



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 07:18 PM GMT

PDB ID : 4OGK
Title : X-ray structure of the uridine phosphorylase from Salmonella typhimurium in complex with thymidine at 2.40 Å resolution
Authors : Sotnichenko, S.E.; Lashkov, A.A.; Gabdoulkhakov, A.G.; Mikhailov, A.M.
Deposited on : 2014-01-16
Resolution : 2.40 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 ⓘ symbol.

The following versions of software and data (see [references ⓘ](#)) 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

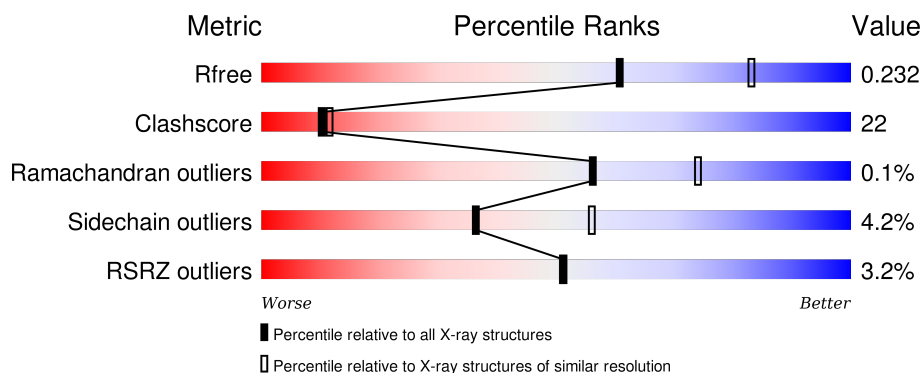
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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	2919 (2.40-2.40)
Clashscore	102246	3407 (2.40-2.40)
Ramachandran outliers	100387	3351 (2.40-2.40)
Sidechain outliers	100360	3352 (2.40-2.40)
RSRZ outliers	91569	2928 (2.40-2.40)

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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	253	<div> <div>2%</div> <div>62%</div> <div>34%</div> <div>..</div> </div>
1	B	253	<div> <div>6%</div> <div>59%</div> <div>36%</div> <div>..</div> </div>
1	C	253	<div> <div>3%</div> <div>67%</div> <div>30%</div> <div>..</div> </div>
1	D	253	<div> <div>2%</div> <div>55%</div> <div>41%</div> <div>..</div> </div>
1	E	253	<div> <div>2%</div> <div>56%</div> <div>40%</div> <div>..</div> </div>

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Mol	Chain	Length	Quality of chain
1	F	253	

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	THM	B	301	-	-	-	X
6	PG4	E	302	-	-	-	X

2 Entry composition [i](#)

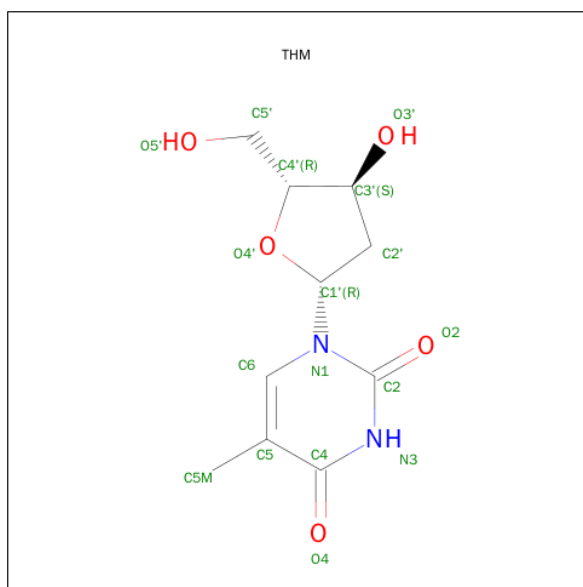
There are 8 unique types of molecules in this entry. The entry contains 11404 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Uridine phosphorylase.

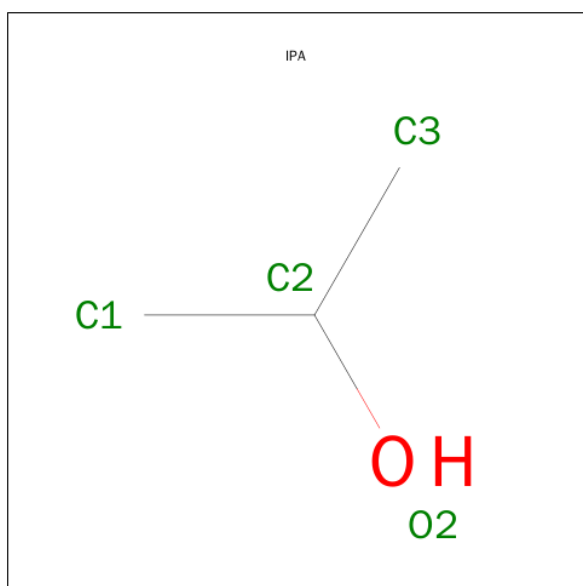
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	250	Total	C	N	O	S	0	0	0
			1877	1174	330	361	12			
1	B	250	Total	C	N	O	S	0	0	0
			1877	1174	330	361	12			
1	C	250	Total	C	N	O	S	0	0	0
			1877	1174	330	361	12			
1	D	250	Total	C	N	O	S	0	0	0
			1877	1174	330	361	12			
1	E	250	Total	C	N	O	S	0	0	0
			1877	1174	330	361	12			
1	F	245	Total	C	N	O	S	0	0	0
			1837	1151	323	351	12			

- Molecule 2 is THYMIDINE (three-letter code: THM) (formula: C₁₀H₁₄N₂O₅).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			17	10	2	5		
2	B	1	Total	C	N	O	0	0
			17	10	2	5		
2	D	1	Total	C	N	O	0	0
			17	10	2	5		
2	E	1	Total	C	N	O	0	0
			17	10	2	5		
2	F	1	Total	C	N	O	0	0
			17	10	2	5		

- Molecule 3 is ISOPROPYL ALCOHOL (three-letter code: IPA) (formula: C_3H_8O).



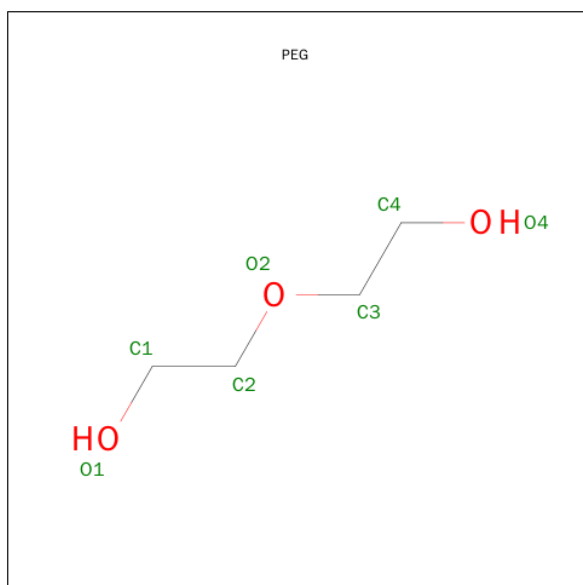
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			4	3	1		

- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



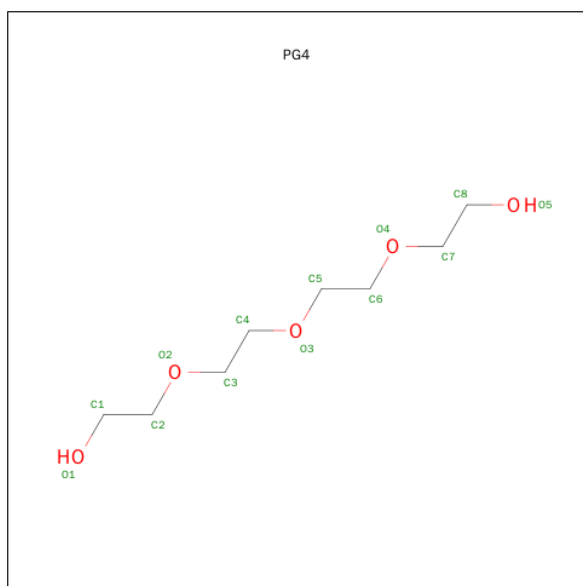
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	0
			4	2	2		
4	E	1	Total	C	O	0	0
			4	2	2		
4	F	1	Total	C	O	0	0
			4	2	2		

- Molecule 5 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



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

- Molecule 6 is TETRAETHYLENE GLYCOL (three-letter code: PG4) (formula: $C_8H_{18}O_5$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	E	1	Total	C	O	0	0
			13	8	5		

- Molecule 7 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	F	1	Total	K	0	0
			1	1		

- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	10	Total	O	0	0
			10	10		
8	B	10	Total	O	0	0
			10	10		
8	C	11	Total	O	0	0
			11	11		
8	D	7	Total	O	0	0
			7	7		

