



Full wwPDB X-ray Structure Validation Report ⓘ

Nov 1, 2023 – 10:33 PM EDT

PDB ID : 3IDZ
Title : Crystal Structure of S378Q mutant TTHA0252 from *Thermus thermophilus* HB8
Authors : Ishikawa, H.; Nakagawa, N.; Kuramitsu, S.; Yokoyama, S.; Masui, R.; RIKEN Structural Genomics/Proteomics Initiative (RSGI)
Deposited on : 2009-07-22
Resolution : 2.50 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 : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

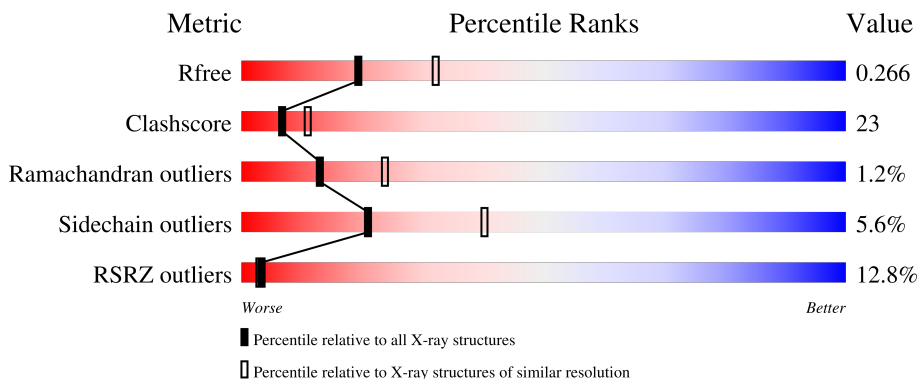
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

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 $\leq 5\%$. 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	431	
1	B	431	
1	C	431	
1	D	431	

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	443	-	-	X	-
2	SO4	A	445	-	-	-	X
2	SO4	B	434	-	-	-	X
2	SO4	B	441	-	-	X	-
2	SO4	C	439	-	-	-	X
2	SO4	D	432	-	-	X	-
3	FLC	A	454	-	-	X	-
3	FLC	B	456	-	-	X	X

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 13823 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 Ribonuclease TTHA0252.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	431	3329	2129	598	594	8	0	0	0
1	B	431	3329	2129	598	594	8	0	0	0
1	C	431	3329	2129	598	594	8	0	0	0
1	D	431	3329	2129	598	594	8	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	378	GLN	SER	engineered mutation	UNP Q5SLP1
B	378	GLN	SER	engineered mutation	UNP Q5SLP1
C	378	GLN	SER	engineered mutation	UNP Q5SLP1
D	378	GLN	SER	engineered mutation	UNP Q5SLP1

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



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		
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		
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	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		
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	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		

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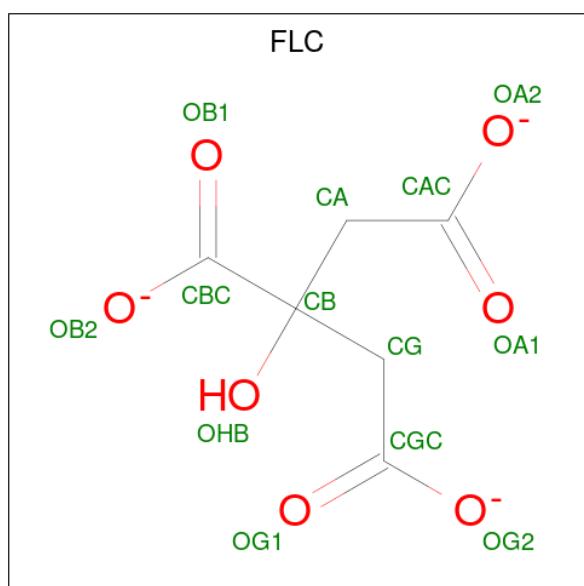
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		
2	C	1	Total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

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

- Molecule 3 is CITRATE ANION (three-letter code: FLC) (formula: C₆H₅O₇).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			13	6	7		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	B	1	Total	C	O	0	0
			13	6	7		
3	B	1	Total	C	O	0	0
			13	6	7		

- Molecule 4 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	2	Total	Zn	0	0
			2	2		
4	B	2	Total	Zn	0	0
			2	2		
4	C	2	Total	Zn	0	0
			2	2		
4	D	2	Total	Zn	0	0
			2	2		

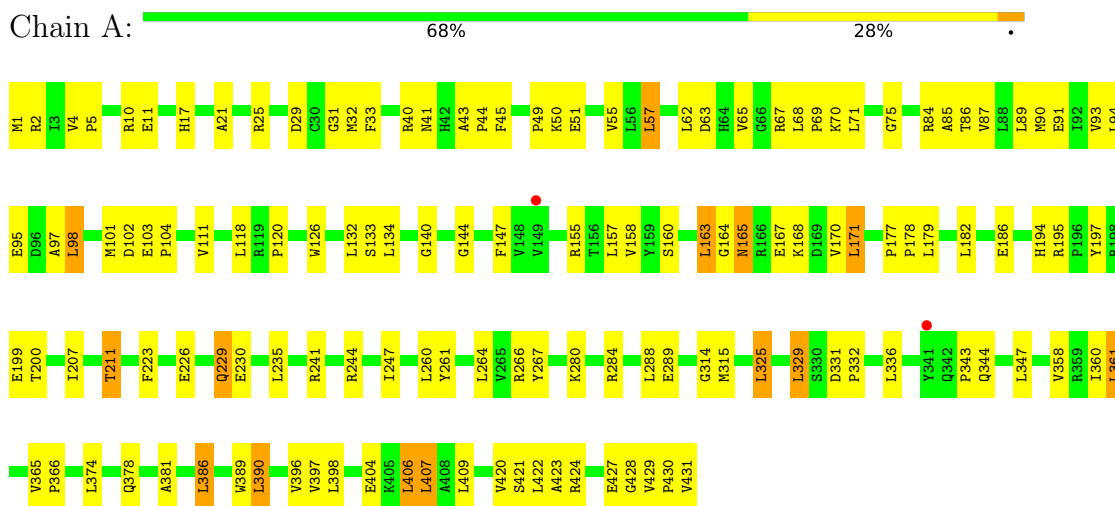
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	60	Total	O	0	0
			60	60		
5	B	41	Total	O	0	0
			41	41		
5	C	21	Total	O	0	0
			21	21		
5	D	8	Total	O	0	0
			8	8		

