Full wwPDB X-ray Structure Validation Report ⓘ

Nov 12, 2024 – 03:33 PM EST

PDB ID	:	3OP1
Title	:	Crystal Structure of Macrolide-efflux Protein SP_1110 from Streptococcus pneumoniae
Authors	:	Kim, Y.; Li, H.; Cobb, G.; Joachimiak, A.; Midwest Center for Structural Genomics (MCSG)
Deposited on	:	2010-08-31
Resolution	:	2.49 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:

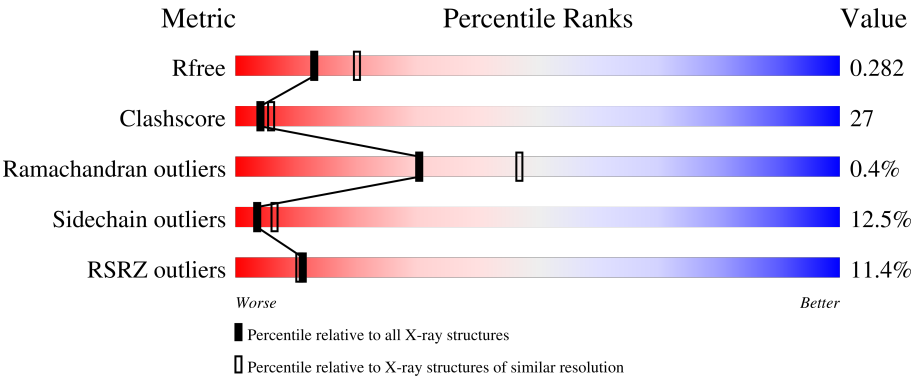
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 2.49 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}	164625	7106 (2.50-2.46)
Clashscore	180529	7991 (2.50-2.46)
Ramachandran outliers	177936	7888 (2.50-2.46)
Sidechain outliers	177891	7890 (2.50-2.46)
RSRZ outliers	164620	7106 (2.50-2.46)

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	308	2% 62% 31%
1	B	308	27% 53% 36% 10%
1	C	308	2% 53% 25% 6% 16%

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	GOL	A	315	-	-	X	-
3	GOL	A	317	-	-	X	-
4	PEG	A	319	-	-	X	-
4	PEG	B	314	-	-	X	-
5	ACY	A	316	-	-	X	-

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 7247 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.

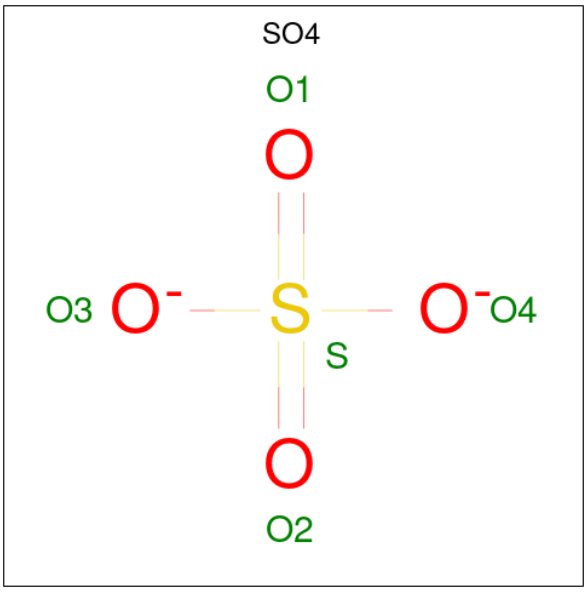
- Molecule 1 is a protein called Macrolide-efflux protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	297	Total	C	N	O	Se	0	1	0
			2387	1531	399	449	8			
1	B	304	Total	C	N	O	Se	0	0	0
			2426	1551	411	457	7			
1	C	260	Total	C	N	O	Se	0	0	0
			2067	1333	346	381	7			

There are 9 discrepancies between the modelled and reference sequences:

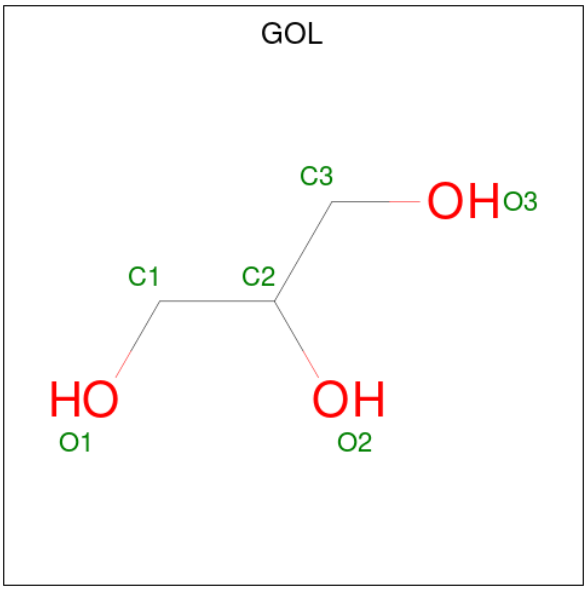
Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	SER	-	expression tag	UNP Q97QT9
A	-1	ASN	-	expression tag	UNP Q97QT9
A	0	ALA	-	expression tag	UNP Q97QT9
B	-2	SER	-	expression tag	UNP Q97QT9
B	-1	ASN	-	expression tag	UNP Q97QT9
B	0	ALA	-	expression tag	UNP Q97QT9
C	-2	SER	-	expression tag	UNP Q97QT9
C	-1	ASN	-	expression tag	UNP Q97QT9
C	0	ALA	-	expression tag	UNP Q97QT9

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



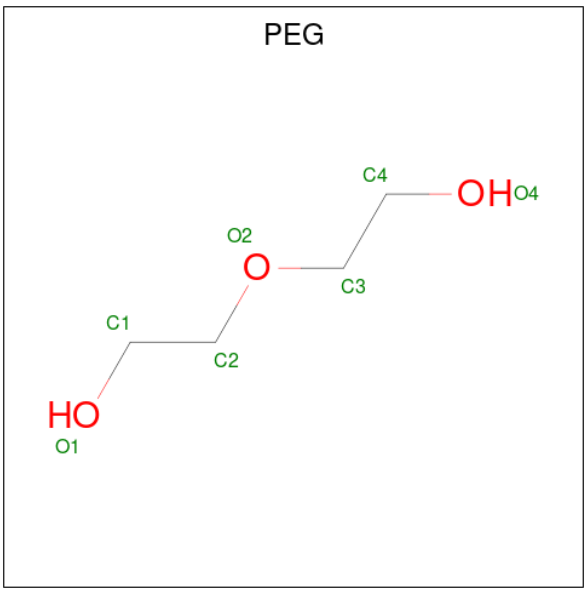
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0
2	C	1	Total O S 5 4 1	0	0

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



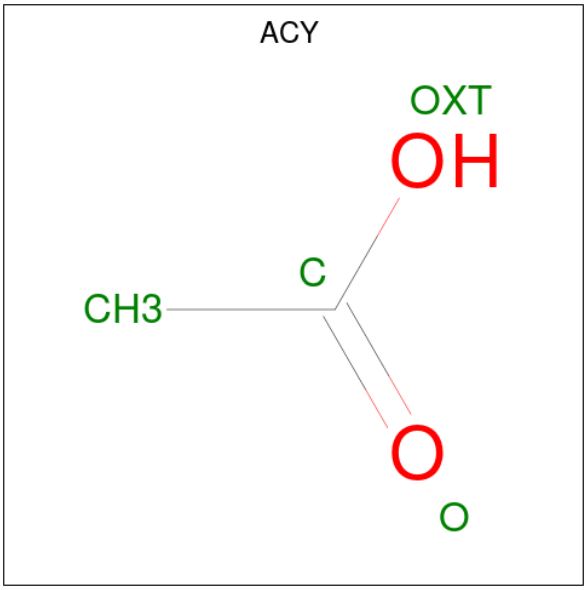
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	B	1	Total C O 6 3 3	0	0
3	B	1	Total C O 6 3 3	0	0
3	B	1	Total C O 6 3 3	0	0
3	C	1	Total C O 6 3 3	0	0
3	C	1	Total C O 6 3 3	0	0
3	C	1	Total C O 6 3 3	0	0
3	C	1	Total C O 6 3 3	0	0
3	C	1	Total C O 6 3 3	0	0

- Molecule 4 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 7 4 3	0	0
4	A	1	Total C O 7 4 3	0	0
4	B	1	Total C O 7 4 3	0	0
4	B	1	Total C O 14 8 6	0	1

- Molecule 5 is ACETIC ACID (three-letter code: ACY) (formula: $C_2H_4O_2$).