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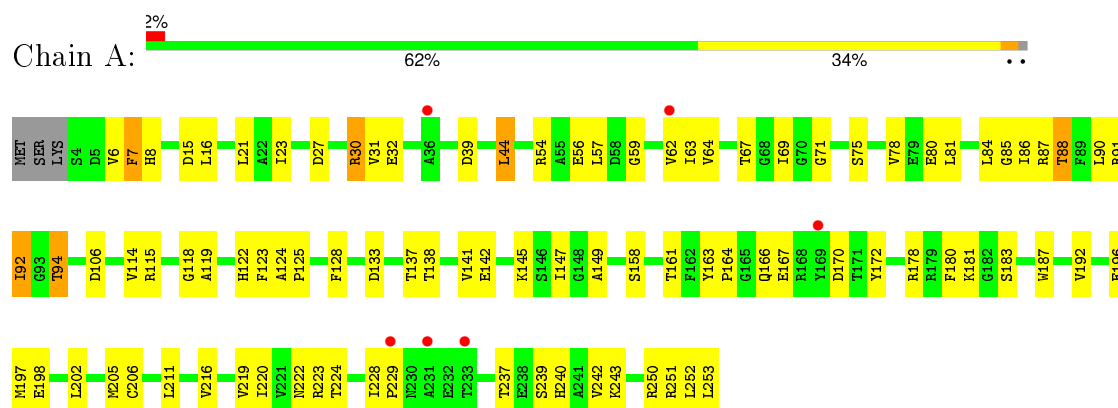
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	E	13	Total	O	0	0
			13	13		
8	F	5	Total	O	0	0
			5	5		

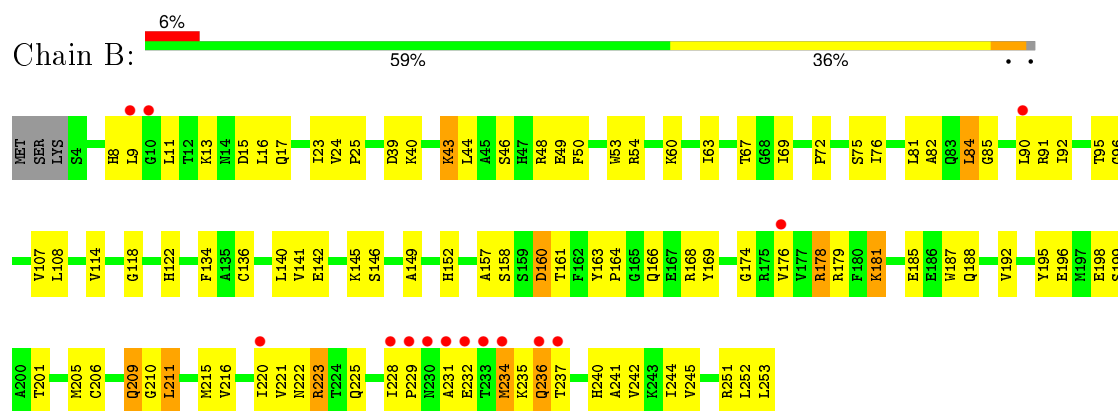
3 Residue-property plots

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 ($\text{RSRZ} > 2$). 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.

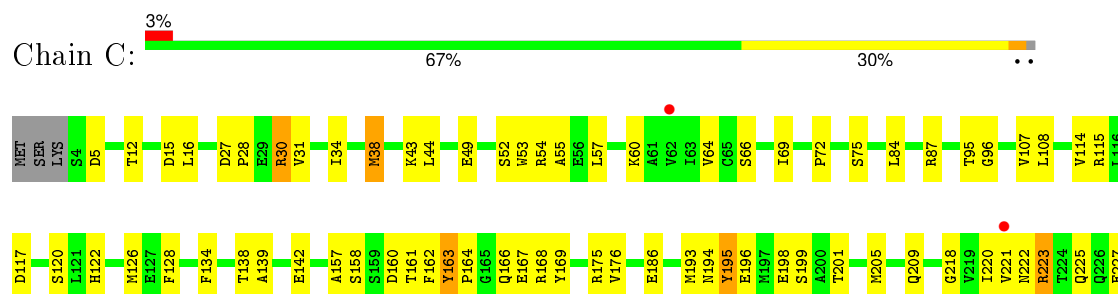
• Molecule 1: Uridine phosphorylase



• Molecule 1: Uridine phosphorylase

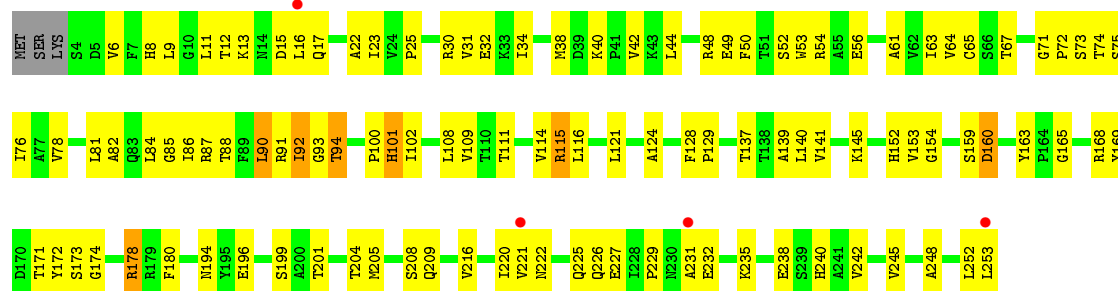


• Molecule 1: Uridine phosphorylase

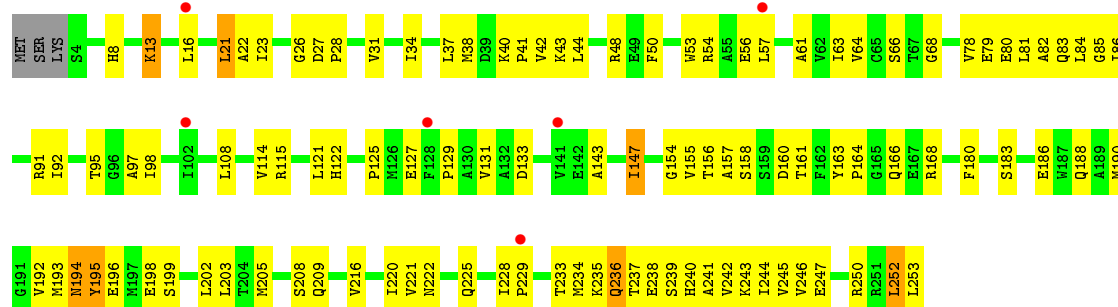




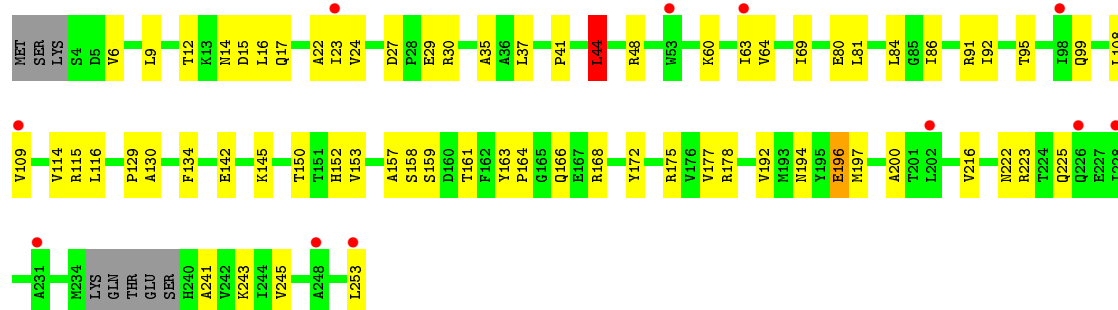
• Molecule 1: Uridine phosphorylase



• Molecule 1: Uridine phosphorylase



• Molecule 1: Uridine phosphorylase



4 Data and refinement statistics

Property	Value	Source
Space group	P 61	Depositor
Cell constants a, b, c, α , β , γ	89.97 Å 89.97 Å 256.56 Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	9.99 – 2.40 29.45 – 2.40	Depositor EDS
% Data completeness (in resolution range)	97.7 (9.99-2.40) 99.9 (29.45-2.40)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	0.08	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.88 (at 2.39 Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.8.1_1168)	Depositor
R, R_{free}	0.220 , 0.236 0.222 , 0.232	Depositor DCC
R_{free} test set	2283 reflections (5.33%)	DCC
Wilson B-factor (Å ²)	48.6	Xtriage
Anisotropy	0.515	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 38.0	EDS
Estimated twinning fraction	0.480 for h,-h-k,-l 0.459 for h,-h-k,-l	Xtriage
Reported twinning fraction	0.480 for h,-h-k,-l	Depositor
L-test for twinning ²	$\langle L \rangle = 0.30$, $\langle L^2 \rangle = 0.13$	Xtriage
Outliers	0 of 45659 reflections	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	11404	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 3.25% of the height of the origin peak. No significant pseudotranslation is detected.*

¹ Intensities estimated from amplitudes.