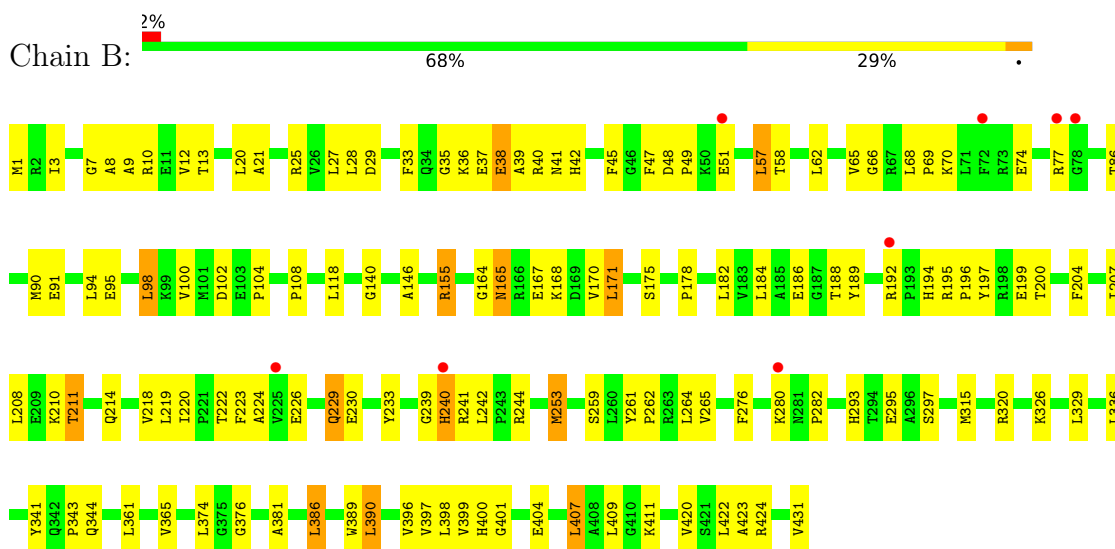
3 Residue-property plots i

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Ribonuclease TTHA0252

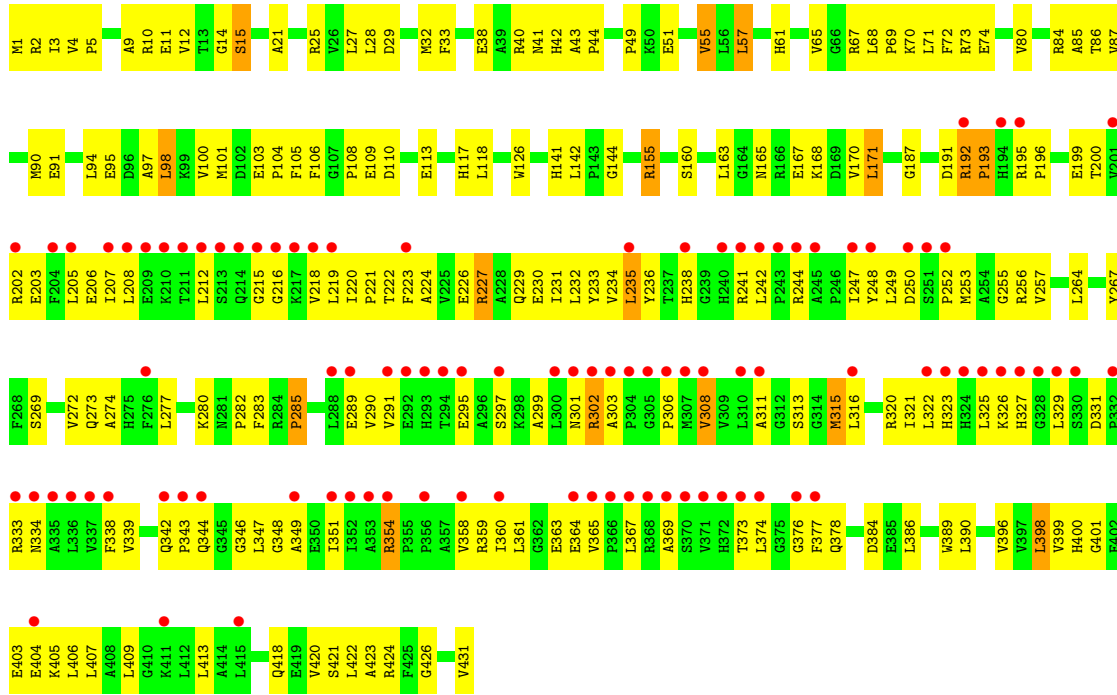


• Molecule 1: Ribonuclease TTHA0252

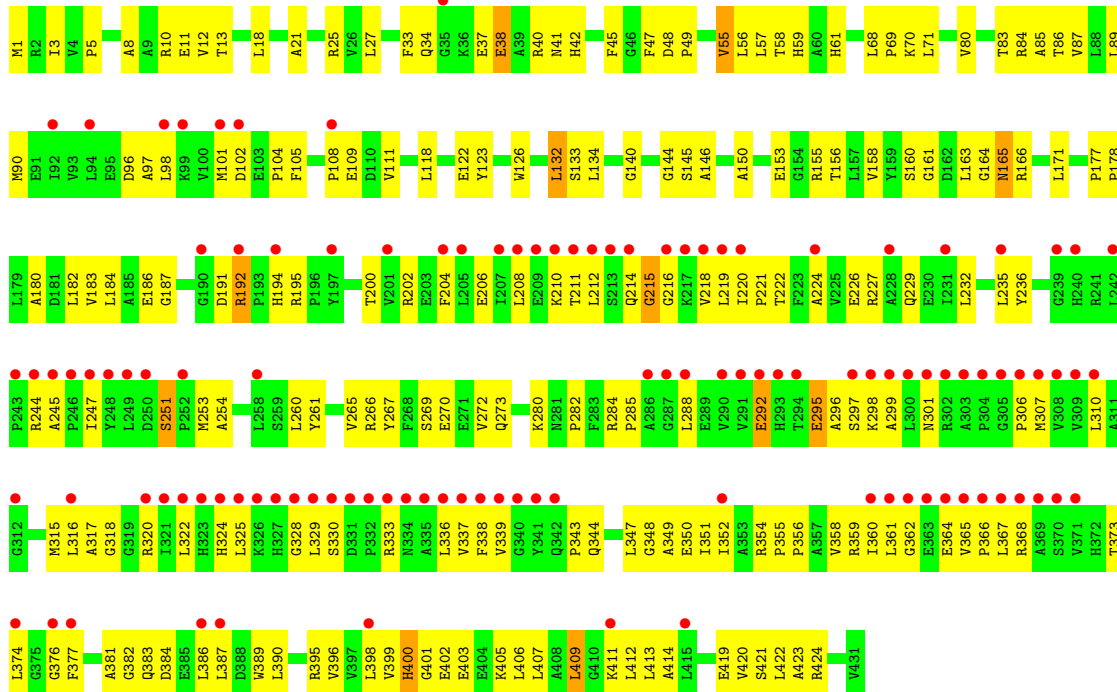


• Molecule 1: Ribonuclease TTHA0252





• Molecule 1: Ribonuclease TTHA0252



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	142.84Å 147.20Å 121.17Å 90.00° 109.52° 90.00°	Depositor
Resolution (Å)	50.00 – 2.50 49.67 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.8 (50.00-2.50) 99.8 (49.67-2.50)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.24 (at 2.51Å)	Xtrriage
Refinement program	CNS	Depositor
R, R_{free}	0.240 , 0.278 0.226 , 0.266	Depositor DCC
R_{free} test set	8162 reflections (10.03%)	wwPDB-VP
Wilson B-factor (Å ²)	54.9	Xtrriage
Anisotropy	0.080	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 48.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	13823	wwPDB-VP
Average B, all atoms (Å ²)	66.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.63% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: SO4, ZN, FLC

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	0.39	0/3410	0.67	0/4625
1	B	0.39	0/3410	0.69	0/4625
1	C	0.32	0/3410	0.58	0/4625
1	D	0.30	0/3410	0.57	0/4625
All	All	0.35	0/13640	0.63	0/18500

There are no bond length outliers.

There are no bond angle outliers.

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	3329	0	3354	117	0
1	B	3329	0	3354	125	0
1	C	3329	0	3354	200	0
1	D	3329	0	3354	200	0
2	A	110	0	0	8	0
2	B	115	0	0	2	0
2	C	75	0	0	2	0
2	D	30	0	0	4	0
3	A	13	0	5	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	26	0	10	7	0
4	A	2	0	0	0	0
4	B	2	0	0	0	0
4	C	2	0	0	0	0
4	D	2	0	0	0	0
5	A	60	0	0	0	0
5	B	41	0	0	1	0
5	C	21	0	0	1	0
5	D	8	0	0	2	0
All	All	13823	0	13431	635	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 23.

All (635) 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:C:247:ILE:HA	1:C:308:VAL:HG13	1.40	1.04
1:D:10:ARG:HH12	1:D:424:ARG:HG2	1.18	1.04
1:C:33:PHE:H	1:C:41:ASN:HD21	1.04	1.01
1:C:73:ARG:HH21	1:C:106:PHE:HA	1.26	0.98
1:B:33:PHE:H	1:B:41:ASN:HD21	0.96	0.94
1:D:10:ARG:NH1	1:D:424:ARG:HG2	1.82	0.94
1:A:280:LYS:HD3	3:A:454:FLC:OA2	1.68	0.92
1:D:235:LEU:HD13	1:D:247:ILE:HD13	1.51	0.91
1:C:212:LEU:HD22	1:C:306:PRO:HB2	1.53	0.90
1:B:33:PHE:N	1:B:41:ASN:HD21	1.70	0.90
1:C:160:SER:HB2	1:C:163:LEU:HD21	1.52	0.89
1:D:160:SER:HB2	1:D:163:LEU:HD21	1.53	0.87
1:A:2:ARG:HG3	2:A:443:SO4:O4	1.75	0.85
1:C:222:THR:HG22	1:C:339:VAL:HG21	1.58	0.85
1:B:33:PHE:H	1:B:41:ASN:ND2	1.76	0.84
1:D:222:THR:HG22	1:D:339:VAL:HG21	1.57	0.84
1:A:10:ARG:HG3	1:A:10:ARG:HH11	1.41	0.84
1:C:235:LEU:HD23	1:C:236:TYR:H	1.42	0.82
1:D:13:THR:HG21	1:D:34:GLN:HB2	1.61	0.82
1:B:37:GLU:HG3	1:B:40:ARG:HH11	1.44	0.82
1:B:320:ARG:HD3	3:B:455:FLC:HG2	1.61	0.81
1:A:33:PHE:H	1:A:41:ASN:HD21	1.26	0.81
1:A:2:ARG:CD	2:A:443:SO4:O4	2.29	0.80
1:C:326:LYS:HD2	1:C:361:LEU:HB2	1.62	0.80