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

- Molecule 6 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	B	1	Total Cl 1 1	0	0

- Molecule 7 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	81	Total O 81 81	0	0

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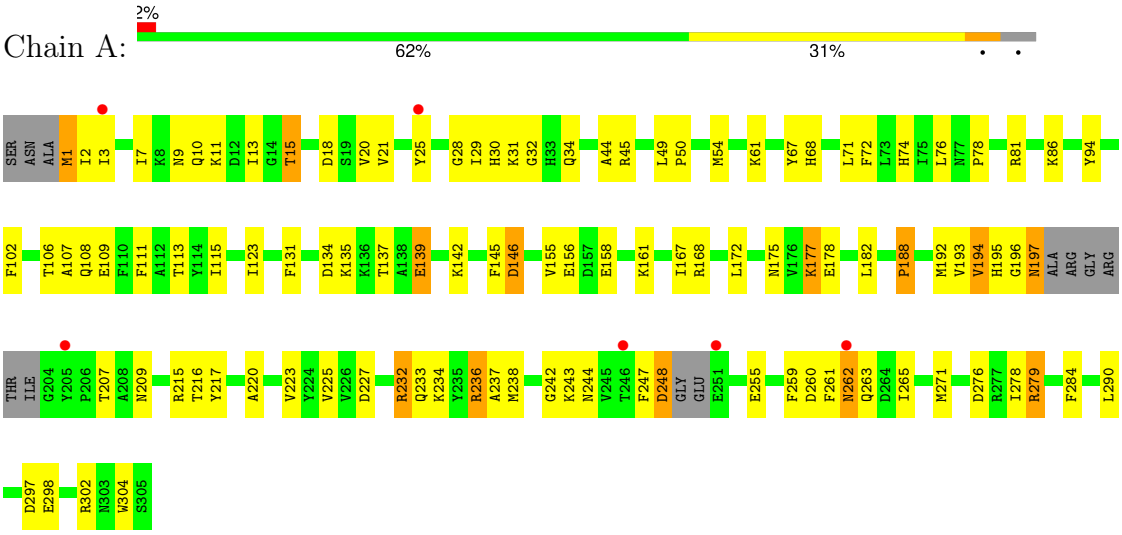
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	B	95	Total O 95 95	0	0
7	C	59	Total O 59 59	0	0

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.

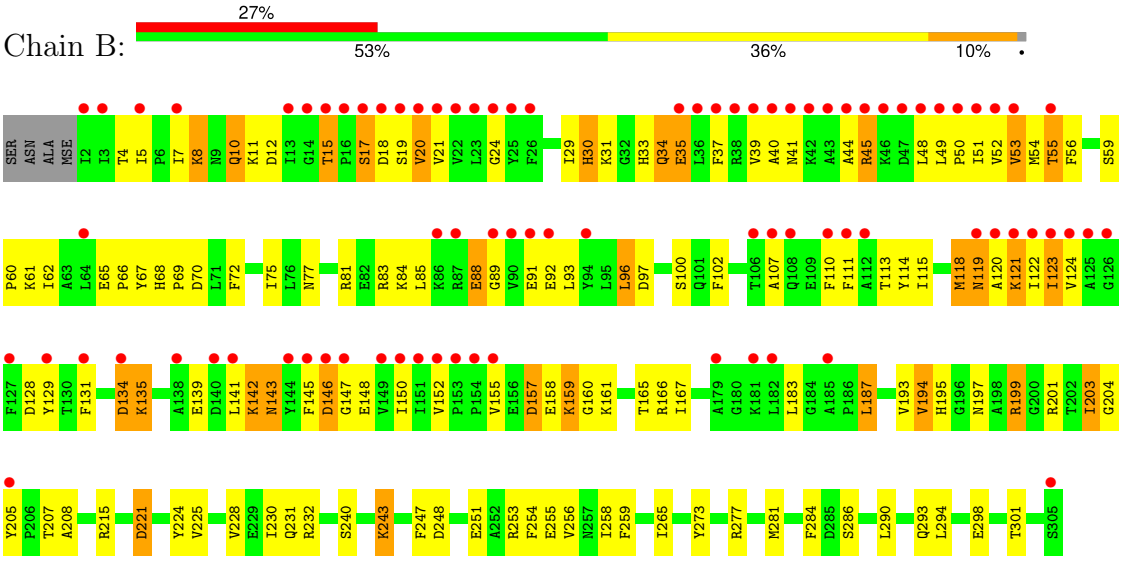
• Molecule 1: Macrolide-efflux protein

Chain A:



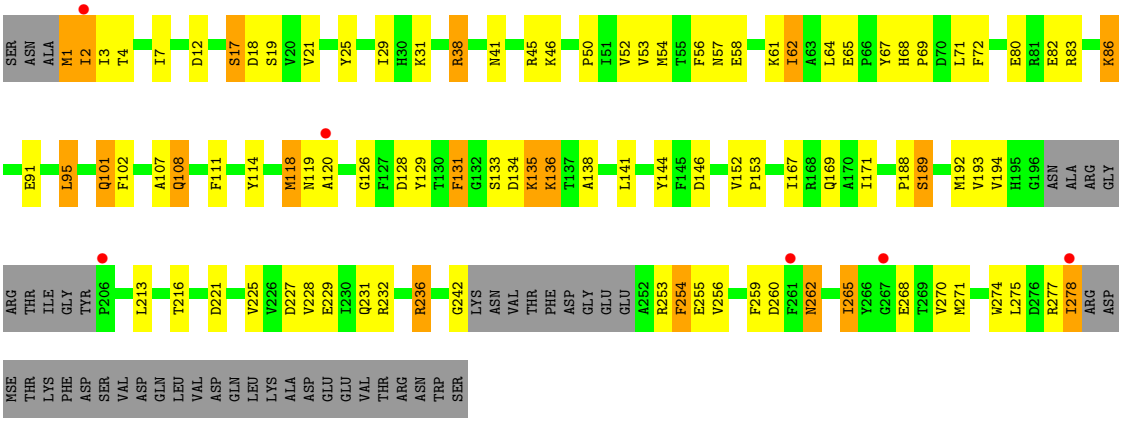
• Molecule 1: Macrolide-efflux protein

Chain B:



• Molecule 1: Macrolide-efflux protein

Chain C:


SER ASN ALA M1 I2 I3 T4 I7 D12 S17 D18 S19 V20 V21 Y25 I29 H30 K31 R38 N41 R45 K46 P50 I51 V52 V53 M54 T55 F56 N57 E58 K61 I62 A63 L64 E65 P66 Y67 H68 P69 D70 L71 F72 E80 R81 E82 R83 K86
E91 L95 Q101 F102 A107 Q108 F111 Y114 M118 N119 A120 G126 F127 D128 Y129 T130 F131 G132 S133 D134 K135 K136 T137 A138 L141 Y144 F145 D146 V152 P153 I167 R168 Q169 A170 I171 P188 S189 M192 V193 V194 H195 G196 ASN ALA ARG GLY
ARG THR ILE GLY TYR P206 L213 T216 D221 V225 V226 D227 V228 E229 I230 Q231 R232 R236 G242 LYS ASN VAL THR PHE ASP GLY GLU GLU A252 R253 F254 E255 V256 F259 D260 F261 N262 I265 Y266 G267 E268 T269 V270 M271 W274 L275 D276 R277 I278 ARG ASP
MSE THR LYS PHE ASP SER VAL ASP GLN LEU VAL ASP GLN LEU LYS ALA ASP GLU GLU VAL THR ARG ASN TRP SER