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

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: IPA, K, THM, EDO, PG4, PEG

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	0.49	2/1907 (0.1%)	0.55	0/2584
1	B	0.61	0/1907	0.59	0/2584
1	C	0.55	0/1907	0.57	0/2584
1	D	0.49	0/1907	0.56	0/2584
1	E	0.47	0/1907	0.57	0/2584
1	F	0.49	0/1866	0.55	1/2528 (0.0%)
All	All	0.52	2/11401 (0.0%)	0.56	1/15448 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	167	GLU	CD-OE1	-5.56	1.19	1.25
1	A	253	LEU	C-OXT	5.01	1.32	1.23

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	44	LEU	CA-CB-CG	5.36	127.63	115.30

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	1877	0	1887	74	0
1	B	1877	0	1887	109	0
1	C	1877	0	1887	77	0
1	D	1877	0	1887	101	0
1	E	1877	0	1887	106	0
1	F	1837	0	1847	60	0
2	A	17	0	14	4	0
2	B	17	0	14	1	0
2	D	17	0	14	0	0
2	E	17	0	14	1	0
2	F	17	0	14	0	0
3	A	4	0	8	0	0
4	A	4	0	6	0	0
4	C	4	0	6	0	0
4	E	4	0	6	0	0
4	F	4	0	6	0	0
5	D	7	0	10	0	0
6	E	13	0	18	2	0
7	F	1	0	0	0	0
8	A	10	0	0	0	0
8	B	10	0	0	0	0
8	C	11	0	0	0	0
8	D	7	0	0	0	0
8	E	13	0	0	0	0
8	F	5	0	0	0	0
All	All	11404	0	11412	493	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 22.

All (493) 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:140:LEU:HD22	1:B:216:VAL:CG2	1.63	1.28
1:E:108:LEU:HD13	1:E:194:ASN:ND2	1.60	1.16
1:F:196:GLU:HG3	1:F:197:MET:H	1.08	1.10
1:B:140:LEU:HD22	1:B:216:VAL:HG21	1.23	1.08
1:F:15:ASP:HB3	1:F:44:LEU:HD13	1.37	1.03
1:B:223:ARG:HG2	1:B:223:ARG:HH11	0.95	1.03
1:D:22:ALA:HB2	1:D:86:ILE:HG12	1.39	1.01
1:E:199:SER:O	1:E:203:LEU:HG	1.63	0.98
1:E:108:LEU:HD13	1:E:194:ASN:CG	1.85	0.96