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2:ARG:HD2	2:A:443:SO4:O4	1.81	0.80
1:C:221:PRO:HB3	1:C:321:ILE:HG12	1.62	0.80
1:C:360:ILE:HG22	1:C:361:LEU:HD22	1.61	0.80
1:A:50:LYS:HE2	1:A:75:GLY:HA3	1.64	0.78
1:A:2:ARG:CG	2:A:443:SO4:O4	2.32	0.78
1:D:215:GLY:HA2	1:D:306:PRO:HD3	1.65	0.77
1:B:168:LYS:HE2	1:B:230:GLU:OE1	1.86	0.76
1:D:33:PHE:H	1:D:41:ASN:HD21	1.32	0.76
1:D:329:LEU:HD11	1:D:336:LEU:HD12	1.66	0.76
1:B:10:ARG:NH1	1:B:424:ARG:HG2	2.00	0.76
1:A:25:ARG:HD3	1:A:51:GLU:O	1.86	0.76
1:B:196:PRO:HB2	1:B:199:GLU:HG2	1.68	0.76
1:A:62:LEU:HD13	1:A:93:VAL:HG12	1.67	0.75
1:C:351:ILE:HG12	1:C:358:VAL:HG21	1.67	0.75
1:A:1:MET:HG3	1:A:21:ALA:HB2	1.68	0.74
1:B:411:LYS:HA	3:B:456:FLC:HG1	1.70	0.74
1:D:359:ARG:HH12	1:D:362:GLY:HA2	1.51	0.74
1:B:226:GLU:HA	1:B:229:GLN:HE21	1.51	0.73
1:D:318:GLY:HA2	1:D:322:LEU:HD11	1.69	0.73
1:A:132:LEU:HG	1:A:134:LEU:HD11	1.69	0.73
1:D:59:HIS:CD2	1:D:61:HIS:HB2	2.23	0.73
1:A:366:PRO:HG2	2:A:449:SO4:O3	1.88	0.73
1:C:219:LEU:HD23	1:C:325:LEU:HD12	1.71	0.73
1:C:343:PRO:HG2	1:C:346:GLY:HA3	1.69	0.73
1:D:359:ARG:NH1	1:D:362:GLY:HA2	2.02	0.73
1:B:240:HIS:HE1	1:B:241:ARG:HH21	1.34	0.73
1:A:102:ASP:CG	1:A:103:GLU:H	1.93	0.72
1:B:320:ARG:HD3	3:B:455:FLC:CG	2.18	0.72
1:D:227:ARG:NH1	2:D:432:SO4:O4	2.21	0.72
1:D:37:GLU:HB3	1:D:40:ARG:HH11	1.54	0.72
1:D:184:LEU:HD11	1:D:399:VAL:HG21	1.71	0.72
1:A:360:ILE:HG22	1:A:361:LEU:HD22	1.72	0.71
1:B:182:LEU:HD11	1:B:397:VAL:HG23	1.71	0.71
1:A:244:ARG:HH11	1:A:244:ARG:HG2	1.55	0.71
1:C:220:ILE:HG22	1:C:222:THR:HG23	1.73	0.71
1:C:215:GLY:HA2	1:C:306:PRO:HD3	1.71	0.71
1:B:37:GLU:HB3	1:B:40:ARG:HE	1.56	0.70
1:B:229:GLN:HG3	1:B:261:TYR:CE1	2.27	0.70
1:D:227:ARG:NH1	2:D:432:SO4:O1	2.24	0.70
1:C:73:ARG:NH2	1:C:106:PHE:HA	2.03	0.70
1:D:399:VAL:HG12	1:D:400:HIS:N	2.06	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:235:LEU:HD23	1:C:236:TYR:N	2.05	0.70
1:A:200:THR:HG23	1:A:374:LEU:HB3	1.72	0.70
1:A:194:HIS:HB3	1:A:378:GLN:NE2	2.06	0.69
1:C:403:GLU:O	1:C:407:LEU:HD23	1.92	0.69
1:B:102:ASP:O	1:B:104:PRO:HD3	1.92	0.69
1:B:1:MET:HG3	1:B:21:ALA:HB2	1.74	0.69
1:C:12:VAL:HG12	1:C:401:GLY:HA2	1.74	0.69
1:C:232:LEU:HD11	1:C:249:LEU:HD13	1.74	0.69
1:A:10:ARG:HG3	1:A:10:ARG:NH1	2.05	0.68
1:B:398:LEU:N	1:B:398:LEU:HD12	2.08	0.68
1:D:245:ALA:HB1	1:D:307:MET:HA	1.75	0.68
1:C:302:ARG:HD2	1:C:302:ARG:C	2.15	0.67
1:C:91:GLU:O	1:C:95:GLU:HG2	1.94	0.67
1:B:25:ARG:HD3	1:B:51:GLU:O	1.95	0.67
1:C:250:ASP:HB3	1:C:311:ALA:HB2	1.77	0.67
1:D:360:ILE:HG22	1:D:361:LEU:HD23	1.77	0.67
1:A:223:PHE:HB2	2:A:436:SO4:O2	1.94	0.67
1:C:10:ARG:NH2	1:C:424:ARG:HH11	1.92	0.67
1:A:280:LYS:HZ3	3:A:454:FLC:HA2	1.60	0.67
1:C:315:MET:HA	1:C:342:GLN:HE22	1.60	0.66
1:C:235:LEU:HD11	1:C:285:PRO:HG3	1.76	0.66
1:D:218:VAL:HG23	1:D:307:MET:O	1.96	0.66
1:B:210:LYS:O	1:B:214:GLN:HG2	1.96	0.66
1:B:404:GLU:H	1:B:404:GLU:CD	1.98	0.66
1:A:280:LYS:NZ	3:A:454:FLC:HA2	2.10	0.65
1:C:170:VAL:HG12	1:C:171:LEU:HD13	1.77	0.65
1:C:70:LYS:HE2	1:C:74:GLU:OE1	1.96	0.65
1:C:325:LEU:O	1:C:329:LEU:HB2	1.96	0.65
1:B:398:LEU:HD13	1:B:420:VAL:HG23	1.78	0.65
1:D:325:LEU:O	1:D:329:LEU:HB2	1.95	0.65
1:A:89:LEU:HD23	1:A:260:LEU:HD23	1.79	0.65
1:B:170:VAL:HG12	1:B:171:LEU:HD13	1.79	0.65
1:D:386:LEU:O	1:D:390:LEU:HD23	1.97	0.65
1:C:420:VAL:HG22	1:C:421:SER:N	2.12	0.65
1:D:49:PRO:HB3	1:D:71:LEU:HD12	1.77	0.65
1:C:87:VAL:HG13	1:C:118:LEU:HD13	1.79	0.64
1:D:399:VAL:HG12	1:D:400:HIS:H	1.63	0.64
1:D:318:GLY:HA2	1:D:322:LEU:CD1	2.28	0.64
1:B:411:LYS:HG3	3:B:456:FLC:HA1	1.78	0.64
1:C:236:TYR:OH	1:C:280:LYS:HD3	1.97	0.64
1:A:97:ALA:O	1:A:101:MET:HB2	1.98	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:12:VAL:HG12	1:D:401:GLY:HA2	1.79	0.64
1:B:12:VAL:HG23	1:B:13:THR:HG23	1.79	0.64
1:B:226:GLU:CA	1:B:229:GLN:HE21	2.11	0.64
1:D:85:ALA:HB2	1:D:267:TYR:CE2	2.33	0.64
1:C:32:MET:HA	1:C:67:ARG:HG3	1.80	0.63
1:D:200:THR:HG21	1:D:376:GLY:HA3	1.79	0.63
1:C:97:ALA:O	1:C:101:MET:HB2	1.99	0.63
1:B:229:GLN:HG3	1:B:261:TYR:CZ	2.34	0.63
1:B:389:TRP:HE3	1:B:390:LEU:HD13	1.64	0.63
1:D:227:ARG:NH1	2:D:432:SO4:S	2.72	0.63
1:C:223:PHE:HD1	1:C:227:ARG:HG3	1.63	0.63
1:A:207:ILE:O	1:A:211:THR:HG23	1.99	0.63
