 1
All	All	550/566 (97%)	429 (78%)	121 (22%)	1 1

All (121) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	42	ARG
1	A	47	VAL
1	A	53	ASP
1	A	64	GLU
1	A	68	VAL
1	A	74	ARG
1	A	76	LYS
1	A	78	LEU
1	A	93	ASN
1	A	99	GLU
1	A	109	VAL
1	A	123	LYS
1	A	135	LEU
1	A	139	ARG
1	A	143	VAL
1	A	145	SER
1	A	146	GLU
1	A	147	GLU
1	A	150	ILE
1	A	154	SER
1	A	192	SER
1	A	207	LEU
1	A	210	ARG
1	A	212	ILE
1	A	213	ASN
1	A	216	ARG
1	A	218	ARG
1	A	221	ILE
1	A	224	LEU
1	A	227	ARG
1	A	230	SER
1	A	231	LEU
1	A	237	ILE
1	A	238	THR
1	A	240	GLU
1	A	243	ARG
1	A	251	PHE
1	A	253	ASP
1	A	274	ARG
1	A	278	ARG
1	A	290	LYS
1	A	291	GLN
1	A	306	LYS

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Mol	Chain	Res	Type
1	A	317	LYS
1	A	331	LEU
1	A	333	ASP
1	A	337	ARG
1	A	341	THR
1	A	346	SER
1	A	351	GLN
1	A	352	ASP
1	A	355	SER
1	A	357	LEU
1	A	358	GLU
1	A	360	SER
1	A	365	ILE
1	A	366	SER
1	A	373	MET
1	B	42	ARG
1	B	44	ARG
1	B	47	VAL
1	B	53	ASP
1	B	56	LYS
1	B	57	VAL
1	B	60	LEU
1	B	64	GLU
1	B	68	VAL
1	B	69	ARG
1	B	71	SER
1	B	78	LEU
1	B	93	ASN
1	B	99	GLU
1	B	109	VAL
1	B	111	GLN
1	B	117	SER
1	B	123	LYS
1	B	143	VAL
1	B	145	SER
1	B	146	GLU
1	B	147	GLU
1	B	150	ILE
1	B	158	LEU
1	B	159	GLN
1	B	160	SER
1	B	207	LEU

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Mol	Chain	Res	Type
1	B	212	ILE
1	B	216	ARG
1	B	218	ARG
1	B	221	ILE
1	B	224	LEU
1	B	227	ARG
1	B	229	LYS
1	B	231	LEU
1	B	237	ILE
1	B	238	THR
1	B	240	GLU
1	B	243	ARG
1	B	251	PHE
1	B	252	LYS
1	B	253	ASP
1	B	271	GLU
1	B	273	LEU
1	B	274	ARG
1	B	288	MET
1	B	290	LYS
1	B	291	GLN
1	B	296	SER
1	B	298	SER
1	B	306	LYS
1	B	308	ARG
1	B	317	LYS
1	B	331	LEU
1	B	334	LEU
1	B	337	ARG
1	B	352	ASP
1	B	355	SER
1	B	357	LEU
1	B	358	GLU
1	B	360	SER
1	B	365	ILE
1	B	373	MET

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	88	ASN
1	A	111	GLN

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Mol	Chain	Res	Type
1	A	151	GLN
1	A	235	HIS
1	A	351	GLN
1	A	369	GLN
1	B	88	ASN
1	B	111	GLN
1	B	351	GLN
1	B	354	GLN

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)