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:196:GLU:HG3	1:F:197:MET:N	1.77	0.96
1:B:176:VAL:O	1:B:181:LYS:HE2	1.67	0.94
1:D:22:ALA:CB	1:D:86:ILE:HG12	1.97	0.94
1:E:250:ARG:O	1:E:253:LEU:HD12	1.68	0.93
1:B:15:ASP:HB3	1:B:44:LEU:HD22	1.49	0.93
1:B:140:LEU:HD22	1:B:216:VAL:HG23	1.47	0.92
1:C:161:THR:OG1	1:C:164:PRO:HD2	1.68	0.92
1:A:250:ARG:O	1:A:251:ARG:HB2	1.71	0.90
1:B:223:ARG:HG2	1:B:223:ARG:NH1	1.75	0.89
1:E:156:THR:HG23	1:E:194:ASN:O	1.73	0.89
1:C:221:VAL:HB	1:C:229:PRO:HD3	1.54	0.89
1:D:16:LEU:CD1	1:D:84:LEU:HD13	2.04	0.88
1:B:223:ARG:CG	1:B:223:ARG:HH11	1.85	0.88
1:B:206:CYS:O	1:B:210:GLY:HA2	1.74	0.88
1:B:40:LYS:O	1:B:40:LYS:HG2	1.73	0.87
1:D:81:LEU:O	1:D:85:GLY:HA2	1.75	0.87
1:B:222:ASN:ND2	1:B:225:GLN:CB	2.37	0.87
1:D:16:LEU:HD13	1:D:84:LEU:HD13	1.58	0.86
1:D:22:ALA:HB2	1:D:86:ILE:CG1	2.06	0.85
1:F:92:ILE:HD11	1:F:241:ALA:HB1	1.60	0.83
1:A:197:MET:HG3	2:A:301:THM:H1'	1.61	0.82
1:E:143:ALA:HB1	1:E:247:GLU:HG3	1.61	0.82
1:E:8:HIS:HB3	1:E:50:PHE:CE1	2.16	0.81
1:B:222:ASN:ND2	1:B:225:GLN:HB3	1.97	0.80
1:F:95:THR:HG22	1:F:196:GLU:HB2	1.63	0.79
1:B:60:LYS:HB2	1:B:253:LEU:HD13	1.64	0.79
1:E:82:ALA:O	1:E:85:GLY:HA3	1.82	0.78
1:B:40:LYS:O	1:B:40:LYS:CG	2.30	0.78
1:A:57:LEU:HD11	1:A:250:ARG:HE	1.48	0.77
1:D:15:ASP:HB3	1:D:44:LEU:HD22	1.67	0.76
1:A:178:ARG:HA	1:A:181:LYS:HD3	1.68	0.76
1:B:222:ASN:ND2	1:B:225:GLN:HB2	1.99	0.76
1:E:86:ILE:HD13	1:E:86:ILE:N	2.00	0.76
1:B:81:LEU:HA	1:B:84:LEU:HD22	1.67	0.75
1:D:86:ILE:HG21	1:D:88:THR:O	1.86	0.75
1:D:22:ALA:HB2	1:D:86:ILE:CD1	2.17	0.75
1:E:252:LEU:O	1:E:253:LEU:OXT	2.05	0.74
1:D:86:ILE:CG2	1:D:88:THR:O	2.36	0.74
1:B:140:LEU:CD2	1:B:216:VAL:HG21	2.11	0.73
1:E:40:LYS:HD3	1:E:56:GLU:HB2	1.70	0.73
1:D:81:LEU:O	1:D:84:LEU:HB2	1.90	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:108:LEU:CD1	1:E:194:ASN:ND2	2.49	0.71
1:B:164:PRO:HB3	1:B:176:VAL:HG13	1.71	0.71
1:C:222:ASN:O	1:C:225:GLN:HB3	1.91	0.71
1:B:221:VAL:HA	1:B:229:PRO:HG3	1.71	0.71
1:B:91:ARG:CG	1:B:215:MET:HE2	2.21	0.71
1:E:238:GLU:O	1:E:242:VAL:N	2.22	0.70
1:B:16:LEU:HD21	1:B:84:LEU:HB3	1.73	0.70
1:D:8:HIS:HB3	1:D:50:PHE:HE2	1.57	0.70
1:B:166:GLN:OE1	1:B:168:ARG:NH2	2.25	0.69
1:B:205:MET:O	1:B:209:GLN:HB2	1.93	0.69
1:E:22:ALA:HB2	1:E:86:ILE:HG13	1.75	0.69
1:B:13:LYS:HA	1:B:16:LEU:HD13	1.74	0.69
1:A:172:TYR:CE2	1:B:211:LEU:HD21	2.28	0.68
1:B:222:ASN:HD22	1:B:225:GLN:HB3	1.58	0.68
1:B:16:LEU:HA	1:B:63:ILE:HD11	1.75	0.68
1:F:81:LEU:O	1:F:84:LEU:HB2	1.94	0.68
1:A:39:ASP:HB2	1:A:56:GLU:HB2	1.75	0.68
1:E:92:ILE:HD11	1:E:241:ALA:HB1	1.76	0.68
1:F:163:TYR:HB2	1:F:164:PRO:HD3	1.77	0.67
1:C:43:LYS:HZ2	1:C:53:TRP:HE1	1.41	0.67
1:F:22:ALA:HB2	1:F:86:ILE:HD13	1.77	0.67
1:E:166:GLN:NE2	2:E:301:THM:O2	2.28	0.67
1:A:92:ILE:HG23	1:A:92:ILE:O	1.92	0.67
1:E:108:LEU:CD1	1:E:194:ASN:CG	2.63	0.66
1:E:108:LEU:HD13	1:E:194:ASN:HD21	1.60	0.66
1:A:122:HIS:CE1	1:B:160:ASP:HB2	2.31	0.66
1:C:87:ARG:NH1	1:D:172:TYR:OH	2.29	0.66
1:D:94:THR:HG22	1:D:220:ILE:HD11	1.76	0.66
1:A:166:GLN:NE2	2:A:301:THM:O2	2.28	0.66
1:D:25:PRO:HB3	1:D:92:ILE:HG23	1.78	0.65
1:D:171:THR:HG22	1:D:173:SER:H	1.62	0.65
1:A:172:TYR:CZ	1:B:211:LEU:HD21	2.31	0.65
1:D:94:THR:CG2	1:D:220:ILE:HD11	2.26	0.65
1:C:162:PHE:O	1:C:168:ARG:NH1	2.29	0.65
1:E:23:ILE:HB	1:E:64:VAL:HG22	1.78	0.65
1:C:196:GLU:OE2	1:C:199:SER:N	2.30	0.65
1:B:206:CYS:O	1:B:210:GLY:CA	2.45	0.64
1:D:204:THR:O	1:D:208:SER:N	2.21	0.64
1:B:206:CYS:O	1:B:211:LEU:N	2.30	0.64
1:F:16:LEU:HA	1:F:63:ILE:HD11	1.79	0.64
1:C:5:ASP:HB2	1:C:12:THR:HA	1.80	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:38:MET:HB2	1:C:55:ALA:HB1	1.80	0.64
1:A:57:LEU:HD11	1:A:250:ARG:NE	2.12	0.63
1:E:250:ARG:HA	1:E:253:LEU:HD11	1.80	0.63
1:C:49:GLU:HG2	1:D:49:GLU:HG3	1.80	0.63
1:E:42:VAL:HB	1:E:54:ARG:HB3	1.80	0.63
1:B:141:VAL:HG12	1:B:145:LYS:HE2	1.79	0.63
1:D:16:LEU:CD1	1:D:84:LEU:CD1	2.75	0.63
1:A:250:ARG:O	1:A:251:ARG:CB	2.45	0.63
1:E:234:MET:O	1:E:236:GLN:N	2.32	0.63
1:C:175:ARG:NH2	1:D:208:SER:OG	2.32	0.63
1:E:221:VAL:HG23	1:E:229:PRO:HD3	1.81	0.63
1:B:222:ASN:HD21	1:B:225:GLN:HB2	1.63	0.63
1:C:196:GLU:CD	1:C:199:SER:H	2.01	0.63
1:D:109:VAL:HB	1:D:153:VAL:HG22	1.81	0.63
1:A:86:ILE:HG22	1:A:88:THR:H	1.64	0.62
1:B:163:TYR:HA	1:B:168:ARG:HD2	1.81	0.62
1:A:91:ARG:O	1:A:92:ILE:HG22	1.99	0.62
1:D:11:LEU:HD11	1:D:44:LEU:HB3	1.81	0.62
1:D:205:MET:O	1:D:209:GLN:N	2.31	0.62
1:B:91:ARG:HG2	1:B:215:MET:CE	2.29	0.62
1:E:236:GLN:O	1:E:239:SER:N	2.33	0.62
1:D:82:ALA:O	1:D:85:GLY:HA3	2.00	0.61
1:C:166:GLN:OE1	1:C:168:ARG:NH1	2.30	0.61
1:E:16:LEU:HD11	1:E:84:LEU:HB3	1.82	0.61
1:B:242:VAL:HA	1:B:245:VAL:HG12	1.81	0.61
1:D:163:TYR:HA	1:D:168:ARG:HD2	1.81	0.61
1:E:205:MET:O	1:E:209:GLN:NE2	2.27	0.61
1:C:205:MET:O	1:C:209:GLN:N	2.34	0.60
1:A:166:GLN:HB3	1:A:223:ARG:HH12	1.65	0.60
1:F:166:GLN:OE1	1:F:168:ARG:NH2	2.32	0.60
1:D:23:ILE:N	1:D:63:ILE:O	2.31	0.60
1:A:44:LEU:HD11	1:A:54:ARG:HB2	1.83	0.60
1:D:52:SER:HG	1:D:65:CYS:HG	1.49	0.60
1:A:166:GLN:HE22	2:A:301:THM:C2	2.13	0.60
1:A:196:GLU:CD	1:A:198:GLU:H	2.05	0.60
1:B:181:LYS:O	1:D:178:ARG:NH2	2.34	0.60
1:A:114:VAL:HA	1:F:129:PRO:HD3	1.83	0.60
1:B:15:ASP:HB3	1:B:44:LEU:CD2	2.28	0.59
1:C:115:ARG:NH1	1:C:128:PHE:O	2.36	0.59
1:D:205:MET:HA	1:D:208:SER:HB3	1.85	0.59
1:A:115:ARG:NH2	1:A:124:ALA:O	2.28	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:78:VAL:HG21	1:E:202:LEU:HD13	1.85	0.59
1:D:16:LEU:HD11	1:D:84:LEU:CD1	2.33	0.59
1:A:239:SER:HA	1:A:242:VAL:HB	1.83	0.59
1:D:90:LEU:HD21	1:D:140:LEU:HD21	1.83	0.59
1:C:167:GLU:O	1:C:223:ARG:NH1	2.36	0.59
1:D:13:LYS:O	1:D:16:LEU:HB2	2.03	0.59
1:F:92:ILE:HB	1:F:245:VAL:HG21	1.83	0.59
1:E:81:LEU:O	1:E:85:GLY:HA2	2.03	0.59
1:E:252:LEU:O	1:E:253:LEU:C	2.38	0.58
1:F:115:ARG:HD2	1:F:130:ALA:HB2	1.84	0.58
1:E:143:ALA:CB	1:E:247:GLU:HG3	2.32	0.58
1:C:122:HIS:HE1	1:D:160:ASP:H	1.52	0.58
1:C:44:LEU:HB2	1:C:52:SER:O	2.04	0.58
1:E:16:LEU:HD22	1:E:63:ILE:HG13	1.85	0.58
1:D:16:LEU:HD11	1:D:84:LEU:HD13	1.86	0.58
1:D:221:VAL:HG23	1:D:229:PRO:HD2	1.85	0.58
1:E:34:ILE:HG13	1:E:242:VAL:HG11	1.86	0.58
1:A:69:ILE:HD12	1:B:50:PHE:HZ	1.69	0.58
1:C:161:THR:OG1	1:C:164:PRO:CD	2.48	0.57
1:B:91:ARG:CG	1:B:215:MET:CE	2.83	0.57
1:C:114:VAL:HB	1:C:157:ALA:HA	1.86	0.57
1:C:43:LYS:HG2	1:C:53:TRP:CZ2	2.40	0.57
1:E:222:ASN:HD22	1:E:225:GLN:HB2	1.70	0.57
1:A:86:ILE:CG2	1:A:88:THR:H	2.18	0.57
1:B:198:GLU:O	1:B:201:THR:OG1	2.23	0.57
1:A:142:GLU:HG2	1:A:251:ARG:HH11	1.70	0.56
1:B:222:ASN:HD22	1:B:225:GLN:CB	2.12	0.56
1:B:237:THR:O	1:B:241:ALA:N	2.28	0.56
1:E:234:MET:C	1:E:236:GLN:H	2.08	0.56
1:E:220:ILE:O	1:E:229:PRO:HG3	2.05	0.56
1:A:23:ILE:HG12	1:A:90:LEU:HD12	1.87	0.56
1:E:246:VAL:O	1:E:250:ARG:HG3	2.06	0.56
1:C:43:LYS:NZ	1:C:53:TRP:HE1	2.04	0.56
1:A:84:LEU:HB2	1:A:85:GLY:HA2	1.88	0.56
1:B:178:ARG:HA	1:B:181:LYS:HG2	1.88	0.56
1:D:141:VAL:O	1:D:145:LYS:HG2	2.06	0.56
1:C:16:LEU:HD21	1:C:84:LEU:HB3	1.88	0.56
1:B:210:GLY:C	1:B:211:LEU:HG	2.27	0.55
1:F:115:ARG:HG2	1:F:200:ALA:HB1	1.88	0.55
1:B:84:LEU:N	1:B:85:GLY:HA2	2.21	0.55