1:A:229:GLN:H	1:A:229:GLN:NE2	1.97	0.63
1:B:297:SER:OG	1:B:320:ARG:HG2	1.98	0.63
1:C:321:ILE:O	1:C:325:LEU:HD13	1.99	0.62
1:D:399:VAL:HG22	1:D:423:ALA:HB3	1.81	0.62
1:C:420:VAL:HG22	1:C:421:SER:H	1.65	0.62
1:B:12:VAL:HG12	1:B:401:GLY:HA2	1.81	0.62
1:C:73:ARG:HD2	1:C:110:ASP:OD2	1.99	0.62
1:D:153:GLU:O	1:D:155:ARG:HG2	1.99	0.62
1:A:33:PHE:H	1:A:41:ASN:ND2	1.98	0.61
1:A:165:ASN:C	1:A:165:ASN:HD22	2.02	0.61
1:C:413:LEU:HD22	1:C:418:GLN:NE2	2.16	0.61
1:D:57:LEU:CD2	1:D:80:VAL:HG12	2.31	0.61
1:D:221:PRO:HD2	1:D:337:VAL:O	1.99	0.61
1:A:167:GLU:OE2	1:A:194:HIS:HE1	1.82	0.61
1:C:329:LEU:HG	1:C:367:LEU:HA	1.83	0.60
1:D:37:GLU:HB3	1:D:40:ARG:NH1	2.16	0.60
1:A:194:HIS:HB3	1:A:378:GLN:HE22	1.66	0.60
1:D:3:ILE:HD13	1:D:184:LEU:HD22	1.84	0.60
1:D:382:GLY:O	1:D:386:LEU:HD13	2.02	0.60
1:A:1:MET:N	2:A:443:SO4:O2	2.35	0.60
1:A:57:LEU:HG	1:A:65:VAL:HG12	1.84	0.60
1:B:398:LEU:N	1:B:398:LEU:CD1	2.65	0.60
1:D:57:LEU:HD21	1:D:80:VAL:CG1	2.31	0.60
1:C:27:LEU:HD13	1:C:29:ASP:O	2.01	0.60
1:C:359:ARG:HA	1:C:363:GLU:O	2.02	0.60
1:D:177:PRO:HD3	1:D:389:TRP:NE1	2.16	0.60
1:A:207:ILE:O	1:A:211:THR:CG2	2.50	0.59
1:B:35:GLY:O	1:B:38:GLU:HB2	2.02	0.59
1:B:240:HIS:CE1	1:B:241:ARG:HH21	2.19	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:132:LEU:HD22	1:D:134:LEU:HG	1.85	0.59
1:D:202:ARG:O	1:D:206:GLU:HG3	2.02	0.59
1:A:32:MET:HA	1:A:67:ARG:HG3	1.84	0.59
1:C:98:LEU:HD11	1:C:108:PRO:HA	1.85	0.59
1:C:218:VAL:HB	1:C:308:VAL:HA	1.83	0.59
1:D:98:LEU:HD11	1:D:108:PRO:HA	1.85	0.59
1:C:235:LEU:HD12	1:C:247:ILE:HD13	1.84	0.59
1:D:87:VAL:HG13	1:D:118:LEU:HD13	1.85	0.59
1:D:402:GLU:HB2	1:D:405:LYS:HG2	1.82	0.59
1:B:223:PHE:HB3	5:B:469:HOH:O	2.03	0.59
1:D:216:GLY:HA3	1:D:333:ARG:O	2.03	0.59
1:D:409:LEU:HD22	1:D:413:LEU:CD2	2.33	0.58
1:B:37:GLU:CG	1:B:40:ARG:HH11	2.14	0.58
1:D:55:VAL:HG13	1:D:80:VAL:HA	1.84	0.58
1:D:298:LYS:HA	1:D:301:ASN:ND2	2.19	0.58
1:D:386:LEU:HD23	1:D:409:LEU:HD11	1.86	0.58
1:C:360:ILE:HG22	1:C:361:LEU:CD2	2.31	0.58
1:D:220:ILE:HG12	1:D:337:VAL:HB	1.85	0.58
1:B:196:PRO:HD2	1:B:199:GLU:CD	2.24	0.57
1:D:11:GLU:O	1:D:401:GLY:N	2.29	0.57
1:A:86:THR:O	1:A:90:MET:HB2	2.04	0.57
1:C:386:LEU:O	1:C:390:LEU:HD23	2.04	0.57
1:C:98:LEU:HD11	1:C:108:PRO:CA	2.35	0.57
1:C:216:GLY:O	1:C:306:PRO:HA	2.04	0.57
1:C:247:ILE:HA	1:C:308:VAL:CG1	2.25	0.57
1:C:316:LEU:HB3	1:C:347:LEU:HD23	1.87	0.57
1:B:229:GLN:CD	1:B:229:GLN:H	2.08	0.57
1:C:86:THR:HG22	1:C:90:MET:CE	2.35	0.57
1:C:269:SER:O	1:C:273:GLN:HG3	2.04	0.57
1:A:91:GLU:O	1:A:95:GLU:HG2	2.04	0.57
1:D:208:LEU:HD23	1:D:218:VAL:HG11	1.85	0.57
1:D:210:LYS:O	1:D:214:GLN:HG2	2.04	0.57
1:D:229:GLN:H	1:D:229:GLN:NE2	2.03	0.57
1:D:383:GLN:O	1:D:387:LEU:HG	2.04	0.57
1:B:10:ARG:HH12	1:B:424:ARG:HG2	1.68	0.57
1:C:43:ALA:O	1:C:70:LYS:NZ	2.38	0.57
1:C:208:LEU:CD2	1:C:218:VAL:HG11	2.35	0.57
1:B:37:GLU:HG3	1:B:40:ARG:NH1	2.16	0.56
1:B:98:LEU:HD11	1:B:108:PRO:HB3	1.87	0.56
1:B:407:LEU:HD13	1:B:422:LEU:HD21	1.86	0.56
1:C:205:LEU:HD11	1:C:238:HIS:CG	2.40	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:224:ALA:CB	1:B:253:MET:HG2	2.36	0.56
1:A:229:GLN:H	1:A:229:GLN:CD	2.09	0.56
1:C:167:GLU:OE1	1:C:196:PRO:HA	2.05	0.56
1:C:403:GLU:HG2	1:C:407:LEU:HD23	1.86	0.56
1:D:202:ARG:HH11	1:D:202:ARG:CB	2.18	0.56
1:D:358:VAL:O	1:D:365:VAL:HG12	2.05	0.56
1:A:168:LYS:HE3	1:A:230:GLU:OE1	2.06	0.56
1:A:33:PHE:N	1:A:41:ASN:HD21	2.02	0.56
1:C:338:PHE:HD2	1:C:373:THR:HG22	1.70	0.56
1:D:166:ARG:O	1:D:166:ARG:HG3	2.05	0.56
1:C:160:SER:HB2	1:C:163:LEU:CD2	2.31	0.56
1:D:182:LEU:HD12	1:D:183:VAL:H	1.70	0.56
1:D:45:PHE:HB3	1:D:47:PHE:CE1	2.41	0.56
1:D:123:TYR:HE1	1:D:146:ALA:HB2	1.71	0.56
1:D:387:LEU:HD11	1:D:412:LEU:HD13	1.87	0.56
1:A:85:ALA:HB2	1:A:267:TYR:CD2	2.41	0.55
1:C:12:VAL:HG12	1:C:401:GLY:CA	2.35	0.55
1:C:57:LEU:HG	1:C:65:VAL:HG12	1.86	0.55
1:C:331:ASP:HB3	1:C:334:ASN:ND2	2.21	0.55
1:A:84:ARG:HD3	1:A:120:PRO:HB3	1.88	0.55
1:A:140:GLY:O	1:A:164:GLY:HA3	2.05	0.55
1:A:244:ARG:HG2	1:A:244:ARG:NH1	2.20	0.55
1:C:86:THR:HG22	1:C:90:MET:HE3	1.89	0.55
1:B:20:LEU:CD2	1:B:25:ARG:HE	2.20	0.55
1:D:101:MET:SD	1:D:104:PRO:HA	2.46	0.55
1:C:235:LEU:CD1	1:C:247:ILE:HD13	2.37	0.55
1:C:236:TYR:HD1	1:C:285:PRO:HA	1.72	0.55