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	180.15Å 73.25Å 87.52Å 90.00° 112.48° 90.00°	Depositor
Resolution (Å)	35.76 – 2.49 35.76 – 2.49	Depositor EDS
% Data completeness (in resolution range)	97.9 (35.76-2.49) 97.9 (35.76-2.49)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.09	Depositor
$< I/\sigma(I) >$ [1]	2.66 (at 2.48Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.6.2_432), REFMAC 5.5	Depositor
R, R_{free}	0.198 , 0.265 0.220 , 0.282	Depositor DCC
R_{free} test set	1817 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å^2)	46.6	Xtriage
Anisotropy	0.438	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 72.2	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	7247	wwPDB-VP
Average B, all atoms (Å^2)	59.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.92% 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: PEG, SO4, GOL, CL, ACY

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	0/2428	0.73	1/3271 (0.0%)
1	B	0.62	0/2468	0.69	0/3327
1	C	0.60	0/2103	0.70	0/2832
All	All	0.63	0/6999	0.71	1/9430 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	236	ARG	CG-CD-NE	-5.06	101.17	111.80

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	2387	0	2380	110	0
1	B	2426	0	2423	177	0
1	C	2067	0	2089	100	0
2	A	5	0	0	0	0
2	B	10	0	0	0	0
2	C	5	0	0	1	0
3	A	24	0	32	15	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	18	0	24	3	0
3	C	30	0	40	2	0
4	A	14	0	20	6	0
4	B	21	0	30	9	0
5	A	4	0	3	2	0
6	B	1	0	0	0	0
7	A	81	0	0	4	0
7	B	95	0	0	10	0
7	C	59	0	0	8	0
All	All	7247	0	7041	379	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 (379) 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:31:LYS:HA	1:B:34:GLN:OE1	1.42	1.15
1:A:192:MSE:HE3	1:B:62:ILE:HG21	1.17	1.11
1:A:197:ASN:C	1:A:197:ASN:HD22	1.53	1.06
1:A:260:ASP:HA	3:A:315:GOL:H31	1.32	1.05
1:A:194:VAL:HG13	1:B:67:TYR:HB2	1.35	1.04
1:A:15:THR:HG22	1:A:94:TYR:OH	1.58	1.04
1:B:49:LEU:HD11	1:B:121:LYS:HE3	1.35	1.03
1:B:134:ASP:O	1:B:135:LYS:HB3	1.58	1.00
1:A:106:THR:HG23	1:A:108:GLN:H	1.29	0.97
1:C:21:VAL:CG2	1:C:120:ALA:HB2	1.95	0.95
1:B:4:THR:O	1:B:5:ILE:HD13	1.68	0.92
1:A:192:MSE:CE	1:B:62:ILE:HG21	2.02	0.88
1:B:34:GLN:HG3	1:B:88:GLU:OE2	1.72	0.88
1:B:118:MSE:O	1:B:119:ASN:HB2	1.73	0.88
1:C:136:LYS:HD2	1:C:144:TYR:OH	1.75	0.86
1:B:18:ASP:HB3	1:B:121:LYS:CG	2.04	0.86
1:B:10:GLN:HG2	1:B:113:THR:HB	1.58	0.85
1:B:33:HIS:O	1:B:37:PHE:CD2	2.30	0.85
1:A:215:ARG:HD3	4:A:319:PEG:H22	1.55	0.85
1:A:192:MSE:HE3	1:B:62:ILE:CG2	2.06	0.84
1:B:155:VAL:HG12	1:B:155:VAL:O	1.76	0.84
1:B:122:ILE:HG12	1:B:148:GLU:HB3	1.56	0.84
1:A:106:THR:HG23	1:A:108:GLN:N	1.91	0.83
1:A:197:ASN:C	1:A:197:ASN:ND2	2.30	0.83