1:E:115:ARG:NH1	1:E:125:PRO:O	2.39	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:139:ALA:HB3	1:D:252:LEU:HD11	1.88	0.55
1:B:23:ILE:HG22	1:B:25:PRO:HD3	1.89	0.55
1:B:43:LYS:HB2	1:B:53:TRP:CZ2	2.41	0.55
1:D:108:LEU:HD23	1:D:152:HIS:HB2	1.89	0.55
1:E:196:GLU:CD	1:E:199:SER:H	2.10	0.55
1:F:114:VAL:HB	1:F:157:ALA:HA	1.88	0.55
1:D:221:VAL:HG23	1:D:229:PRO:CD	2.36	0.55
1:C:234:MET:O	1:C:238:GLU:HG2	2.07	0.55
1:E:79:GLU:OE2	1:E:83:GLN:NE2	2.40	0.55
1:D:90:LEU:HD22	1:D:245:VAL:HG23	1.89	0.55
1:A:222:ASN:ND2	1:A:224:THR:OG1	2.40	0.55
1:D:196:GLU:CD	1:D:199:SER:H	2.10	0.55
1:D:16:LEU:O	1:D:54:ARG:HG3	2.07	0.54
1:E:114:VAL:HB	1:E:157:ALA:HA	1.88	0.54
1:D:56:GLU:HG2	1:D:61:ALA:HA	1.90	0.54
1:B:234:MET:O	1:B:236:GLN:N	2.41	0.54
1:C:163:TYR:HB2	1:C:164:PRO:HD3	1.89	0.54
1:C:222:ASN:HB3	1:C:225:GLN:HB2	1.89	0.54
1:C:115:ARG:HH21	1:C:120:SER:HB2	1.72	0.54
1:B:206:CYS:HB3	1:B:211:LEU:O	2.07	0.54
1:A:6:VAL:HG11	1:A:80:GLU:HB3	1.90	0.54
1:E:154:GLY:N	1:E:193:MET:HE1	2.23	0.54
1:B:140:LEU:CD2	1:B:216:VAL:HG23	2.28	0.53
1:C:122:HIS:CE1	1:D:160:ASP:H	2.26	0.53
1:C:95:THR:OG1	1:C:195:TYR:O	2.20	0.53
1:D:13:LYS:O	1:D:16:LEU:N	2.28	0.53
1:D:42:VAL:N	1:D:54:ARG:O	2.33	0.53
1:B:67:THR:OG1	1:B:91:ARG:NH1	2.41	0.53
1:B:158:SER:OG	1:B:196:GLU:OE2	2.22	0.53
1:A:172:TYR:OH	1:B:211:LEU:HD21	2.08	0.53
1:F:6:VAL:HG11	1:F:80:GLU:HG2	1.91	0.53
1:F:163:TYR:N	1:F:164:PRO:CD	2.72	0.53
1:C:115:ARG:HH21	1:C:120:SER:CB	2.21	0.53
1:E:79:GLU:HG3	1:E:83:GLN:HE22	1.73	0.53
1:B:17:GLN:O	1:B:17:GLN:HG2	2.07	0.53
1:C:108:LEU:HD13	1:C:193:MET:HB3	1.91	0.53
1:F:35:ALA:HB1	1:F:41:PRO:HG3	1.91	0.53
1:A:69:ILE:N	1:B:49:GLU:OE2	2.42	0.53
1:B:136:CYS:HA	1:B:252:LEU:HD11	1.91	0.53
1:E:220:ILE:HG22	1:E:235:LYS:HD2	1.91	0.53
1:E:147:ILE:HD12	1:E:244:ILE:HD12	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:72:PRO:O	1:B:76:ILE:HG13	2.09	0.52
1:A:23:ILE:HG23	1:A:90:LEU:HB2	1.91	0.52
1:C:15:ASP:O	1:C:54:ARG:HD3	2.09	0.52
1:E:158:SER:O	1:E:158:SER:OG	2.24	0.52
1:D:16:LEU:HD13	1:D:84:LEU:CD1	2.33	0.52
1:B:81:LEU:O	1:B:84:LEU:HB2	2.09	0.52
1:B:16:LEU:HD11	1:B:84:LEU:HG	1.91	0.52
1:B:179:ARG:O	1:D:178:ARG:NH1	2.42	0.52
1:A:178:ARG:NH2	1:C:186:GLU:OE2	2.40	0.52
1:A:158:SER:HA	1:A:196:GLU:O	2.09	0.52
1:D:100:PRO:HA	1:D:222:ASN:HD21	1.75	0.52
1:B:196:GLU:OE2	1:B:199:SER:OG	2.24	0.52
1:E:190:MET:HB2	1:E:192:VAL:HG23	1.92	0.52
1:D:81:LEU:HB3	1:D:86:ILE:HD13	1.92	0.52
1:E:238:GLU:O	1:E:242:VAL:HG23	2.10	0.52
1:E:91:ARG:NH2	1:E:198:GLU:OE1	2.43	0.51
1:C:158:SER:HA	1:C:196:GLU:O	2.09	0.51
1:B:43:LYS:HZ1	1:B:46:SER:HB2	1.75	0.51
1:D:115:ARG:NH2	1:D:121:LEU:HD23	2.26	0.51
1:C:134:PHE:O	1:C:138:THR:HG23	2.09	0.51
1:C:163:TYR:N	1:C:164:PRO:CD	2.73	0.51
1:B:209:GLN:HG2	1:B:211:LEU:HD11	1.91	0.51
1:A:56:GLU:HB3	1:A:59:GLY:HA2	1.92	0.51
1:B:134:PHE:CE1	1:C:138:THR:HG22	2.45	0.51
1:C:28:PRO:HD2	1:D:48:ARG:HG2	1.93	0.51
1:B:44:LEU:HD11	1:B:54:ARG:HB2	1.92	0.51
1:D:6:VAL:HG21	1:D:9:LEU:HB2	1.91	0.51
1:E:41:PRO:HB2	1:E:53:TRP:NE1	2.26	0.51
1:F:12:THR:HG23	1:F:14:ASN:H	1.75	0.51
1:E:186:GLU:O	1:E:190:MET:HG2	2.11	0.51
1:B:185:GLU:HA	1:B:188:GLN:HB3	1.93	0.51
1:A:7:PHE:HB3	1:A:8:HIS:ND1	2.26	0.51
1:A:142:GLU:HG2	1:A:251:ARG:NH1	2.24	0.50
1:E:83:GLN:HG3	1:F:172:TYR:HB2	1.93	0.50
1:C:163:TYR:H	1:C:164:PRO:HD3	1.75	0.50
1:C:117:ASP:OD1	1:C:120:SER:OG	2.29	0.50
1:C:160:ASP:O	1:D:72:PRO:HB3	2.11	0.50
1:A:30:ARG:HH22	1:A:94:THR:CB	2.24	0.50
1:C:139:ALA:HA	1:C:142:GLU:HB3	1.92	0.50
1:C:238:GLU:O	1:C:242:VAL:HG23	2.10	0.50
1:E:34:ILE:HG13	1:E:242:VAL:CG1	2.41	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:134:PHE:HE1	1:C:138:THR:HG22	1.77	0.50
1:A:133:ASP:O	1:A:137:THR:OG1	2.27	0.50
1:D:9:LEU:HD23	1:D:50:PHE:CG	2.47	0.50
1:B:185:GLU:N	1:B:185:GLU:OE2	2.43	0.50
1:B:142:GLU:HG3	1:B:251:ARG:NH1	2.27	0.50
1:E:163:TYR:OH	1:F:80:GLU:OE1	2.31	0.49
1:D:220:ILE:O	1:D:229:PRO:HG3	2.12	0.49
1:A:115:ARG:NH1	1:A:125:PRO:O	2.45	0.49
1:B:43:LYS:HA	1:B:53:TRP:CD2	2.47	0.49
1:D:226:GLN:NE2	1:D:227:GLU:OE2	2.40	0.49
1:C:117:ASP:OD1	1:C:120:SER:N	2.34	0.49
1:C:142:GLU:OE1	1:C:251:ARG:NH1	2.45	0.49
1:A:118:GLY:HA3	1:B:118:GLY:HA3	1.93	0.49
1:A:149:ALA:HB2	1:A:240:HIS:CE1	2.47	0.49
1:B:91:ARG:HG2	1:B:215:MET:HE2	1.89	0.49
1:A:78:VAL:HG21	1:A:202:LEU:HD13	1.93	0.49
1:F:27:ASP:OD2	1:F:30:ARG:HG2	2.13	0.49
1:E:95:THR:OG1	1:E:195:TYR:O	2.25	0.49
1:E:216:VAL:HG11	1:E:245:VAL:HB	1.95	0.49
1:E:97:ALA:HA	1:E:194:ASN:HA	1.94	0.49
1:C:196:GLU:CD	1:C:198:GLU:H	2.15	0.49
1:A:8:HIS:HB2	1:A:80:GLU:OE1	2.13	0.49
1:F:80:GLU:O	1:F:84:LEU:HG	2.13	0.49
1:B:142:GLU:HA	1:B:145:LYS:HD2	1.94	0.49
1:E:42:VAL:HG21	1:E:54:ARG:HH21	1.78	0.49
1:E:154:GLY:CA	1:E:193:MET:CE	2.90	0.49
1:D:222:ASN:HB3	1:D:225:GLN:HB3	1.95	0.49
1:E:41:PRO:HB2	1:E:53:TRP:HE1	1.78	0.49
1:C:117:ASP:OD2	1:C:120:SER:OG	2.30	0.48
1:E:127:GLU:OE2	1:E:127:GLU:N	2.46	0.48
1:F:142:GLU:HA	1:F:145:LYS:HG2	1.96	0.48
1:D:30:ARG:O	1:D:34:ILE:HG12	2.13	0.48
1:D:74:THR:O	1:D:78:VAL:HG23	2.13	0.48
1:B:92:ILE:HA	1:B:216:VAL:O	2.13	0.48
1:F:29:GLU:HB3	1:F:30:ARG:NH2	2.28	0.48
1:A:81:LEU:O	1:A:85:GLY:HA2	2.14	0.48
1:D:115:ARG:HH21	1:D:121:LEU:HD23	1.78	0.48
1:F:15:ASP:HB3	1:F:44:LEU:CD1	2.26	0.48
1:B:164:PRO:HB3	1:B:176:VAL:CG1	2.40	0.48
1:E:239:SER:O	1:E:243:LYS:N	2.30	0.48
1:E:41:PRO:C	1:E:53:TRP:HE1	2.17	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:108:LEU:HD12	1:F:194:ASN:HB3	1.96	0.48
1:D:86:ILE:HG23	1:D:88:THR:H	1.78	0.48
1:E:21:LEU:HD11	1:E:252:LEU:HD12	1.95	0.48
1:F:163:TYR:H	1:F:164:PRO:HD3	1.79	0.48
1:E:250:ARG:HA	1:E:253:LEU:CD1	2.43	0.48
1:B:209:GLN:N	1:B:210:GLY:HA2	2.29	0.48
1:E:154:GLY:HA3	1:E:193:MET:CE	2.44	0.48
1:E:143:ALA:HB1	1:E:247:GLU:CG	2.36	0.47
1:A:252:LEU:O	1:A:252:LEU:HD23	2.13	0.47
1:A:240:HIS:HA	1:A:243:LYS:HE3	1.95	0.47
1:F:194:ASN:N	1:F:194:ASN:OD1	2.47	0.47
1:C:60:LYS:HB2	1:C:253:LEU:HD11	1.95	0.47
1:D:201:THR:O	1:D:205:MET:HG2	2.14	0.47
1:E:196:GLU:OE1	1:E:199:SER:N	2.45	0.47
1:B:15:ASP:O	1:B:54:ARG:HD3	2.13	0.47
1:C:167:GLU:HG3	1:C:176:VAL:HG11	1.97	0.47
1:C:72:PRO:O	1:C:75:SER:OG	2.31	0.47
1:D:242:VAL:HA	1:D:245:VAL:HG12	1.97	0.47
1:F:92:ILE:HD13	1:F:216:VAL:HG13	1.96	0.47
1:A:163:TYR:N	1:A:164:PRO:CD	2.78	0.47
1:B:149:ALA:HB2	1:B:240:HIS:NE2	2.29	0.47
1:A:86:ILE:HG22	1:A:88:THR:N	2.29	0.47
1:D:238:GLU:O	1:D:242:VAL:HG23	2.15	0.47
1:E:98:ILE:O	1:E:188:GLN:NE2	2.40	0.47
1:E:115:ARG:NH2	1:E:121:LEU:HD23	2.31	0.46
1:F:196:GLU:CG	1:F:197:MET:N	2.61	0.46
1:A:187:TRP:HB3	1:A:192:VAL:HB	1.98	0.46
1:C:194:ASN:OD1	1:C:194:ASN:N	2.48	0.46
1:E:38:MET:HG3	1:E:57:LEU:HD22	1.97	0.46
1:E:208:SER:O	1:F:175:ARG:NH2	2.44	0.46
1:C:239:SER:HA	1:C:242:VAL:HB	1.98	0.46
1:D:129:PRO:HD3	1:E:114:VAL:HA	1.97	0.46
1:F:9:LEU:HD11	1:F:81:LEU:HD12	1.96	0.46
1:A:67:THR:OG1	1:A:91:ARG:NH1	2.45	0.46
1:B:72:PRO:O	1:B:75:SER:OG	2.30	0.46
1:D:231:ALA:HA	1:D:232:GLU:HA	1.57	0.46
1:B:114:VAL:HB	1:B:157:ALA:HA	1.98	0.46
1:F:109:VAL:HG13	1:F:153:VAL:HG13	1.97	0.46
1:E:48:ARG:NH1	1:F:69:ILE:HD11	2.31	0.46
1:C:162:PHE:HD1	1:C:163:TYR:CE1	2.33	0.46
1:F:9:LEU:CD1	1:F:81:LEU:HD12	2.46	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:48:ARG:HB3	1:B:49:GLU:H	1.46	0.46