1:A:85:ALA:HB2	1:A:267:TYR:CE2	2.42	0.55
1:C:205:LEU:HD13	1:C:241:ARG:HD2	1.89	0.55
1:C:359:ARG:HG3	1:C:364:GLU:OE2	2.06	0.55
1:B:140:GLY:O	1:B:164:GLY:HA3	2.07	0.55
1:B:239:GLY:C	1:B:241:ARG:H	2.10	0.55
1:C:233:TYR:CE1	1:C:282:PRO:HB2	2.42	0.55
1:D:8:ALA:O	1:D:399:VAL:HG13	2.07	0.55
1:D:220:ILE:HG22	1:D:222:THR:HG23	1.89	0.55
1:B:70:LYS:NZ	1:B:74:GLU:OE1	2.38	0.54
1:D:58:THR:O	1:D:145:SER:HA	2.06	0.54
1:B:241:ARG:HG3	1:B:242:LEU:N	2.23	0.54
1:B:396:VAL:HG12	1:B:398:LEU:HD12	1.90	0.54
1:C:227:ARG:HH22	1:C:377:PHE:C	2.11	0.54
1:B:10:ARG:HH12	1:B:424:ARG:CG	2.20	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:232:LEU:HD22	1:D:288:LEU:HD13	1.88	0.54
1:C:11:GLU:OE1	1:C:40:ARG:NH1	2.41	0.54
1:D:12:VAL:HG23	1:D:13:THR:HG23	1.89	0.54
1:D:37:GLU:CB	1:D:40:ARG:HH11	2.20	0.54
1:D:177:PRO:HD3	1:D:389:TRP:CD1	2.42	0.54
1:C:55:VAL:HG22	1:C:80:VAL:HG13	1.90	0.54
1:C:98:LEU:HD11	1:C:108:PRO:HB3	1.90	0.54
1:D:381:ALA:HB3	1:D:386:LEU:HD11	1.89	0.54
1:B:10:ARG:NH1	1:B:424:ARG:CG	2.69	0.54
1:C:170:VAL:HG12	1:C:171:LEU:CD1	2.38	0.54
1:B:200:THR:OG1	1:B:376:GLY:HA3	2.09	0.53
1:B:398:LEU:CD1	1:B:420:VAL:HG23	2.38	0.53
1:D:85:ALA:HB3	1:D:144:GLY:HA3	1.89	0.53
1:C:230:GLU:O	1:C:233:TYR:HB3	2.09	0.53
1:A:182:LEU:HD11	1:A:397:VAL:HG23	1.91	0.53
1:B:326:LYS:HD2	1:B:361:LEU:HB2	1.89	0.53
1:D:83:THR:O	1:D:87:VAL:HG23	2.07	0.53
1:C:155:ARG:HD3	1:C:431:VAL:O	2.08	0.53
1:C:215:GLY:HA2	1:C:306:PRO:CD	2.36	0.53
1:C:326:LYS:HD2	1:C:361:LEU:CB	2.38	0.53
1:C:200:THR:HG21	1:C:376:GLY:HA3	1.90	0.53
1:C:252:PRO:HB2	2:C:439:SO4:O2	2.09	0.53
1:D:354:ARG:HG3	1:D:354:ARG:HH11	1.74	0.53
1:A:266:ARG:NH2	1:D:273:GLN:HE22	2.07	0.53
1:A:84:ARG:NH2	1:D:270:GLU:OE1	2.42	0.53
1:A:229:GLN:HG3	1:A:261:TYR:CZ	2.44	0.53
1:D:161:GLY:O	1:D:186:GLU:HG2	2.08	0.53
1:D:177:PRO:HD3	1:D:389:TRP:CE2	2.44	0.53
1:D:349:ALA:HA	1:D:352:ILE:HD12	1.91	0.53
1:D:409:LEU:HD22	1:D:413:LEU:HD21	1.90	0.53
1:D:182:LEU:HD12	1:D:183:VAL:N	2.24	0.53
1:A:404:GLU:CD	1:A:404:GLU:H	2.12	0.52
1:D:211:THR:HG21	1:D:218:VAL:HG22	1.91	0.52
1:D:229:GLN:H	1:D:229:GLN:CD	2.11	0.52
1:D:5:PRO:HG2	1:D:423:ALA:HB1	1.92	0.52
1:B:200:THR:HG23	1:B:374:LEU:HB3	1.91	0.52
1:D:202:ARG:HB2	1:D:202:ARG:NH1	2.24	0.52
1:D:269:SER:OG	1:D:272:VAL:HG23	2.09	0.52
1:A:226:GLU:HA	1:A:229:GLN:HE21	1.74	0.52
1:B:47:PHE:O	1:B:49:PRO:HD3	2.09	0.52
1:C:168:LYS:HD2	1:C:378:GLN:O	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:284:ARG:HA	1:D:288:LEU:CD2	2.39	0.52
1:B:396:VAL:HG12	1:B:398:LEU:CD1	2.40	0.52
1:D:338:PHE:HB2	1:D:373:THR:HA	1.90	0.52
1:A:226:GLU:CA	1:A:229:GLN:HE21	2.23	0.52
1:C:84:ARG:HB3	1:C:267:TYR:OH	2.09	0.52
1:D:247:ILE:O	1:D:288:LEU:HA	2.09	0.52
1:C:233:TYR:HE1	1:C:282:PRO:HB2	1.74	0.52
1:D:163:LEU:N	1:D:163:LEU:HD22	2.25	0.52
1:C:212:LEU:CD2	1:C:306:PRO:HB2	2.34	0.52
1:C:248:TYR:HA	1:C:289:GLU:HB3	1.92	0.52
1:D:280:LYS:O	1:D:282:PRO:HD3	2.10	0.52
1:D:411:LYS:O	1:D:414:ALA:HB3	2.09	0.52
1:B:411:LYS:CG	3:B:456:FLC:HA1	2.40	0.51
1:D:403:GLU:O	1:D:407:LEU:HD23	2.10	0.51
1:A:102:ASP:CG	1:A:103:GLU:N	2.62	0.51
1:C:315:MET:HA	1:C:342:GLN:NE2	2.24	0.51
1:D:395:ARG:HG3	1:D:419:GLU:HB3	1.91	0.51
1:B:399:VAL:HG12	1:B:423:ALA:HB3	1.92	0.51
1:C:49:PRO:HB3	1:C:71:LEU:HD12	1.92	0.51
1:C:205:LEU:HD22	1:C:242:LEU:HD21	1.91	0.51
1:A:132:LEU:HG	1:A:134:LEU:CD1	2.39	0.51
1:C:57:LEU:HD23	1:C:90:MET:CE	2.39	0.51
1:A:347:LEU:HD11	1:A:358:VAL:HG11	1.92	0.51
1:A:424:ARG:HD3	1:A:427:GLU:OE1	2.10	0.51
1:C:208:LEU:O	1:C:212:LEU:HG	2.11	0.51
1:D:383:GLN:NE2	1:D:412:LEU:HD11	2.26	0.51
1:A:86:THR:HG22	1:A:90:MET:HE2	1.93	0.51
1:C:342:GLN:OE1	1:C:348:GLY:HA3	2.11	0.51
1:D:402:GLU:O	1:D:406:LEU:HD13	2.11	0.51
1:A:360:ILE:HG22	1:A:361:LEU:CD2	2.40	0.51
1:C:269:SER:OG	1:C:272:VAL:HG23	2.11	0.51
1:C:344:GLN:HE21	1:C:344:GLN:HA	1.76	0.51
1:D:316:LEU:C	1:D:318:GLY:H	2.14	0.51
1:B:220:ILE:HG22	1:B:222:THR:HG23	1.93	0.51
1:C:202:ARG:O	1:C:206:GLU:HG3	2.11	0.51
1:C:229:GLN:CD	1:C:229:GLN:H	2.13	0.51
1:C:274:ALA:O	1:C:277:LEU:HB3	2.11	0.51
1:C:10:ARG:HH21	1:C:424:ARG:HH11	1.59	0.51
1:A:84:ARG:NH1	1:A:120:PRO:HB2	2.27	0.51
1:B:45:PHE:HB3	1:B:47:PHE:CE1	2.45	0.51