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:238:MSE:HE2	1:A:298:GLU:HA	1.58	0.83
1:B:30:HIS:CE1	1:B:33:HIS:CD2	2.67	0.83
1:B:123:ILE:HD11	1:B:141:LEU:HD13	1.61	0.82
1:C:21:VAL:HG23	1:C:120:ALA:HB2	1.60	0.82
1:A:67:TYR:HB2	1:B:194:VAL:HG13	1.60	0.82
1:B:49:LEU:CD1	1:B:121:LYS:HG3	2.10	0.81
1:C:2:ILE:HG22	1:C:86:LYS:HG3	1.61	0.81
1:B:31:LYS:CA	1:B:34:GLN:OE1	2.26	0.81
1:B:49:LEU:HD13	1:B:121:LYS:HG3	1.62	0.81
1:B:29:ILE:N	1:B:29:ILE:HD13	1.94	0.80
1:A:194:VAL:CG1	1:B:67:TYR:HB2	2.12	0.79
1:B:123:ILE:O	1:B:123:ILE:HG13	1.83	0.79
4:B:314:PEG:H41	7:B:398:HOH:O	1.82	0.79
1:B:122:ILE:HG23	1:B:148:GLU:O	1.83	0.79
1:C:21:VAL:HG21	1:C:120:ALA:HB2	1.65	0.79
1:B:34:GLN:CG	1:B:88:GLU:OE2	2.32	0.78
1:B:61:LYS:HD2	3:B:316:GOL:H12	1.65	0.78
1:C:136:LYS:CD	1:C:144:TYR:OH	2.32	0.78
1:B:284:PHE:H	3:B:315:GOL:H11	1.46	0.77
1:A:284:PHE:CD2	1:A:290:LEU:HD13	2.20	0.76
1:B:18:ASP:HB3	1:B:121:LYS:HG2	1.65	0.76
1:A:243:LYS:O	1:A:244:ASN:HB2	1.84	0.76
1:C:118:MSE:O	1:C:119:ASN:HB2	1.84	0.76
1:C:136:LYS:CE	1:C:144:TYR:OH	2.35	0.75
1:B:29:ILE:HD13	1:B:29:ILE:H	1.50	0.75
1:A:238:MSE:HE2	1:A:298:GLU:CA	2.16	0.74
1:C:136:LYS:HD2	1:C:144:TYR:CZ	2.23	0.74
1:B:8:LYS:HE3	1:B:8:LYS:HA	1.69	0.74
1:C:62:ILE:HD13	1:C:71:LEU:HB3	1.70	0.73
1:C:193:VAL:HG11	1:C:265:ILE:HD12	1.69	0.73
1:B:120:ALA:O	1:B:145:PHE:HZ	1.73	0.72
1:A:260:ASP:CA	3:A:315:GOL:H31	2.15	0.72
3:A:315:GOL:H12	1:C:41:ASN:HD22	1.54	0.72
1:B:207:THR:HG21	1:B:255:GLU:HG2	1.70	0.71
1:B:39:VAL:HG21	1:B:152:VAL:HG22	1.73	0.71
1:A:67:TYR:HB2	1:B:194:VAL:CG1	2.20	0.71
1:C:19:SER:HA	1:C:50:PRO:HD2	1.73	0.71
1:A:111:PHE:HA	1:A:115:ILE:HG12	1.73	0.70
1:B:135:LYS:CG	1:B:135:LYS:O	2.39	0.70
1:C:1:MSE:SE	1:C:1:MSE:N	2.76	0.69
1:C:68:HIS:ND1	1:C:69:PRO:HD2	2.08	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:157:ASP:OD1	1:B:157:ASP:C	2.30	0.69
1:B:215:ARG:HD3	4:B:314:PEG:H21	1.74	0.69
1:C:262:ASN:CG	1:C:262:ASN:O	2.30	0.69
1:B:65:GLU:HB3	1:B:66:PRO:HD2	1.75	0.69
1:B:88:GLU:HA	1:B:88:GLU:OE1	1.93	0.69
1:B:134:ASP:O	1:B:135:LYS:CB	2.39	0.69
1:A:196:GLY:O	1:A:197:ASN:C	2.30	0.68
1:A:238:MSE:HE3	1:A:259:PHE:HZ	1.58	0.68
1:A:232:ARG:HG3	1:A:232:ARG:HH11	1.59	0.68
1:A:106:THR:HG22	1:A:109:GLU:H	1.59	0.67
1:A:260:ASP:OD2	3:A:315:GOL:H2	1.94	0.67
1:A:207:THR:CG2	1:A:255:GLU:HB3	2.25	0.67
1:B:20:VAL:HG21	1:B:44:ALA:HB2	1.75	0.67
3:A:315:GOL:C1	1:C:41:ASN:HD22	2.08	0.66
1:B:35:GLU:HB2	1:B:155:VAL:HG21	1.75	0.66
1:A:223:VAL:HG12	1:A:278:ILE:HD12	1.77	0.66
1:A:192:MSE:CE	1:B:62:ILE:HD13	2.26	0.66
1:C:31:LYS:HE2	7:C:361:HOH:O	1.95	0.66
1:C:128:ASP:OD2	7:C:370:HOH:O	2.13	0.65
1:B:24:GLY:H	4:B:317[B]:PEG:H12	1.62	0.65
1:B:18:ASP:HB3	1:B:121:LYS:CD	2.27	0.64
1:B:135:LYS:O	1:B:135:LYS:HG3	1.97	0.64
1:B:146:ASP:OD1	1:B:147:GLY:N	2.30	0.64
1:B:114:TYR:O	1:B:118:MSE:CG	2.46	0.63
1:B:159:LYS:HB3	1:B:166:ARG:CZ	2.28	0.63
1:C:216:THR:HG21	7:C:328:HOH:O	1.97	0.63
1:A:197:ASN:ND2	1:A:197:ASN:O	2.30	0.63
1:B:157:ASP:OD1	1:B:159:LYS:N	2.30	0.63
1:B:48:LEU:N	1:B:48:LEU:HD22	2.13	0.63
1:B:18:ASP:CG	1:B:121:LYS:HD3	2.18	0.63
1:A:74:HIS:CD2	3:A:317:GOL:H31	2.34	0.63
1:B:143:ASN:OD1	1:B:143:ASN:N	2.30	0.63
1:B:142:LYS:HA	7:B:374:HOH:O	1.97	0.62
1:B:134:ASP:OD2	1:B:134:ASP:N	2.30	0.62
1:C:167:ILE:O	1:C:171:ILE:HG13	2.00	0.62
1:A:32:GLY:HA2	1:A:155:VAL:HG21	1.82	0.62
1:B:107:ALA:N	1:B:134:ASP:OD2	2.29	0.62
1:A:243:LYS:HG2	1:A:247:PHE:CZ	2.35	0.61
1:B:53:VAL:HG12	1:B:93:LEU:CD1	2.30	0.61
1:B:199:ARG:HD3	7:B:403:HOH:O	2.00	0.61
1:A:167:ILE:HD11	1:A:182:LEU:CB	2.31	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:102:PHE:HZ	4:B:317[A]:PEG:H32	1.65	0.61
1:C:58:GLU:HG3	7:C:332:HOH:O	2.00	0.61
1:B:159:LYS:HB3	1:B:166:ARG:NH1	2.16	0.60
1:B:142:LYS:HE2	7:B:374:HOH:O	2.01	0.60
1:C:111:PHE:HE2	1:C:131:PHE:HE2	1.47	0.60
1:C:277:ARG:HG2	1:C:278:ILE:N	2.16	0.60
1:B:221:ASP:OD1	1:B:243:LYS:HG2	2.02	0.60
1:B:49:LEU:CD1	1:B:121:LYS:HE3	2.24	0.59
1:B:33:HIS:HB3	1:B:37:PHE:HE2	1.66	0.59
1:B:114:TYR:O	1:B:118:MSE:HG2	2.02	0.59
1:C:1:MSE:SE	1:C:1:MSE:H3	2.34	0.59
1:C:136:LYS:HD2	1:C:144:TYR:CE2	2.37	0.59
1:B:65:GLU:HB3	1:B:66:PRO:CD	2.33	0.59
1:B:129:TYR:CZ	1:B:131:PHE:HB3	2.37	0.59
1:C:17:SER:OG	1:C:18:ASP:N	2.34	0.59
1:A:10:GLN:NE2	1:A:113:THR:HG23	2.18	0.59
1:B:19:SER:HB2	1:B:50:PRO:O	2.02	0.59
1:B:120:ALA:O	1:B:145:PHE:CZ	2.53	0.59
1:C:136:LYS:HE2	1:C:144:TYR:OH	2.03	0.59
1:C:57:ASN:OD1	1:C:95:LEU:HB3	2.02	0.59
1:C:229:GLU:O	1:C:270:VAL:HG23	2.03	0.59
1:C:2:ILE:CG2	1:C:86:LYS:HG3	2.33	0.58
1:A:167:ILE:HD11	1:A:182:LEU:HB2	1.84	0.58
1:A:233:GLN:HB2	7:A:357:HOH:O	2.02	0.58
1:B:31:LYS:HA	1:B:34:GLN:HB2	1.85	0.58
1:B:284:PHE:CD2	1:B:290:LEU:HD13	2.39	0.58
1:C:19:SER:O	1:C:120:ALA:HA	2.03	0.57
3:A:315:GOL:H12	1:C:38:ARG:HA	1.86	0.57
1:B:111:PHE:HA	1:B:115:ILE:CG1	2.35	0.57
1:A:74:HIS:O	1:A:216:THR:HA	2.04	0.57
1:A:61:LYS:NZ	5:A:316:ACY:H1	2.20	0.57
1:B:55:THR:HG23	1:B:56:PHE:N	2.20	0.57
1:C:189:SER:HB2	1:C:274:TRP:HE1	1.70	0.57
1:B:59:SER:OG	1:B:61:LYS:HB2	2.05	0.57
4:B:314:PEG:C4	7:B:398:HOH:O	2.46	0.57
1:C:131:PHE:HD1	1:C:131:PHE:H	1.51	0.57
1:A:188:PRO:HB2	1:A:271:MSE:CE	2.35	0.56
1:A:278:ILE:HG22	1:A:279:ARG:HG2	1.87	0.56