1:A:237:THR:O	1:A:240:HIS:HB3	2.16	0.46
1:B:107:VAL:HG11	1:B:244:ILE:HD12	1.98	0.46
1:A:197:MET:HG3	2:A:301:THM:O2	2.16	0.45
1:D:111:THR:HG22	1:D:137:THR:HG21	1.99	0.45
1:E:166:GLN:OE1	1:E:168:ARG:NH1	2.50	0.45
1:F:116:LEU:HB2	1:F:159:SER:HA	1.97	0.45
1:F:163:TYR:N	1:F:164:PRO:HD3	2.32	0.45
1:A:27:ASP:HB3	1:A:30:ARG:HG2	1.98	0.45
1:A:141:VAL:O	1:A:145:LYS:N	2.49	0.45
1:D:16:LEU:CB	1:D:17:GLN:HA	2.47	0.45
1:C:107:VAL:HG12	1:C:218:GLY:HA2	1.98	0.45
1:F:84:LEU:HA	1:F:84:LEU:HD23	1.53	0.45
1:E:234:MET:O	1:E:234:MET:SD	2.75	0.45
1:F:158:SER:HB3	1:F:200:ALA:HB2	1.98	0.45
1:B:84:LEU:HA	1:B:84:LEU:HD12	1.73	0.45
1:C:69:ILE:N	1:D:49:GLU:OE2	2.34	0.45
1:E:155:VAL:HG23	1:E:192:VAL:HA	1.98	0.45
1:C:229:PRO:HB2	1:C:234:MET:SD	2.57	0.45
1:F:163:TYR:HA	1:F:168:ARG:HD2	1.98	0.45
1:C:198:GLU:OE1	1:C:198:GLU:N	2.50	0.45
1:B:108:LEU:HD13	1:B:152:HIS:HB2	1.99	0.45
1:C:234:MET:HG3	1:C:235:LYS:H	1.82	0.45
1:C:234:MET:HG3	1:C:235:LYS:N	2.32	0.45
1:D:196:GLU:OE2	1:D:199:SER:N	2.46	0.45
1:F:60:LYS:HB2	1:F:253:LEU:HD21	1.99	0.45
1:B:95:THR:OG1	1:B:96:GLY:N	2.49	0.45
1:C:163:TYR:H	1:C:164:PRO:CD	2.30	0.45
1:C:31:VAL:HG21	1:C:66:SER:HB2	1.99	0.45
1:C:117:ASP:OD1	1:C:120:SER:CB	2.64	0.44
1:F:23:ILE:HB	1:F:64:VAL:HG22	1.99	0.44
1:A:220:ILE:O	1:A:229:PRO:HG3	2.18	0.44
1:E:56:GLU:HG3	1:E:61:ALA:HA	1.99	0.44
1:E:180:PHE:HA	1:E:183:SER:HB3	1.98	0.44
1:C:96:GLY:HA2	1:C:221:VAL:O	2.18	0.44
1:C:31:VAL:HG13	1:C:64:VAL:HG12	1.99	0.44
1:B:69:ILE:HD11	2:B:301:THM:H5'2	1.99	0.44
1:E:27:ASP:OD1	1:F:48:ARG:NH1	2.50	0.44
1:A:71:GLY:O	1:A:75:SER:N	2.39	0.44
1:D:165:GLY:HA2	1:D:180:PHE:CD1	2.52	0.44
1:E:31:VAL:HG13	1:E:64:VAL:HG12	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:237:THR:O	1:E:240:HIS:HB2	2.18	0.44
1:C:57:LEU:HG	1:C:250:ARG:HG2	1.99	0.44
1:C:228:ILE:HG13	1:C:229:PRO:HD2	1.98	0.44
1:B:141:VAL:HG11	1:C:134:PHE:CE2	2.53	0.44
1:D:101:HIS:CD2	1:D:102:ILE:HG13	2.53	0.44
1:A:7:PHE:HB3	1:A:8:HIS:HD1	1.82	0.44
1:E:43:LYS:HB2	1:E:53:TRP:CH2	2.53	0.44
1:D:71:GLY:N	1:D:72:PRO:CD	2.80	0.44
1:E:250:ARG:O	1:E:253:LEU:CD1	2.53	0.44
1:E:31:VAL:HG21	1:E:66:SER:HB3	1.99	0.44
1:E:161:THR:HB	1:E:164:PRO:HD2	2.00	0.44
1:E:147:ILE:HD11	1:E:247:GLU:CD	2.37	0.44
1:A:115:ARG:NH1	1:A:128:PHE:O	2.50	0.44
1:A:21:LEU:HD12	1:A:252:LEU:HD22	1.99	0.44
1:B:9:LEU:HD23	1:B:11:LEU:HD12	1.99	0.44
1:D:40:LYS:O	1:D:42:VAL:HG23	2.18	0.43
1:B:146:SER:OG	1:B:251:ARG:NH2	2.51	0.43
1:A:86:ILE:HG22	1:A:87:ARG:N	2.33	0.43
1:D:116:LEU:HB2	1:D:159:SER:HA	1.99	0.43
1:D:84:LEU:HA	1:D:84:LEU:HD23	1.86	0.43
1:D:92:ILE:HG13	1:D:93:GLY:N	2.33	0.43
1:F:37:LEU:HD13	1:F:243:LYS:HG2	2.00	0.43
1:E:42:VAL:HG11	1:E:54:ARG:NH2	2.34	0.43
1:B:24:VAL:O	1:B:91:ARG:HD2	2.19	0.43
1:E:131:VAL:HG13	6:E:302:PG4:O5	2.19	0.43
1:E:57:LEU:HA	1:E:57:LEU:HD12	1.87	0.43
1:E:13:LYS:H	1:E:13:LYS:HG2	1.22	0.43
1:A:202:LEU:HA	1:A:205:MET:HE3	2.01	0.43
1:D:194:ASN:OD1	1:D:194:ASN:N	2.51	0.43
1:B:231:ALA:HA	1:B:232:GLU:HA	1.76	0.43
1:E:239:SER:O	1:E:243:LYS:HB2	2.19	0.43
1:C:220:ILE:HB	1:C:229:PRO:HB3	2.01	0.43
1:D:12:THR:OG1	1:D:13:LYS:N	2.52	0.43
1:D:141:VAL:HG22	1:D:153:VAL:HG21	2.00	0.43
1:D:111:THR:OG1	1:D:154:GLY:O	2.35	0.43
1:B:8:HIS:HB3	1:B:50:PHE:CE1	2.54	0.43
1:E:86:ILE:H	1:E:86:ILE:HD13	1.80	0.42
1:E:221:VAL:HG21	1:E:228:ILE:HG13	2.00	0.42
1:D:67:THR:OG1	1:D:91:ARG:NH1	2.52	0.42
1:C:30:ARG:HH11	1:C:30:ARG:HG2	1.84	0.42
1:D:31:VAL:HG13	1:D:64:VAL:HG12	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:106:ASP:H	1:A:219:VAL:HB	1.84	0.42
1:B:169:TYR:O	1:B:174:GLY:HA2	2.19	0.42
1:E:122:HIS:ND1	1:F:161:THR:OG1	2.47	0.42
1:E:81:LEU:HB3	1:E:86:ILE:HG12	2.01	0.42
1:F:16:LEU:O	1:F:17:GLN:HB2	2.19	0.42
1:D:153:VAL:HG12	1:D:154:GLY:N	2.33	0.42
1:E:27:ASP:HA	1:E:28:PRO:HD3	1.91	0.42
1:F:222:ASN:HB3	1:F:225:GLN:HB3	2.01	0.42
1:D:44:LEU:HD11	1:D:54:ARG:HB2	2.01	0.42
1:B:161:THR:HG22	1:B:164:PRO:HD2	2.00	0.42
1:C:34:ILE:HG13	1:C:242:VAL:HG13	2.02	0.42
1:C:117:ASP:CG	1:C:120:SER:HG	2.22	0.42
1:E:80:GLU:HA	1:E:83:GLN:OE1	2.18	0.42
1:D:38:MET:HG3	1:D:56:GLU:O	2.19	0.42
1:C:27:ASP:HB3	1:C:30:ARG:HB3	2.02	0.42
1:D:32:GLU:HG3	1:D:53:TRP:CZ2	2.55	0.42
1:F:150:THR:HG22	1:F:152:HIS:HE1	1.85	0.42
1:A:92:ILE:HA	1:A:216:VAL:HG13	2.01	0.42
1:C:115:ARG:HB2	1:C:126:MET:HE1	2.01	0.42
1:E:44:LEU:HD23	1:E:44:LEU:HA	1.90	0.42
1:F:177:VAL:CG1	1:F:178:ARG:N	2.82	0.42
1:D:75:SER:OG	1:D:76:ILE:N	2.53	0.42
1:F:15:ASP:OD1	1:F:44:LEU:HD22	2.19	0.42
1:D:205:MET:O	1:D:209:GLN:HG2	2.19	0.42
1:D:204:THR:O	1:D:208:SER:CB	2.68	0.42
1:A:15:ASP:HB3	1:A:44:LEU:CD2	2.49	0.42
1:B:223:ARG:CG	1:B:223:ARG:NH1	2.53	0.42
1:A:119:ALA:N	1:B:160:ASP:OD2	2.52	0.42
1:B:142:GLU:HG3	1:B:251:ARG:HH11	1.83	0.42
1:F:95:THR:CG2	1:F:196:GLU:HB2	2.44	0.42
1:F:222:ASN:HB3	1:F:225:GLN:CB	2.50	0.42
1:A:16:LEU:HA	1:A:63:ILE:HD11	2.01	0.42
1:A:123:PHE:CZ	1:B:161:THR:HG21	2.55	0.42
1:A:147:ILE:HG21	1:A:240:HIS:CE1	2.55	0.41
1:E:38:MET:HG3	1:E:57:LEU:HD13	2.02	0.41
1:F:91:ARG:HH21	1:F:196:GLU:CD	2.24	0.41
1:D:248:ALA:O	1:D:252:LEU:HD12	2.20	0.41
1:D:114:VAL:HA	1:E:129:PRO:HD3	2.02	0.41
1:A:138:THR:HA	1:F:134:PHE:HZ	1.84	0.41
1:E:26:GLY:HA2	1:E:68:GLY:H	1.85	0.41
1:B:91:ARG:HG2	1:B:215:MET:HE1	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:84:LEU:HA	1:E:84:LEU:HD23	1.82	0.41
1:E:37:LEU:HD13	1:E:37:LEU:HA	1.94	0.41
1:B:75:SER:HA	1:B:205:MET:SD	2.61	0.41
1:D:140:LEU:HD22	1:D:216:VAL:HB	2.02	0.41
1:F:99:GLN:NE2	1:F:192:VAL:O	2.49	0.41
1:D:124:ALA:HB1	1:D:128:PHE:HB3	2.02	0.41
1:B:163:TYR:HB2	1:B:164:PRO:HD3	2.03	0.41
1:E:42:VAL:O	1:E:54:ARG:N	2.35	0.41
1:E:42:VAL:N	1:E:54:ARG:O	2.39	0.41
1:B:142:GLU:HA	1:B:145:LYS:HB2	2.02	0.41
1:A:31:VAL:HG13	1:A:64:VAL:HG12	2.03	0.41
1:F:12:THR:N	1:F:15:ASP:OD2	2.49	0.41
1:B:161:THR:CG2	1:B:164:PRO:HD2	2.51	0.41
1:B:82:ALA:O	1:B:85:GLY:HA3	2.20	0.41
1:F:6:VAL:HG21	1:F:9:LEU:HB2	2.02	0.41
1:D:102:ILE:HD13	1:D:108:LEU:HD21	2.02	0.41
1:A:206:CYS:HA	1:A:211:LEU:HB2	2.03	0.41
1:A:161:THR:OG1	1:B:122:HIS:ND1	2.39	0.41
1:D:94:THR:HG21	1:D:220:ILE:HD11	2.02	0.41
1:B:187:TRP:HB3	1:B:192:VAL:HB	2.03	0.41
1:C:44:LEU:HD23	1:C:44:LEU:HA	1.91	0.40
1:D:87:ARG:N	1:D:87:ARG:HD3	2.36	0.40
1:C:201:THR:O	1:C:205:MET:HG2	2.21	0.40
1:D:235:LYS:O	1:D:238:GLU:HG2	2.21	0.40
1:D:169:TYR:O	1:D:174:GLY:HA2	2.22	0.40
1:B:220:ILE:HG22	1:B:235:LYS:HB3	2.03	0.40
1:F:163:TYR:H	1:F:164:PRO:CD	2.33	0.40
1:A:228:ILE:H	1:A:228:ILE:HG13	1.60	0.40
1:B:90:LEU:HD11	1:B:252:LEU:HD12	2.04	0.40
1:E:133:ASP:HA	6:E:302:PG4:C8	2.52	0.40
1:A:180:PHE:HA	1:A:183:SER:HB2	2.04	0.40
1:F:166:GLN:HB3	1:F:223:ARG:HH22	1.87	0.40
1:C:15:ASP:O	1:C:54:ARG:NH1	2.54	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	248/253 (98%)	242 (98%)	6 (2%)	0	100	100
1	B	248/253 (98%)	241 (97%)	7 (3%)	0	100	100
1	C	248/253 (98%)	241 (97%)	6 (2%)	1 (0%)	39	56
1	D	248/253 (98%)	243 (98%)	5 (2%)	0	100	100
1	E	248/253 (98%)	234 (94%)	14 (6%)	0	100	100
1	F	241/253 (95%)	235 (98%)	6 (2%)	0	100	100
All	All	1481/1518 (98%)	1436 (97%)	44 (3%)	1 (0%)	56	74