1:C:10:ARG:HH21	1:C:424:ARG:HG2	1.76	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:299:ALA:O	1:C:303:ALA:HB2	2.10	0.51
1:C:233:TYR:HB2	1:C:283:PHE:CD1	2.45	0.50
1:D:420:VAL:HG22	1:D:421:SER:N	2.26	0.50
1:A:280:LYS:CD	3:A:454:FLC:OA2	2.51	0.50
1:A:315:MET:SD	1:A:343:PRO:HD3	2.51	0.50
1:A:407:LEU:HD13	1:A:422:LEU:HD21	1.92	0.50
1:C:68:LEU:HD11	1:C:72:PHE:HE1	1.77	0.50
1:B:224:ALA:HB1	1:B:253:MET:HG2	1.93	0.50
1:B:344:GLN:OE1	1:B:344:GLN:HA	2.10	0.50
1:D:219:LEU:HD21	1:D:324:HIS:O	2.11	0.50
1:B:155:ARG:CD	1:B:431:VAL:O	2.59	0.50
1:B:389:TRP:CE3	1:B:390:LEU:HD13	2.46	0.50
1:C:163:LEU:HD11	1:C:389:TRP:CE2	2.46	0.50
1:D:200:THR:CG2	1:D:376:GLY:HA3	2.42	0.50
1:C:68:LEU:HB3	1:C:69:PRO:HD3	1.92	0.50
1:B:57:LEU:HG	1:B:65:VAL:HG12	1.94	0.50
1:B:168:LYS:HG2	1:B:197:TYR:CD2	2.46	0.50
1:C:168:LYS:HE2	1:C:230:GLU:OE1	2.12	0.50
1:C:221:PRO:HA	1:C:311:ALA:O	2.11	0.50
1:C:227:ARG:NH2	1:C:377:PHE:HB3	2.27	0.50
1:A:389:TRP:HE3	1:A:390:LEU:HD13	1.76	0.50
1:C:203:GLU:O	1:C:207:ILE:HG13	2.12	0.49
1:C:396:VAL:HG12	1:C:398:LEU:HD13	1.93	0.49
1:D:13:THR:HB	1:D:33:PHE:HA	1.94	0.49
1:D:399:VAL:CG1	1:D:400:HIS:H	2.25	0.49
1:D:232:LEU:O	1:D:285:PRO:HD3	2.13	0.49
1:A:49:PRO:HB3	1:A:71:LEU:HD12	1.94	0.49
1:B:381:ALA:HB3	1:B:386:LEU:HD13	1.94	0.49
1:D:57:LEU:CD2	1:D:80:VAL:CG1	2.89	0.49
1:D:156:THR:O	1:D:180:ALA:HB1	2.11	0.49
1:C:208:LEU:HD21	1:C:218:VAL:HG11	1.93	0.49
1:D:355:PRO:HB2	1:D:356:PRO:HD2	1.95	0.49
1:A:165:ASN:ND2	1:A:167:GLU:H	2.09	0.49
1:B:7:GLY:O	1:B:9:ALA:N	2.46	0.49
1:D:399:VAL:CG1	1:D:400:HIS:N	2.74	0.49
1:A:10:ARG:NH1	1:A:423:ALA:O	2.43	0.49
1:B:184:LEU:HD11	1:B:399:VAL:HG11	1.95	0.49
1:D:55:VAL:CG1	1:D:80:VAL:HG22	2.43	0.49
1:D:140:GLY:O	1:D:164:GLY:HA3	2.13	0.49
1:D:224:ALA:HB3	1:D:253:MET:CE	2.43	0.49
1:A:160:SER:HB2	1:A:163:LEU:CD2	2.42	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:170:VAL:HG12	1:A:171:LEU:HD13	1.95	0.49
1:A:223:PHE:CE2	1:A:314:GLY:HA3	2.48	0.49
1:B:208:LEU:HD23	1:B:218:VAL:HG21	1.95	0.49
1:D:55:VAL:C	1:D:56:LEU:HD12	2.34	0.49
1:C:101:MET:CE	1:C:104:PRO:HA	2.43	0.48
1:D:158:VAL:HG23	1:D:180:ALA:HB2	1.94	0.48
1:D:396:VAL:HG12	1:D:398:LEU:HD12	1.94	0.48
1:C:221:PRO:HB3	1:C:321:ILE:CG1	2.37	0.48
1:D:55:VAL:HG13	1:D:80:VAL:HG13	1.94	0.48
1:D:59:HIS:HD2	1:D:61:HIS:HB2	1.77	0.48
1:A:11:GLU:CD	1:A:40:ARG:HH12	2.16	0.48
1:B:178:PRO:HB3	1:C:126:TRP:CD2	2.48	0.48
1:D:219:LEU:HD23	1:D:325:LEU:HG	1.94	0.48
1:A:2:ARG:NH1	2:A:448:SO4:O4	2.46	0.48
1:A:85:ALA:HB3	1:A:144:GLY:HA3	1.94	0.48
1:A:32:MET:HE3	1:A:62:LEU:HG	1.95	0.48
1:C:61:HIS:CD2	1:C:142:LEU:HD11	2.48	0.48
1:D:49:PRO:HB3	1:D:71:LEU:CD1	2.43	0.48
1:D:384:ASP:OD2	1:D:384:ASP:N	2.44	0.48
1:A:43:ALA:HB1	1:A:44:PRO:HD2	1.95	0.48
1:B:77:ARG:NE	2:B:441:SO4:O2	2.46	0.48
1:C:422:LEU:N	1:C:422:LEU:HD12	2.29	0.48
1:D:354:ARG:HG3	1:D:354:ARG:NH1	2.28	0.48
1:C:235:LEU:CD1	1:C:285:PRO:HG3	2.43	0.48
1:D:85:ALA:HB2	1:D:267:TYR:CD2	2.49	0.48
3:A:454:FLC:OG2	1:B:293:HIS:CE1	2.67	0.48
1:B:411:LYS:HB2	3:B:456:FLC:OHB	2.13	0.48
1:D:235:LEU:HB2	1:D:285:PRO:HG3	1.96	0.48
1:A:11:GLU:OE2	1:A:40:ARG:NH1	2.46	0.47
1:B:165:ASN:HD22	1:B:165:ASN:C	2.16	0.47
1:B:168:LYS:HG2	1:B:197:TYR:CE2	2.49	0.47
1:C:231:ILE:O	1:C:235:LEU:HD22	2.13	0.47
1:C:9:ALA:C	1:C:11:GLU:H	2.18	0.47
1:C:290:VAL:HG23	1:C:290:VAL:O	2.13	0.47
1:B:48:ASP:OD2	1:B:51:GLU:HG2	2.13	0.47
1:C:85:ALA:HB2	1:C:267:TYR:CD2	2.50	0.47
1:C:25:ARG:NH1	1:C:51:GLU:HB3	2.29	0.47
1:C:168:LYS:CE	1:C:230:GLU:OE1	2.63	0.47
1:C:27:LEU:CD1	1:C:29:ASP:O	2.62	0.47
1:A:147:PHE:HB2	1:A:160:SER:HA	1.96	0.47
1:B:3:ILE:HG23	1:B:3:ILE:O	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:182:LEU:HD11	1:B:397:VAL:CG2	2.41	0.47
1:D:360:ILE:O	1:D:361:LEU:HB2	2.15	0.47
1:A:29:ASP:HA	1:A:57:LEU:HD12	1.97	0.47
1:A:160:SER:HB2	1:A:163:LEU:HD21	1.95	0.47
1:A:223:PHE:CD2	1:A:314:GLY:HA3	2.50	0.47
1:B:90:MET:HE3	1:B:118:LEU:HD13	1.97	0.47
1:B:155:ARG:HD2	1:B:431:VAL:O	2.14	0.47
1:C:1:MET:HG3	1:C:21:ALA:HB2	1.96	0.47
1:C:241:ARG:HG3	1:C:242:LEU:N	2.30	0.47
1:C:295:GLU:OE2	1:C:295:GLU:N	2.45	0.47
1:C:407:LEU:HD22	1:C:422:LEU:HD21	1.96	0.47
1:B:68:LEU:N	1:B:69:PRO:HD2	2.30	0.47
1:B:276:PHE:HA	1:B:280:LYS:O	2.14	0.47
1:D:211:THR:CG2	1:D:218:VAL:HG22	2.45	0.47