1:C:228:VAL:HG21	1:C:256:VAL:HG11	1.87	0.56
1:B:122:ILE:HG13	7:B:332:HOH:O	2.04	0.56
1:C:62:ILE:CD1	1:C:71:LEU:HB3	2.36	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:242:GLY:O	1:A:247:PHE:CE2	2.59	0.56
1:B:131:PHE:CZ	1:B:141:LEU:HD23	2.41	0.56
1:A:10:GLN:HA	1:A:13:ILE:HD12	1.87	0.56
1:A:207:THR:HG21	1:A:255:GLU:HB3	1.88	0.56
1:C:259:PHE:O	1:C:260:ASP:HB2	2.05	0.55
1:B:18:ASP:CB	1:B:121:LYS:HD3	2.36	0.55
1:A:232:ARG:HG3	1:A:232:ARG:NH1	2.21	0.55
1:B:207:THR:CG2	1:B:255:GLU:HG2	2.37	0.55
1:A:7:ILE:HG13	1:A:7:ILE:O	2.07	0.54
1:B:40:ALA:HB2	1:B:124:VAL:HG21	1.89	0.54
1:C:136:LYS:CD	1:C:144:TYR:CE2	2.91	0.54
1:B:4:THR:HG22	1:B:93:LEU:HD23	1.90	0.54
1:B:259:PHE:HE1	1:B:301:THR:CG2	2.19	0.54
1:A:10:GLN:OE1	1:A:10:GLN:N	2.30	0.54
3:A:315:GOL:C1	1:C:41:ASN:ND2	2.71	0.54
3:A:315:GOL:H11	1:C:41:ASN:ND2	2.23	0.54
1:B:83:ARG:HG3	7:B:380:HOH:O	2.08	0.54
1:A:236:ARG:HG3	1:A:237:ALA:N	2.21	0.53
1:B:21:VAL:CG2	1:B:120:ALA:HB2	2.37	0.53
1:B:129:TYR:CE2	1:B:131:PHE:HB3	2.42	0.53
1:B:193:VAL:HG21	1:B:265:ILE:HD12	1.91	0.53
1:A:260:ASP:OD2	3:A:315:GOL:C2	2.55	0.53
1:C:134:ASP:O	1:C:135:LYS:CB	2.56	0.53
1:B:31:LYS:O	1:B:34:GLN:HB2	2.09	0.53
1:B:107:ALA:H	1:B:134:ASP:CG	2.11	0.53
1:C:2:ILE:HD13	1:C:82:GLU:HG3	1.90	0.53
1:C:62:ILE:HD11	1:C:71:LEU:O	2.08	0.53
1:A:106:THR:HG22	1:A:109:GLU:CD	2.28	0.53
1:B:52:VAL:CG2	1:B:118:MSE:HE2	2.39	0.53
1:C:21:VAL:HG23	1:C:120:ALA:CB	2.35	0.53
1:A:248:ASP:OD2	1:A:248:ASP:C	2.47	0.52
1:B:30:HIS:ND1	1:B:30:HIS:C	2.62	0.52
1:C:19:SER:HB2	1:C:52:VAL:HG23	1.91	0.52
1:B:114:TYR:O	1:B:118:MSE:HG3	2.09	0.52
1:C:4:THR:CG2	1:C:95:LEU:CD2	2.88	0.52
1:B:122:ILE:HA	1:B:145:PHE:HE2	1.73	0.52
1:C:228:VAL:HG13	1:C:270:VAL:HG21	1.90	0.52
1:A:29:ILE:HD11	1:A:81:ARG:HG3	1.92	0.52
1:C:114:TYR:O	1:C:118:MSE:HE2	2.10	0.52
1:C:62:ILE:HD13	1:C:71:LEU:CB	2.37	0.52
1:C:193:VAL:HG21	1:C:265:ILE:HD13	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:18:ASP:HB3	1:B:121:LYS:HD3	1.90	0.52
1:B:33:HIS:HB3	1:B:37:PHE:CE2	2.43	0.52
1:B:85:LEU:HD13	1:B:93:LEU:HD22	1.92	0.52
1:A:172:LEU:O	1:A:220:ALA:HB2	2.10	0.52
1:A:242:GLY:O	1:A:247:PHE:CD2	2.63	0.52
1:C:2:ILE:HG12	1:C:3:ILE:N	2.25	0.51
1:C:192:MSE:HB3	1:C:213:LEU:HD21	1.92	0.51
1:C:134:ASP:O	1:C:135:LYS:HB2	2.09	0.51
1:C:231:GLN:O	1:C:232:ARG:HB2	2.09	0.51
1:B:197:ASN:OD1	1:B:199:ARG:HG2	2.10	0.51
1:C:111:PHE:HE2	1:C:131:PHE:CE2	2.25	0.51
1:B:89:GLY:HA2	7:B:365:HOH:O	2.11	0.51
1:A:106:THR:HG21	7:A:329:HOH:O	2.10	0.51
1:B:39:VAL:HG21	1:B:152:VAL:CG2	2.40	0.51
1:B:240:SER:HB3	1:B:281:MSE:HE1	1.91	0.51
1:A:72:PHE:CB	4:A:319:PEG:H21	2.41	0.51
1:B:41:ASN:O	1:B:45:ARG:HG2	2.11	0.51
1:B:251:GLU:HG3	1:B:251:GLU:O	2.11	0.51
1:C:4:THR:CG2	1:C:95:LEU:HD21	2.40	0.51
1:C:67:TYR:HE1	1:C:72:PHE:CE2	2.29	0.51
1:B:100:SER:OG	7:B:338:HOH:O	2.18	0.50
1:A:238:MSE:HE2	1:A:298:GLU:N	2.26	0.50
1:B:159:LYS:CB	1:B:166:ARG:NH2	2.74	0.50
1:A:44:ALA:HB1	1:A:49:LEU:O	2.12	0.50
1:A:194:VAL:CG1	1:B:67:TYR:CB	2.87	0.50
1:A:197:ASN:ND2	1:A:209:ASN:HD21	2.09	0.50
1:C:129:TYR:OH	3:C:313:GOL:H2	2.11	0.50
1:C:131:PHE:N	1:C:131:PHE:CD1	2.79	0.50
1:B:21:VAL:HG21	1:B:120:ALA:HB2	1.93	0.50
1:B:110:PHE:CE2	1:B:115:ILE:HD11	2.47	0.50
1:B:40:ALA:CB	1:B:124:VAL:HG21	2.42	0.49
1:C:265:ILE:O	1:C:268:GLU:HB3	2.12	0.49
1:B:31:LYS:O	1:B:34:GLN:N	2.45	0.49
1:B:215:ARG:HD3	4:B:314:PEG:H42	1.93	0.49
1:A:18:ASP:O	1:A:50:PRO:HD2	2.11	0.49
1:A:215:ARG:HD3	4:A:319:PEG:H32	1.94	0.49
1:C:131:PHE:HD1	1:C:131:PHE:N	2.10	0.49
1:B:8:LYS:HA	1:B:8:LYS:CE	2.40	0.49
1:B:129:TYR:OH	4:B:317[B]:PEG:H21	2.12	0.49
1:C:111:PHE:CE2	1:C:131:PHE:HE2	2.29	0.49
1:A:284:PHE:CE2	1:A:290:LEU:HD13	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:96:LEU:HG	1:B:97:ASP:N	2.27	0.49
1:B:30:HIS:O	1:B:33:HIS:HB2	2.13	0.49
1:A:156:GLU:HG2	1:A:161:LYS:HA	1.95	0.49
1:C:136:LYS:HD3	1:C:144:TYR:HE2	1.78	0.49
1:A:193:VAL:HG21	1:A:265:ILE:HD12	1.94	0.48
1:B:52:VAL:HG21	1:B:118:MSE:HE2	1.96	0.48
1:B:131:PHE:CZ	1:B:141:LEU:CD2	2.97	0.48
2:C:311:SO4:O3	3:C:314:GOL:H31	2.14	0.48
1:A:123:ILE:HD12	1:A:145:PHE:CD2	2.48	0.48
1:B:111:PHE:HA	1:B:115:ILE:HG13	1.95	0.48
1:B:115:ILE:HA	1:B:118:MSE:HG3	1.96	0.48
1:A:167:ILE:HD11	1:A:182:LEU:HB3	1.96	0.48
1:A:197:ASN:HD21	1:A:209:ASN:HD21	1.61	0.48
1:A:107:ALA:HB1	1:A:131:PHE:CE1	2.49	0.48
1:B:159:LYS:HB3	1:B:166:ARG:NH2	2.27	0.48
1:A:177:LYS:HE3	1:A:276:ASP:OD2	2.14	0.47
1:C:107:ALA:HB2	1:C:136:LYS:HG3	1.96	0.47
1:C:129:TYR:CZ	1:C:131:PHE:HB3	2.50	0.47
1:B:15:THR:HG23	1:B:92:GLU:OE1	2.14	0.47
1:B:33:HIS:O	1:B:37:PHE:CE2	2.68	0.47
1:C:4:THR:HG23	1:C:95:LEU:HD21	1.97	0.47
1:A:25[A]:TYR:N	1:A:25[A]:TYR:CD1	2.82	0.47
1:A:30:HIS:O	1:A:34:GLN:HG3	2.15	0.47
1:C:101:GLN:HG2	1:C:102:PHE:N	2.28	0.47
1:A:236:ARG:NH1	1:A:304:TRP:O	2.48	0.47
1:C:7:ILE:HG22	1:C:12:ASP:HB3	1.97	0.47
1:A:28:GLY:HA2	1:A:76:LEU:CD1	2.44	0.46
1:B:41:ASN:OD1	1:B:45:ARG:NH1	2.45	0.46
1:A:10:GLN:CG	1:A:113:THR:HG23	2.45	0.46
1:A:68:HIS:H	1:A:71:LEU:HD12	1.80	0.46
1:B:259:PHE:HE1	1:B:301:THR:HG21	1.81	0.46
1:B:194:VAL:CG1	1:B:195:HIS:N	2.77	0.46
1:C:4:THR:HG22	1:C:95:LEU:CD2	2.46	0.46
1:B:284:PHE:HZ	1:B:293:GLN:HG2	1.81	0.46
1:A:167:ILE:CD1	1:A:182:LEU:HB2	2.45	0.46