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	163	TYR

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	199/202 (98%)	190 (96%)	9 (4%)	34	52
1	B	199/202 (98%)	186 (94%)	13 (6%)	21	33
1	C	199/202 (98%)	193 (97%)	6 (3%)	48	70
1	D	199/202 (98%)	189 (95%)	10 (5%)	30	48
1	E	199/202 (98%)	190 (96%)	9 (4%)	34	52
1	F	194/202 (96%)	191 (98%)	3 (2%)	72	87

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	1189/1212 (98%)	1139 (96%)	50 (4%)	36 56

All (50) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	7	PHE
1	A	30	ARG
1	A	32	GLU
1	A	44	LEU
1	A	62	VAL
1	A	88	THR
1	A	92	ILE
1	A	94	THR
1	A	170	ASP
1	B	39	ASP
1	B	43	LYS
1	B	84	LEU
1	B	160	ASP
1	B	178	ARG
1	B	181	LYS
1	B	195	TYR
1	B	209	GLN
1	B	211	LEU
1	B	223	ARG
1	B	228	ILE
1	B	234	MET
1	B	236	GLN
1	C	30	ARG
1	C	38	MET
1	C	169	TYR
1	C	195	TYR
1	C	223	ARG
1	C	227	GLU
1	D	73	SER
1	D	90	LEU
1	D	92	ILE
1	D	94	THR
1	D	101	HIS
1	D	115	ARG
1	D	160	ASP
1	D	178	ARG
1	D	240	HIS