1:A:4:VAL:HG22	1:A:428:GLY:HA3	1.97	0.46
1:B:204:PHE:CZ	1:B:208:LEU:HD11	2.50	0.46
1:C:322:LEU:HD22	1:C:347:LEU:CD2	2.45	0.46
1:D:177:PRO:HB3	1:D:389:TRP:CZ2	2.50	0.46
1:A:5:PRO:HG2	1:A:423:ALA:HB1	1.97	0.46
1:A:177:PRO:HD3	1:A:389:TRP:CE2	2.51	0.46
1:B:91:GLU:O	1:B:95:GLU:HB2	2.15	0.46
1:D:84:ARG:HG3	1:D:122:GLU:OE2	2.15	0.46
1:D:298:LYS:HE3	5:D:445:HOH:O	2.15	0.46
1:D:322:LEU:CB	1:D:361:LEU:HD21	2.45	0.46
1:A:68:LEU:N	1:A:69:PRO:HD2	2.31	0.46
1:B:188:THR:HG22	1:B:189:TYR:CD1	2.50	0.46
1:B:241:ARG:CG	1:B:242:LEU:N	2.78	0.46
1:C:313:SER:HB2	1:C:315:MET:SD	2.56	0.46
1:D:347:LEU:O	1:D:350:GLU:HB3	2.16	0.46
1:B:262:PRO:O	1:B:265:VAL:HG23	2.16	0.46
1:C:85:ALA:HB2	1:C:267:TYR:CE2	2.51	0.46
1:A:168:LYS:HG2	1:A:197:TYR:CE2	2.50	0.46
1:C:229:GLN:CD	1:C:229:GLN:N	2.69	0.46
1:B:165:ASN:C	1:B:165:ASN:ND2	2.69	0.46
1:C:187:GLY:HA2	1:C:386:LEU:HD21	1.97	0.46
1:D:1:MET:HG3	1:D:21:ALA:HB2	1.97	0.46
1:A:165:ASN:C	1:A:165:ASN:ND2	2.67	0.46
1:B:315:MET:SD	1:B:343:PRO:HD3	2.56	0.46
1:C:253:MET:HB2	1:C:256:ARG:NH1	2.30	0.46
1:C:280:LYS:O	1:C:282:PRO:HD3	2.16	0.46
1:B:90:MET:HE3	1:B:118:LEU:CD1	2.46	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:295:GLU:H	1:B:295:GLU:CD	2.15	0.46
1:C:344:GLN:HA	1:C:344:GLN:NE2	2.30	0.46
1:C:399:VAL:HG12	1:C:423:ALA:HB3	1.98	0.46
1:D:285:PRO:HD2	1:D:288:LEU:HD22	1.98	0.46
1:D:322:LEU:HB3	1:D:361:LEU:HD21	1.98	0.46
1:D:389:TRP:HE3	1:D:390:LEU:HD22	1.81	0.46
1:A:62:LEU:HD13	1:A:93:VAL:CG1	2.41	0.45
1:A:344:GLN:HE21	1:A:344:GLN:HA	1.80	0.45
1:A:178:PRO:HB3	1:D:126:TRP:CD2	2.52	0.45
1:C:141:HIS:O	1:C:142:LEU:HD23	2.17	0.45
1:C:250:ASP:HA	1:C:291:VAL:HB	1.99	0.45
1:C:398:LEU:HB3	1:C:406:LEU:HG	1.98	0.45
1:D:86:THR:HG22	1:D:90:MET:HE2	1.98	0.45
1:B:178:PRO:HD3	1:C:126:TRP:CD1	2.51	0.45
1:B:396:VAL:O	1:B:420:VAL:HA	2.15	0.45
1:D:295:GLU:OE2	1:D:295:GLU:N	2.49	0.45
1:D:68:LEU:N	1:D:69:PRO:HD2	2.30	0.45
1:D:132:LEU:HD23	1:D:133:SER:H	1.82	0.45
1:C:100:VAL:HG12	1:C:100:VAL:O	2.16	0.45
1:A:155:ARG:NH1	1:A:431:VAL:OXT	2.49	0.45
1:B:192:ARG:HG2	1:B:192:ARG:HH11	1.81	0.45
1:B:199:GLU:HG3	1:B:200:THR:N	2.32	0.45
1:C:90:MET:O	1:C:94:LEU:HB2	2.15	0.45
1:C:235:LEU:HD21	1:C:285:PRO:HG3	1.98	0.45
1:D:186:GLU:HA	1:D:399:VAL:O	2.16	0.45
1:D:165:ASN:ND2	1:D:194:HIS:NE2	2.65	0.45
1:D:251:SER:OG	1:D:254:ALA:HB3	2.17	0.45
1:C:354:ARG:NH1	1:C:354:ARG:HG3	2.30	0.45
1:A:31:GLY:HA3	1:A:63:ASP:C	2.37	0.45
1:B:167:GLU:OE2	1:B:194:HIS:HE1	1.99	0.45
1:C:420:VAL:CG2	1:C:421:SER:N	2.80	0.45
1:D:204:PHE:CZ	1:D:208:LEU:HD11	2.52	0.45
1:D:232:LEU:HA	1:D:235:LEU:HD12	1.98	0.45
1:C:4:VAL:HA	1:C:5:PRO:HD3	1.82	0.45
1:C:98:LEU:HD11	1:C:108:PRO:CB	2.46	0.45
1:C:191:ASP:OD1	1:C:405:LYS:HD3	2.17	0.45
1:C:248:TYR:CE2	1:C:289:GLU:HG2	2.52	0.45
1:A:358:VAL:O	1:A:365:VAL:HG12	2.18	0.44
1:C:235:LEU:CG	1:C:285:PRO:HG3	2.47	0.44
1:C:244:ARG:HG3	1:C:244:ARG:HH11	1.81	0.44
1:B:184:LEU:HD11	1:B:399:VAL:CG1	2.48	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:441:SO4:O3	1:D:244:ARG:NH2	2.51	0.44
1:C:28:LEU:O	1:C:29:ASP:HB2	2.17	0.44
1:C:142:LEU:CD2	1:C:226:GLU:HB2	2.47	0.44
1:C:323:HIS:O	1:C:327:HIS:HD2	2.00	0.44
1:B:77:ARG:HG2	1:B:77:ARG:HH11	1.83	0.44
1:B:400:HIS:O	1:B:400:HIS:ND1	2.50	0.44
1:C:163:LEU:N	1:C:163:LEU:HD22	2.32	0.44
1:D:215:GLY:HA2	1:D:306:PRO:CD	2.42	0.44
1:B:66:GLY:O	1:B:69:PRO:HD2	2.17	0.44
1:C:253:MET:C	1:C:255:GLY:N	2.70	0.44
1:D:315:MET:SD	1:D:343:PRO:HD3	2.57	0.44
1:D:344:GLN:HA	1:D:344:GLN:NE2	2.33	0.44
1:D:41:ASN:O	1:D:70:LYS:HE3	2.18	0.44
1:D:236:TYR:CA	1:D:285:PRO:HB3	2.48	0.44
1:A:98:LEU:HD12	1:A:111:VAL:HG21	2.00	0.44
1:C:1:MET:HG2	1:C:431:VAL:HG21	2.00	0.44
1:C:2:ARG:HG3	2:C:445:SO4:O1	2.18	0.44
1:C:333:ARG:HH21	1:C:333:ARG:HG3	1.83	0.44
1:D:204:PHE:CD1	1:D:377:PHE:HZ	2.35	0.44
1:A:325:LEU:O	1:A:329:LEU:HB2	2.17	0.44
1:D:97:ALA:O	1:D:101:MET:HB2	2.17	0.44
1:D:354:ARG:HG3	1:D:367:LEU:HD21	1.99	0.44
1:A:165:ASN:HD21	1:A:167:GLU:HB2	1.83	0.44
1:A:429:VAL:HG13	1:A:430:PRO:HD2	1.99	0.44
1:C:95:GLU:OE2	1:C:95:GLU:HA	2.17	0.44
1:C:205:LEU:HD11	1:C:238:HIS:ND1	2.33	0.44
1:D:18:LEU:HD11	1:D:25:ARG:HB3	2.00	0.44
1:D:409:LEU:HD22	1:D:413:LEU:HD23	2.00	0.44