1:B:224:TYR:CE1	1:B:277:ARG:HG3	2.51	0.46
1:B:259:PHE:CE2	1:B:298:GLU:HG3	2.51	0.46
1:C:54:MSE:HE1	1:C:56:PHE:CE1	2.50	0.46
1:B:34:GLN:HG2	1:B:88:GLU:OE2	2.11	0.46
1:C:193:VAL:HG21	1:C:265:ILE:CD1	2.45	0.46
1:A:1:MSE:HE2	1:A:1:MSE:O	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:139:GLU:N	1:B:139:GLU:OE2	2.49	0.45
1:C:229:GLU:HB3	1:C:271:MSE:HB2	1.97	0.45
1:A:10:GLN:HG3	1:A:113:THR:HG23	1.98	0.45
1:A:192:MSE:HE1	1:B:62:ILE:HD13	1.97	0.45
1:C:61:LYS:O	1:C:65:GLU:N	2.44	0.45
1:A:10:GLN:CD	1:A:113:THR:HG23	2.36	0.45
1:B:18:ASP:CB	1:B:121:LYS:CD	2.91	0.45
1:B:102:PHE:CZ	4:B:317[A]:PEG:H32	2.48	0.45
1:A:146:ASP:OD1	1:A:146:ASP:N	2.37	0.45
1:C:126:GLY:HA3	7:C:370:HOH:O	2.15	0.45
1:A:192:MSE:HE2	1:B:72:PHE:CZ	2.51	0.45
1:B:142:LYS:HB2	1:B:142:LYS:HE3	1.56	0.45
1:B:45:ARG:HD3	1:B:45:ARG:HA	1.33	0.45
1:B:203:ILE:O	1:B:203:ILE:HG22	2.16	0.45
1:C:80:GLU:OE1	1:C:83:ARG:NH1	2.43	0.45
1:A:139:GLU:HA	1:A:142:LYS:NZ	2.31	0.45
1:C:53:VAL:CG1	1:C:54:MSE:N	2.80	0.45
1:A:243:LYS:HE2	1:A:247:PHE:HZ	1.82	0.45
1:B:203:ILE:O	1:B:203:ILE:CG2	2.64	0.45
1:B:203:ILE:N	1:B:203:ILE:HD13	2.32	0.45
1:B:204:GLY:C	1:B:205:TYR:CD2	2.91	0.45
1:A:61:LYS:HZ2	5:A:316:ACY:H1	1.81	0.44
1:B:129:TYR:OH	4:B:317[A]:PEG:H21	2.17	0.44
1:C:29:ILE:N	1:C:29:ILE:HD13	2.32	0.44
1:C:108:GLN:HB3	7:C:353:HOH:O	2.15	0.44
1:C:138:ALA:O	1:C:141:LEU:HB2	2.18	0.44
1:B:75:ILE:HD13	1:B:167:ILE:CG2	2.48	0.44
1:B:8:LYS:HB3	1:B:8:LYS:HE2	1.69	0.44
1:B:111:PHE:CD1	1:B:115:ILE:HG13	2.52	0.44
1:C:254:PHE:HD1	1:C:255:GLU:N	2.16	0.44
1:A:302:ARG:HH22	3:A:315:GOL:H2	1.81	0.44
1:B:20:VAL:O	1:B:51:ILE:HA	2.18	0.44
1:B:29:ILE:HG21	1:B:84:LYS:HB3	1.98	0.44
1:A:107:ALA:HB1	1:A:131:PHE:HE1	1.82	0.44
4:A:319:PEG:H41	7:A:375:HOH:O	2.18	0.44
1:B:194:VAL:HG13	1:B:195:HIS:N	2.32	0.44
1:C:2:ILE:HG22	1:C:86:LYS:NZ	2.32	0.44
1:A:260:ASP:N	7:A:370:HOH:O	2.50	0.44
1:B:39:VAL:CG1	1:B:150:ILE:HG21	2.47	0.44
1:C:67:TYR:HE1	1:C:72:PHE:HE2	1.65	0.44
1:A:194:VAL:HG13	1:A:195:HIS:N	2.32	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:314:PEG:H22	1:B:195:HIS:ND1	2.33	0.44
1:B:231:GLN:O	1:B:232:ARG:HB2	2.16	0.44
1:A:232:ARG:CZ	1:B:8:LYS:HG3	2.48	0.44
1:C:221:ASP:OD2	1:C:242:GLY:C	2.56	0.44
1:A:15:THR:HG22	1:A:94:TYR:HH	1.75	0.43
1:C:67:TYR:CE1	1:C:72:PHE:HE2	2.36	0.43
1:A:72:PHE:HB2	4:A:319:PEG:H21	2.00	0.43
1:B:30:HIS:CE1	1:B:33:HIS:H	2.36	0.43
1:C:52:VAL:HG11	1:C:118:MSE:HG2	2.00	0.43
1:A:155:VAL:H	3:A:312:GOL:H12	1.83	0.43
1:B:129:TYR:OH	1:B:131:PHE:HB3	2.19	0.43
1:B:207:THR:CG2	1:B:208:ALA:N	2.82	0.43
1:B:187:LEU:O	1:B:273:TYR:HA	2.19	0.43
1:C:136:LYS:CD	1:C:144:TYR:CZ	2.97	0.43
1:B:7:ILE:HG22	1:B:12:ASP:HB3	2.01	0.43
1:A:78:PRO:CG	3:A:317:GOL:H32	2.48	0.43
1:B:167:ILE:HD13	1:B:183:LEU:HG	1.99	0.43
1:B:228:VAL:HG12	1:B:230:ILE:HG13	2.01	0.43
1:B:259:PHE:CZ	1:B:298:GLU:HG3	2.54	0.43
1:A:168:ARG:HD3	1:A:217:TYR:CZ	2.54	0.43
1:B:39:VAL:HG11	1:B:150:ILE:HG21	2.01	0.43
1:C:31:LYS:HE3	7:C:368:HOH:O	2.18	0.43
1:A:194:VAL:CG1	1:A:195:HIS:N	2.81	0.42
1:B:68:HIS:ND1	1:B:70:ASP:HB2	2.34	0.42
1:B:247:PHE:CE1	3:B:313:GOL:H32	2.54	0.42
1:A:31:LYS:HD2	1:A:31:LYS:HA	1.76	0.42
1:B:68:HIS:CG	1:B:69:PRO:HD2	2.55	0.42
1:A:262:ASN:O	1:A:262:ASN:ND2	2.30	0.42
1:B:51:ILE:O	1:B:91:GLU:HB2	2.18	0.42
1:B:204:GLY:C	1:B:205:TYR:HD2	2.22	0.42
1:C:62:ILE:H	1:C:62:ILE:HG12	1.54	0.42
1:A:102:PHE:CD2	1:A:102:PHE:C	2.93	0.42
1:B:18:ASP:OD1	1:B:121:LYS:HD3	2.19	0.42
1:C:2:ILE:HG22	1:C:86:LYS:HZ1	1.84	0.42
1:B:230:ILE:HD11	1:B:258:ILE:HD13	2.02	0.42
1:C:227:ASP:OD1	1:C:236:ARG:HD3	2.20	0.42
1:B:77:ASN:C	1:B:77:ASN:OD1	2.58	0.41
1:B:146:ASP:CG	1:B:147:GLY:N	2.73	0.41
1:C:225:VAL:O	1:C:275:LEU:HB2	2.20	0.41
1:B:29:ILE:HB	1:B:84:LYS:HD3	2.01	0.41
1:B:53:VAL:HG12	1:B:93:LEU:HD13	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:216:THR:CG2	7:C:328:HOH:O	2.64	0.41
1:A:9:ASN:OD1	1:A:11:LYS:HB2	2.19	0.41
1:A:78:PRO:HD3	3:A:317:GOL:H32	2.03	0.41
1:A:261:PHE:CZ	1:A:263:GLN:HB2	2.56	0.41
1:B:135:LYS:O	1:B:135:LYS:HG2	2.20	0.41
1:A:2:ILE:HG22	1:A:86:LYS:HD3	2.02	0.41
1:A:227:ASP:OD1	1:A:236:ARG:HD3	2.20	0.41
1:C:114:TYR:C	1:C:118:MSE:HE2	2.39	0.41
1:C:152:VAL:HA	1:C:153:PRO:HD3	1.94	0.41
1:A:78:PRO:HG3	3:A:317:GOL:H32	2.01	0.41
1:A:131:PHE:HE2	1:A:137:THR:O	2.03	0.41
1:C:25:TYR:CD1	1:C:25:TYR:N	2.89	0.41
1:A:238:MSE:SE	1:A:297:ASP:HB3	2.71	0.41
1:B:159:LYS:HD2	1:B:159:LYS:O	2.21	0.41
1:C:188:PRO:HB2	1:C:271:MSE:HE1	2.03	0.41
1:B:15:THR:CG2	1:B:52:VAL:HG11	2.51	0.41
1:B:201:ARG:HG3	7:B:366:HOH:O	2.20	0.41
1:B:59:SER:HA	1:B:60:PRO:HD2	1.98	0.40
1:A:142:LYS:H	1:A:142:LYS:HG3	1.59	0.40
1:C:228:VAL:HG13	1:C:270:VAL:CG2	2.50	0.40
1:A:111:PHE:CD1	1:A:115:ILE:HG13	2.56	0.40
1:A:156:GLU:HG2	1:A:161:LYS:HG2	2.02	0.40
1:B:122:ILE:HG21	1:B:150:ILE:HD12	2.04	0.40
1:B:157:ASP:O	1:B:160:GLY:N	2.54	0.40
1:C:80:GLU:HG3	1:C:271:MSE:HE1	2.02	0.40
1:C:277:ARG:CG	1:C:278:ILE:N	2.82	0.40
1:B:17:SER:OG	1:B:18:ASP:N	2.54	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	292/308 (95%)	283 (97%)	8 (3%)	1 (0%)	37 54
1	B	302/308 (98%)	295 (98%)	5 (2%)	2 (1%)	19 32
1	C	254/308 (82%)	244 (96%)	10 (4%)	0	100 100
All	All	848/924 (92%)	822 (97%)	23 (3%)	3 (0%)	30 47