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Mol	Chain	Res	Type
1	D	253	LEU
1	E	13	LYS
1	E	21	LEU
1	E	147	ILE
1	E	160	ASP
1	E	194	ASN
1	E	195	TYR
1	E	233	THR
1	E	236	GLN
1	E	252	LEU
1	F	24	VAL
1	F	44	LEU
1	F	196	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	222	ASN
1	A	240	HIS
1	B	14	ASN
1	B	222	ASN
1	B	236	GLN
1	C	230	ASN
1	D	101	HIS
1	E	8	HIS
1	E	222	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry

Of 13 ligands modelled in this entry, 1 is monoatomic - leaving 12 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
2	THM	A	301	-	13,18,18	2.46	5 (38%)	16,26,26	1.83	3 (18%)
3	IPA	A	302	-	3,3,3	0.55	0	3,3,3	0.21	0
4	EDO	A	303	-	3,3,3	0.38	0	2,2,2	0.50	0
2	THM	B	301	-	13,18,18	2.54	5 (38%)	16,26,26	1.77	2 (12%)
4	EDO	C	301	-	3,3,3	0.46	0	2,2,2	0.44	0
2	THM	D	301	-	13,18,18	2.57	5 (38%)	16,26,26	1.88	3 (18%)
5	PEG	D	302	-	6,6,6	0.63	0	5,5,5	0.75	0
2	THM	E	301	-	13,18,18	1.67	2 (15%)	16,26,26	2.38	5 (31%)
6	PG4	E	302	-	12,12,12	0.73	0	11,11,11	0.99	0
4	EDO	E	303	-	3,3,3	0.50	0	2,2,2	0.37	0
2	THM	F	301	-	13,18,18	2.50	5 (38%)	16,26,26	1.82	2 (12%)
4	EDO	F	303	-	3,3,3	0.48	0	2,2,2	0.42	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	THM	A	301	-	-	0/2/18/18	0/2/2/2
3	IPA	A	302	-	-	0/0/0/0	0/0/0/0
4	EDO	A	303	-	-	0/1/1/1	0/0/0/0
2	THM	B	301	-	-	0/2/18/18	0/2/2/2
4	EDO	C	301	-	-	0/1/1/1	0/0/0/0
2	THM	D	301	-	-	0/2/18/18	0/2/2/2
5	PEG	D	302	-	-	0/4/4/4	0/0/0/0
2	THM	E	301	-	-	0/2/18/18	0/2/2/2
6	PG4	E	302	-	-	0/10/10/10	0/0/0/0
4	EDO	E	303	-	-	0/1/1/1	0/0/0/0
2	THM	F	301	-	-	0/2/18/18	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	EDO	F	303	-	-	0/1/1/1	0/0/0/0

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	301	THM	C6-N1	-4.11	1.28	1.35
2	D	301	THM	O3'-C3'	-2.77	1.37	1.43
2	B	301	THM	O3'-C3'	-2.72	1.37	1.43
2	A	301	THM	O3'-C3'	-2.68	1.37	1.43
2	F	301	THM	O3'-C3'	-2.64	1.37	1.43
2	E	301	THM	O4'-C4'	-2.58	1.39	1.45
2	B	301	THM	C2'-C3'	-2.30	1.46	1.52
2	D	301	THM	C2'-C3'	-2.25	1.46	1.52
2	A	301	THM	O4'-C4'	-2.20	1.39	1.45
2	F	301	THM	C2'-C3'	-2.15	1.47	1.52
2	D	301	THM	O4'-C4'	-2.15	1.40	1.45
2	A	301	THM	C2'-C3'	-2.09	1.47	1.52
2	F	301	THM	O4'-C4'	-2.09	1.40	1.45
2	B	301	THM	O4'-C4'	-2.03	1.40	1.45
2	A	301	THM	C4-N3	3.73	1.40	1.33
2	F	301	THM	C4-N3	3.92	1.40	1.33
2	D	301	THM	C4-N3	3.97	1.40	1.33
2	B	301	THM	C4-N3	4.02	1.40	1.33
2	A	301	THM	C6-N1	6.17	1.44	1.35
2	F	301	THM	C6-N1	6.38	1.44	1.35
2	B	301	THM	C6-N1	6.42	1.44	1.35
2	D	301	THM	C6-N1	6.48	1.44	1.35

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	301	THM	C5-C4-N3	-5.65	118.85	125.14
2	F	301	THM	C5-C4-N3	-4.44	120.19	125.14
2	A	301	THM	C5-C4-N3	-4.27	120.38	125.14
2	D	301	THM	C5-C4-N3	-4.20	120.46	125.14
2	B	301	THM	C5-C4-N3	-4.00	120.69	125.14
2	E	301	THM	C2'-C1'-N1	-2.18	108.85	114.16
2	E	301	THM	C4'-O4'-C1'	-2.09	104.18	109.47
2	E	301	THM	O4'-C4'-C3'	-2.09	100.41	105.67
2	D	301	THM	C5'-C4'-C3'	-2.01	109.44	114.80
2	A	301	THM	O4'-C1'-N1	2.04	111.25	107.72
2	A	301	THM	C4-N3-C2	4.88	119.47	115.25

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	301	THM	C4-N3-C2	5.00	119.56	115.25
2	F	301	THM	C4-N3-C2	5.13	119.68	115.25
2	D	301	THM	C4-N3-C2	5.20	119.75	115.25
2	E	301	THM	C4-N3-C2	5.88	120.33	115.25

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

4 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	301	THM	4	0
2	B	301	THM	1	0
2	E	301	THM	1	0
6	E	302	PG4	2	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

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, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	250/253 (98%)	0.08	6 (2%) 62 61	44, 60, 61, 64	1 (0%)
1	B	250/253 (98%)	0.18	14 (5%) 28 28	51, 59, 60, 61	3 (1%)
1	C	250/253 (98%)	0.10	7 (2%) 56 55	46, 59, 61, 62	5 (2%)
1	D	250/253 (98%)	0.05	4 (1%) 74 74	56, 59, 61, 62	1 (0%)
1	E	250/253 (98%)	0.09	6 (2%) 62 61	50, 59, 60, 62	3 (1%)
1	F	245/253 (96%)	0.19	11 (4%) 37 38	56, 60, 61, 67	1 (0%)
All	All	1495/1518 (98%)	0.11	48 (3%) 51 51	44, 59, 61, 67	14 (0%)

All (48) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	253	LEU	4.9
1	B	237	THR	4.3
1	A	233	THR	4.0
1	B	234	MET	3.8
1	B	10	GLY	3.7
1	F	226	GLN	3.6
1	C	253	LEU	3.5
1	B	231	ALA	3.4
1	A	229	PRO	3.4
1	A	169	TYR	3.3
1	B	9	LEU	3.2
1	C	228	ILE	3.1
1	F	63	ILE	3.1
1	B	230	ASN	3.0
1	F	253	LEU	3.0
1	F	228	ILE	2.9
1	C	221	VAL	2.9
1	B	233	THR	2.8
1	A	36	ALA	2.8

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Mol	Chain	Res	Type	RSRZ
1	A	231	ALA	2.7
1	F	202	LEU	2.6
1	F	98	ILE	2.6
1	A	62	VAL	2.6
1	E	141	VAL	2.5
1	B	90	LEU	2.5
1	B	236	GLN	2.5
1	F	248	ALA	2.5
1	C	229	PRO	2.4
1	B	228	ILE	2.3
1	E	57	LEU	2.3
1	E	229	PRO	2.3
1	B	232	GLU	2.3
1	E	128	PHE	2.2
1	E	16	LEU	2.2
1	B	176	VAL	2.2
1	F	231	ALA	2.2
1	F	23	ILE	2.2
1	C	62	VAL	2.1
1	F	109	VAL	2.1
1	C	230	ASN	2.1
1	D	221	VAL	2.1
1	E	102	ILE	2.1
1	D	231	ALA	2.1
1	B	220	ILE	2.0
1	B	229	PRO	2.0
1	F	53	TRP	2.0
1	D	16	LEU	2.0
1	C	233	THR	2.0

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates ⓘ

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, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(Å ²)	Q<0.9
6	PG4	E	302	13/13	0.80	0.30	5.98	60,64,68,68	0
2	THM	B	301	17/17	0.82	0.24	2.13	54,59,60,60	0
2	THM	A	301	17/17	0.86	0.19	1.31	62,63,63,64	0
2	THM	D	301	17/17	0.86	0.21	1.18	63,64,67,67	0
2	THM	F	301	17/17	0.86	0.20	1.02	59,63,67,68	0
2	THM	E	301	17/17	0.90	0.17	0.52	59,60,60,61	0
3	IPA	A	302	4/4	0.82	0.20	0.46	60,60,60,60	0
4	EDO	A	303	4/4	0.97	0.13	-0.52	20,20,20,20	0
7	K	F	302	1/1	0.98	0.10	-1.31	59,59,59,59	0
4	EDO	E	303	4/4	0.85	0.21	-	58,58,58,59	0
4	EDO	C	301	4/4	0.70	0.22	-	62,62,63,64	0
4	EDO	F	303	4/4	0.65	0.21	-	65,67,69,69	0
5	PEG	D	302	7/7	0.55	0.29	-	67,67,68,68	0

6.5 Other polymers [i](#)

There are no such residues in this entry.