11 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	SO4	A	1374	-	4,4,4	0.34	0	6,6,6	0.23	0
2	SO4	A	1375	-	4,4,4	0.27	0	6,6,6	0.30	0
2	SO4	A	1376	-	4,4,4	0.56	0	6,6,6	0.19	0
2	SO4	A	1377	-	4,4,4	0.37	0	6,6,6	0.28	0
2	SO4	A	1378	-	4,4,4	0.47	0	6,6,6	0.29	0
2	SO4	B	1374	-	4,4,4	0.41	0	6,6,6	0.14	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	SO4	B	1375	-	4,4,4	0.43	0	6,6,6	0.09	0
2	SO4	B	1376	-	4,4,4	0.15	0	6,6,6	0.10	0
2	SO4	B	1377	-	4,4,4	0.29	0	6,6,6	0.10	0
2	SO4	B	1378	-	4,4,4	0.27	0	6,6,6	0.16	0
2	SO4	B	1379	-	4,4,4	0.19	0	6,6,6	0.16	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	SO4	A	1374	-	-	0/0/0/0	0/0/0/0
2	SO4	A	1375	-	-	0/0/0/0	0/0/0/0
2	SO4	A	1376	-	-	0/0/0/0	0/0/0/0
2	SO4	A	1377	-	-	0/0/0/0	0/0/0/0
2	SO4	A	1378	-	-	0/0/0/0	0/0/0/0
2	SO4	B	1374	-	-	0/0/0/0	0/0/0/0
2	SO4	B	1375	-	-	0/0/0/0	0/0/0/0
2	SO4	B	1376	-	-	0/0/0/0	0/0/0/0
2	SO4	B	1377	-	-	0/0/0/0	0/0/0/0
2	SO4	B	1378	-	-	0/0/0/0	0/0/0/0
2	SO4	B	1379	-	-	0/0/0/0	0/0/0/0

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.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1377	SO4	1	0
2	A	1378	SO4	2	0

5.7 Other polymers (i)

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	332/344 (96%)	0.08	15 (4%)	37	37	31, 51, 92, 129	0
1	B	332/344 (96%)	0.10	19 (5%)	27	27	30, 50, 91, 128	0
All	All	664/688 (96%)	0.09	34 (5%)	32	31	30, 51, 92, 129	0

All (34) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	251	PHE	8.4
1	A	247	MET	6.9
1	A	221	ILE	5.1
1	A	248	LYS	5.1
1	A	245	PRO	4.7
1	A	244	ARG	4.5
1	A	243	ARG	4.4
1	A	249	ASN	4.0
1	B	222	GLN	3.6
1	B	251	PHE	3.5
1	B	196	VAL	3.4
1	B	252	LYS	3.3
1	B	63	LEU	3.2
1	B	226	ASP	3.0
1	A	250	PHE	2.8
1	B	221	ILE	2.7
1	B	364	PHE	2.7
1	B	114	ALA	2.6
1	B	116	GLY	2.6
1	B	56	LYS	2.6
1	A	246	GLU	2.6
1	B	225	SER	2.5
1	B	42	ARG	2.5
1	B	57	VAL	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	290	LYS	2.2
1	A	289	ALA	2.2
1	B	64	GLU	2.2
1	A	49	GLY	2.1
1	B	289	ALA	2.1
1	B	250	PHE	2.1
1	B	170	THR	2.1
1	A	253	ASP	2.1
1	A	219	PRO	2.1
1	A	71	SER	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 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(Å^2)	Q<0.9
2	SO4	B	1377	5/5	0.78	0.25	1.73	71,75,76,77	5
2	SO4	B	1378	5/5	0.97	0.23	0.21	81,85,86,87	0
2	SO4	B	1379	5/5	0.94	0.13	-1.15	57,61,63,64	0
2	SO4	A	1378	5/5	0.98	0.10	-1.42	57,61,62,63	0
2	SO4	A	1377	5/5	0.97	0.14	-2.34	65,68,70,70	0
2	SO4	A	1375	5/5	0.95	0.16	-	72,76,77,78	5
2	SO4	B	1374	5/5	0.95	0.11	-	70,74,75,76	5
2	SO4	B	1375	5/5	0.89	0.21	-	75,79,80,82	5
2	SO4	A	1374	5/5	0.96	0.13	-	64,67,68,69	5
2	SO4	A	1376	5/5	0.95	0.14	-	67,72,73,73	5
2	SO4	B	1376	5/5	0.88	0.20	-	93,98,99,99	5

6.5 Other polymers (i)

There are no such residues in this entry.