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	119	ASN
1	B	135	LYS
1	A	188	PRO

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	259/257 (101%)	236 (91%)	23 (9%)	8 15
1	B	262/257 (102%)	220 (84%)	42 (16%)	2 3
1	C	223/257 (87%)	195 (87%)	28 (13%)	3 6
All	All	744/771 (96%)	651 (88%)	93 (12%)	3 6

All (93) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	MSE
1	A	3	ILE
1	A	15	THR
1	A	20	VAL
1	A	21	VAL
1	A	45	ARG
1	A	54	MSE
1	A	134	ASP
1	A	135	LYS
1	A	139	GLU

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Mol	Chain	Res	Type
1	A	146	ASP
1	A	158	GLU
1	A	175	ASN
1	A	177	LYS
1	A	178	GLU
1	A	194	VAL
1	A	197	ASN
1	A	225	VAL
1	A	232	ARG
1	A	234	LYS
1	A	248	ASP
1	A	262	ASN
1	A	279	ARG
1	B	8	LYS
1	B	10	GLN
1	B	11	LYS
1	B	15	THR
1	B	17	SER
1	B	20	VAL
1	B	30	HIS
1	B	34	GLN
1	B	35	GLU
1	B	45	ARG
1	B	53	VAL
1	B	54	MSE
1	B	55	THR
1	B	81	ARG
1	B	88	GLU
1	B	96	LEU
1	B	118	MSE
1	B	121	LYS
1	B	123	ILE
1	B	128	ASP
1	B	134	ASP
1	B	142	LYS
1	B	143	ASN
1	B	146	ASP
1	B	157	ASP
1	B	158	GLU
1	B	159	LYS
1	B	161	LYS
1	B	165	THR

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Mol	Chain	Res	Type
1	B	187	LEU
1	B	194	VAL
1	B	199	ARG
1	B	203	ILE
1	B	221	ASP
1	B	225	VAL
1	B	243	LYS
1	B	248	ASP
1	B	253	ARG
1	B	254	PHE
1	B	256	VAL
1	B	286	SER
1	B	294	LEU
1	C	1	MSE
1	C	2	ILE
1	C	17	SER
1	C	38	ARG
1	C	45	ARG
1	C	46	LYS
1	C	62	ILE
1	C	64	LEU
1	C	86	LYS
1	C	91	GLU
1	C	95	LEU
1	C	101	GLN
1	C	108	GLN
1	C	118	MSE
1	C	131	PHE
1	C	133	SER
1	C	135	LYS
1	C	136	LYS
1	C	146	ASP
1	C	169	GLN
1	C	189	SER
1	C	194	VAL
1	C	236	ARG
1	C	253	ARG
1	C	254	PHE
1	C	262	ASN
1	C	265	ILE
1	C	278	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such

sidechains are listed below:

Mol	Chain	Res	Type
1	A	119	ASN
1	A	197	ASN
1	A	244	ASN
1	B	33	HIS
1	B	119	ASN
1	C	41	ASN
1	C	169	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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 23 ligands modelled in this entry, 1 is monoatomic - leaving 22 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	GOL	B	316	-	5,5,5	0.41	0	5,5,5	0.84	0
3	GOL	B	313	-	5,5,5	0.44	0	5,5,5	0.25	0
4	PEG	A	314	-	6,6,6	0.42	0	5,5,5	0.71	0
3	GOL	C	315	-	5,5,5	0.46	0	5,5,5	0.66	0
4	PEG	B	314	-	6,6,6	0.60	0	5,5,5	0.54	0
4	PEG	B	317[A]	-	6,6,6	0.52	0	5,5,5	0.60	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	GOL	B	315	-	5,5,5	0.33	0	5,5,5	0.51	0
2	SO4	C	311	-	4,4,4	0.21	0	6,6,6	0.63	0
3	GOL	A	315	-	5,5,5	0.49	0	5,5,5	0.92	0
2	SO4	B	312	-	4,4,4	0.23	0	6,6,6	0.12	0
3	GOL	C	313	-	5,5,5	0.42	0	5,5,5	0.70	0
2	SO4	A	311	-	4,4,4	0.40	0	6,6,6	0.38	0
3	GOL	A	317	-	5,5,5	0.55	0	5,5,5	0.73	0
4	PEG	B	317[B]	-	6,6,6	0.53	0	5,5,5	0.23	0
3	GOL	C	316	-	5,5,5	0.41	0	5,5,5	0.35	0
4	PEG	A	319	-	6,6,6	0.97	0	5,5,5	1.03	0
3	GOL	C	314	-	5,5,5	0.45	0	5,5,5	0.49	0
3	GOL	A	318	-	5,5,5	0.40	0	5,5,5	0.22	0
5	ACY	A	316	-	3,3,3	0.81	0	3,3,3	0.94	0
3	GOL	C	312	-	5,5,5	0.45	0	5,5,5	0.67	0
3	GOL	A	312	-	5,5,5	0.43	0	5,5,5	0.57	0
2	SO4	B	311	-	4,4,4	0.35	0	6,6,6	0.39	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	GOL	C	316	-	-	2/4/4/4	-
4	PEG	B	314	-	-	3/4/4/4	-
4	PEG	B	317[A]	-	-	1/4/4/4	-
3	GOL	A	318	-	-	2/4/4/4	-
3	GOL	B	315	-	-	2/4/4/4	-
3	GOL	B	316	-	-	3/4/4/4	-
4	PEG	A	319	-	-	4/4/4/4	-
3	GOL	B	313	-	-	4/4/4/4	-
4	PEG	A	314	-	-	3/4/4/4	-
3	GOL	A	315	-	-	2/4/4/4	-
4	PEG	B	317[B]	-	-	1/4/4/4	-
3	GOL	C	314	-	-	3/4/4/4	-
3	GOL	C	312	-	-	0/4/4/4	-
3	GOL	C	315	-	-	2/4/4/4	-
3	GOL	A	312	-	-	4/4/4/4	-
3	GOL	C	313	-	-	2/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	A	317	-	-	2/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (40) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	315	GOL	O1-C1-C2-C3
3	A	318	GOL	O1-C1-C2-C3
3	B	315	GOL	C1-C2-C3-O3
3	B	315	GOL	O2-C2-C3-O3
3	B	316	GOL	C1-C2-C3-O3
3	C	313	GOL	O1-C1-C2-C3
3	C	314	GOL	O1-C1-C2-O2
3	C	314	GOL	O1-C1-C2-C3
3	C	315	GOL	C1-C2-C3-O3
3	C	316	GOL	O1-C1-C2-O2
3	C	316	GOL	O1-C1-C2-C3
4	B	314	PEG	O1-C1-C2-O2
3	A	312	GOL	O1-C1-C2-C3
3	A	312	GOL	C1-C2-C3-O3
3	A	317	GOL	O1-C1-C2-C3
3	B	313	GOL	O1-C1-C2-C3
3	B	313	GOL	C1-C2-C3-O3
3	A	312	GOL	O1-C1-C2-O2
3	A	315	GOL	O1-C1-C2-O2
3	A	318	GOL	O1-C1-C2-O2
4	A	314	PEG	O1-C1-C2-O2
4	A	314	PEG	O2-C3-C4-O4
4	B	317[A]	PEG	O1-C1-C2-O2
4	A	319	PEG	O1-C1-C2-O2
4	A	319	PEG	O2-C3-C4-O4
3	B	313	GOL	O1-C1-C2-O2
3	B	316	GOL	O2-C2-C3-O3
3	C	313	GOL	O1-C1-C2-O2
3	C	315	GOL	O2-C2-C3-O3
4	B	314	PEG	O2-C3-C4-O4
3	B	316	GOL	O1-C1-C2-O2
3	C	314	GOL	O2-C2-C3-O3
3	A	317	GOL	O1-C1-C2-O2

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Mol	Chain	Res	Type	Atoms
4	B	317[B]	PEG	O2-C3-C4-O4
4	A	319	PEG	C1-C2-O2-C3
3	A	312	GOL	O2-C2-C3-O3
4	A	319	PEG	C4-C3-O2-C2
3	B	313	GOL	O2-C2-C3-O3
4	B	314	PEG	C4-C3-O2-C2
4	A	314	PEG	C4-C3-O2-C2

There are no ring outliers.

15 monomers are involved in 37 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	316	GOL	1	0
3	B	313	GOL	1	0
4	A	314	PEG	1	0
4	B	314	PEG	4	0
4	B	317[A]	PEG	3	0
3	B	315	GOL	1	0
2	C	311	SO4	1	0
3	A	315	GOL	10	0
3	C	313	GOL	1	0
3	A	317	GOL	4	0
4	B	317[B]	PEG	2	0
4	A	319	PEG	5	0
3	C	314	GOL	1	0
5	A	316	ACY	2	0
3	A	312	GOL	1	0

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	289/308 (93%)	-0.15	6 (2%) 63 61	22, 45, 81, 110	1 (0%)
1	B	297/308 (96%)	1.29	84 (28%) 1 2	29, 60, 111, 141	0
1	C	253/308 (82%)	0.10	6 (2%) 59 57	31, 60, 94, 129	0
All	All	839/924 (90%)	0.44	96 (11%) 11 10	22, 54, 102, 141	1 (0%)

All (96) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	22	VAL	5.4
1	B	50	PRO	5.3
1	B	20	VAL	5.1
1	B	44	ALA	4.8
1	B	41	ASN	4.7
1	B	125	ALA	4.7
1	B	124	VAL	4.6
1	B	153	PRO	4.4
1	B	3	ILE	4.3
1	B	150	ILE	4.3
1	B	40	ALA	4.3
1	B	51	ILE	4.2
1	B	127	PHE	4.2
1	B	37	PHE	4.2
1	B	39	VAL	4.1
1	B	43	ALA	4.1
1	B	36	LEU	4.0
1	B	19	SER	4.0
1	B	21	VAL	3.9
1	B	152	VAL	3.9
1	B	151	ILE	3.9
1	B	122	ILE	3.8
1	B	111	PHE	3.8

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Mol	Chain	Res	Type	RSRZ
1	B	155	VAL	3.8
1	B	45	ARG	3.8
1	B	35	GLU	3.8
1	B	2	ILE	3.7
1	B	23	LEU	3.7
1	B	42	LYS	3.7
1	B	120	ALA	3.6
1	B	146	ASP	3.6
1	B	126	GLY	3.5
1	B	16	PRO	3.5
1	B	123	ILE	3.5
1	B	108	GLN	3.4
1	B	15	THR	3.4
1	B	92	GLU	3.4
1	B	53	VAL	3.4
1	B	24	GLY	3.4
1	B	48	LEU	3.3
1	B	55	THR	3.2
1	B	138	ALA	3.2
1	B	141	LEU	3.1
1	B	121	LYS	3.1
1	B	49	LEU	3.1
1	B	25	TYR	3.1
1	B	145	PHE	3.1
1	B	14	GLY	3.0
1	B	26	PHE	3.0
1	B	205	TYR	3.0
1	A	205	TYR	2.9
1	B	131	PHE	2.9
1	B	129	TYR	2.9
1	B	110	PHE	2.8
1	B	154	PRO	2.8
1	B	94	TYR	2.8
1	B	144	TYR	2.8
1	B	52	VAL	2.8
1	B	181	LYS	2.7
1	B	46	LYS	2.7
1	A	246	THR	2.7
1	B	112	ALA	2.6
1	B	147	GLY	2.6
1	B	17	SER	2.6
1	B	185	ALA	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	3	ILE	2.5
1	B	91	GLU	2.5
1	B	90	VAL	2.5
1	B	89	GLY	2.5
1	C	2	ILE	2.4
1	B	106	THR	2.4
1	A	251	GLU	2.4
1	B	64	LEU	2.4
1	A	25[A]	TYR	2.4
1	B	7	ILE	2.4
1	B	107	ALA	2.4
1	B	87	ARG	2.3
1	B	182	LEU	2.3
1	B	140	ASP	2.3
1	B	38	ARG	2.3
1	C	267	GLY	2.3
1	B	86	LYS	2.3
1	B	18	ASP	2.3
1	B	149	VAL	2.3
1	C	278	ILE	2.3
1	C	120	ALA	2.2
1	B	5	ILE	2.2
1	B	47	ASP	2.2
1	B	134	ASP	2.2
1	B	119	ASN	2.1
1	B	13	ILE	2.1
1	B	179	ALA	2.1
1	A	262	ASN	2.1
1	C	261	PHE	2.1
1	B	305	SER	2.1
1	C	206	PRO	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	SO4	B	311	5/5	0.58	0.20	95,96,99,102	0
3	GOL	C	315	6/6	0.75	0.19	75,92,95,95	0
2	SO4	B	312	5/5	0.77	0.15	142,143,144,144	0
3	GOL	A	312	6/6	0.78	0.25	70,75,86,86	0
5	ACY	A	316	4/4	0.78	0.21	74,75,79,79	0
3	GOL	B	316	6/6	0.79	0.14	77,81,84,85	0
3	GOL	C	314	6/6	0.82	0.14	70,71,74,74	0
3	GOL	A	315	6/6	0.83	0.17	61,68,110,114	0
3	GOL	C	316	6/6	0.84	0.15	76,83,87,92	0
4	PEG	B	317[A]	7/7	0.84	0.26	48,64,72,73	7
4	PEG	B	317[B]	7/7	0.84	0.26	71,72,74,76	7
3	GOL	A	317	6/6	0.84	0.21	69,76,80,81	0
3	GOL	B	313	6/6	0.86	0.18	80,86,91,94	0
3	GOL	C	313	6/6	0.87	0.14	61,66,69,69	0
6	CL	B	306	1/1	0.87	0.12	85,85,85,85	0
3	GOL	B	315	6/6	0.88	0.12	76,80,81,85	0
3	GOL	A	318	6/6	0.91	0.16	76,79,87,93	0
4	PEG	A	319	7/7	0.91	0.12	43,46,53,57	0
4	PEG	A	314	7/7	0.92	0.12	42,48,55,61	0
2	SO4	C	311	5/5	0.92	0.15	72,74,80,88	0
4	PEG	B	314	7/7	0.93	0.08	42,50,57,58	0
2	SO4	A	311	5/5	0.94	0.10	60,62,70,71	0
3	GOL	C	312	6/6	0.95	0.08	42,48,49,53	0

6.5 Other polymers (i)

There are no such residues in this entry.