1:C:329:LEU:HD12	1:C:369:ALA:HB3	2.00	0.44
1:D:322:LEU:HB3	1:D:361:LEU:CD2	2.48	0.44
1:A:45:PHE:CZ	1:A:70:LYS:HD3	2.53	0.43
1:B:86:THR:HG22	1:B:90:MET:HE2	1.99	0.43
1:C:109:GLU:H	1:C:109:GLU:CD	2.22	0.43
1:C:113:GLU:OE2	1:C:117:HIS:HE1	2.00	0.43
1:D:12:VAL:HG23	1:D:13:THR:N	2.33	0.43
1:D:266:ARG:HB3	5:D:442:HOH:O	2.18	0.43
1:C:32:MET:HB2	1:C:41:ASN:OD1	2.17	0.43
1:C:403:GLU:HG2	1:C:407:LEU:CD2	2.47	0.43
1:A:1:MET:HG3	1:A:21:ALA:CB	2.45	0.43
1:A:57:LEU:HD23	1:A:90:MET:CE	2.48	0.43
1:D:200:THR:OG1	1:D:376:GLY:HA3	2.17	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:397:VAL:HG12	1:A:423:ALA:HB2	2.01	0.43
1:C:329:LEU:HD11	1:C:367:LEU:CD1	2.48	0.43
1:B:239:GLY:O	1:B:241:ARG:N	2.51	0.43
1:C:57:LEU:HD22	1:C:80:VAL:CG1	2.48	0.43
1:D:208:LEU:O	1:D:212:LEU:HG	2.18	0.43
1:D:330:SER:O	1:D:368:ARG:HB2	2.18	0.43
1:D:395:ARG:CG	1:D:419:GLU:HB3	2.48	0.43
1:B:220:ILE:HG22	1:B:222:THR:CG2	2.49	0.43
1:C:227:ARG:NH2	1:C:377:PHE:O	2.51	0.43
1:D:202:ARG:CB	1:D:202:ARG:NH1	2.81	0.43
1:D:232:LEU:HD23	1:D:235:LEU:HD12	2.00	0.43
1:D:295:GLU:H	1:D:295:GLU:CD	2.22	0.43
1:D:384:ASP:HA	1:D:387:LEU:HD12	2.00	0.43
1:A:102:ASP:O	1:A:104:PRO:HD3	2.19	0.43
1:D:42:HIS:CE1	1:D:105:PHE:HB3	2.53	0.43
1:D:284:ARG:HA	1:D:288:LEU:HD23	2.01	0.43
1:D:298:LYS:HA	1:D:301:ASN:HD22	1.82	0.43
1:A:126:TRP:CD2	1:D:178:PRO:HB3	2.53	0.43
1:A:284:ARG:HD2	3:A:454:FLC:OHB	2.19	0.43
1:C:367:LEU:O	1:C:367:LEU:HG	2.19	0.43
1:D:192:ARG:HD2	1:D:192:ARG:O	2.19	0.43
1:D:329:LEU:CD1	1:D:336:LEU:HD12	2.44	0.43
1:A:396:VAL:O	1:A:420:VAL:HG23	2.19	0.43
1:B:207:ILE:O	1:B:211:THR:HG23	2.19	0.43
1:C:384:ASP:OD2	1:C:384:ASP:N	2.51	0.43
1:D:132:LEU:HD23	1:D:133:SER:N	2.34	0.43
1:D:229:GLN:HG3	1:D:261:TYR:CE1	2.54	0.43
1:A:133:SER:C	1:A:134:LEU:HD12	2.40	0.43
1:B:37:GLU:CB	1:B:40:ARG:HH11	2.32	0.43
1:C:43:ALA:HB1	1:C:44:PRO:HD2	2.01	0.43
1:C:208:LEU:HD23	1:C:218:VAL:HG11	2.01	0.43
1:D:344:GLN:HA	1:D:344:GLN:HE21	1.84	0.43
1:A:398:LEU:HB3	1:A:406:LEU:HG	2.01	0.42
1:B:398:LEU:HD13	1:B:420:VAL:CG2	2.48	0.42
1:D:232:LEU:HD13	1:D:288:LEU:HD21	2.00	0.42
1:A:84:ARG:NH1	1:A:120:PRO:CB	2.82	0.42
1:A:331:ASP:HA	1:A:332:PRO:HD2	1.84	0.42
1:B:58:THR:HB	1:B:146:ALA:O	2.19	0.42
1:B:155:ARG:HD3	1:B:431:VAL:O	2.19	0.42
1:B:207:ILE:O	1:B:211:THR:CG2	2.67	0.42
1:C:227:ARG:HH12	1:C:378:GLN:HA	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:231:ILE:C	1:C:233:TYR:H	2.23	0.42
1:C:358:VAL:O	1:C:365:VAL:HG12	2.19	0.42
1:D:384:ASP:O	1:D:387:LEU:HB2	2.19	0.42
1:B:100:VAL:HG12	1:B:100:VAL:O	2.19	0.42
1:C:85:ALA:HB3	1:C:144:GLY:HA3	2.02	0.42
1:D:85:ALA:HB2	1:D:267:TYR:CZ	2.54	0.42
1:A:360:ILE:CG2	1:A:361:LEU:HD22	2.47	0.42
1:C:33:PHE:H	1:C:41:ASN:ND2	1.89	0.42
1:C:80:VAL:HB	1:C:118:LEU:HD23	2.00	0.42
1:C:315:MET:O	1:C:316:LEU:HB2	2.19	0.42
1:C:374:LEU:C	1:C:376:GLY:H	2.23	0.42
1:A:420:VAL:HG22	1:A:421:SER:N	2.34	0.42
1:C:10:ARG:NH2	1:C:424:ARG:NH1	2.63	0.42
1:D:229:GLN:CD	1:D:229:GLN:N	2.72	0.42
1:D:320:ARG:O	1:D:320:ARG:HG2	2.19	0.42
1:A:155:ARG:HD3	1:A:431:VAL:O	2.19	0.42
1:C:420:VAL:CG2	1:C:421:SER:H	2.31	0.42
1:D:134:LEU:HD23	1:D:150:ALA:HB2	2.01	0.42
1:D:359:ARG:HA	1:D:364:GLU:HA	2.02	0.42
1:A:87:VAL:HG13	1:A:118:LEU:HD13	2.00	0.42
1:B:20:LEU:HD21	1:B:25:ARG:HE	1.84	0.42
1:D:226:GLU:C	1:D:229:GLN:HE21	2.23	0.42
1:B:37:GLU:O	1:B:39:ALA:N	2.53	0.42
1:D:296:ALA:O	1:D:299:ALA:HB3	2.20	0.42
1:A:381:ALA:HB3	1:A:386:LEU:HD13	2.02	0.42
1:B:178:PRO:HB3	1:C:126:TRP:CE3	2.54	0.42
1:B:259:SER:O	1:B:262:PRO:HD2	2.20	0.42
1:D:164:GLY:O	1:D:381:ALA:HB2	2.20	0.42
1:D:329:LEU:HD21	1:D:351:ILE:HD13	2.01	0.42
1:D:406:LEU:HD23	1:D:422:LEU:HG	2.02	0.42
1:C:344:GLN:HE21	1:C:344:GLN:CA	2.32	0.41
1:C:42:HIS:CE1	1:C:105:PHE:HB3	2.56	0.41
1:D:202:ARG:HH11	1:D:202:ARG:HB2	1.84	0.41
1:D:229:GLN:HG3	1:D:261:TYR:CZ	2.55	0.41
1:D:310:LEU:N	1:D:310:LEU:HD12	2.34	0.41
1:B:10:ARG:HH11	1:B:424:ARG:HG2	1.82	0.41
1:B:28:LEU:O	1:B:29:ASP:HB2	2.20	0.41
1:C:233:TYR:HB2	1:C:283:PHE:HD1	1.84	0.41
1:D:204:PHE:HB2	1:D:374:LEU:HD13	2.01	0.41
1:A:200:THR:CG2	1:A:374:LEU:HB3	2.46	0.41
1:B:244:ARG:HG2	1:B:244:ARG:HH11	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:320:ARG:HD3	3:B:455:FLC:HG1	2.01	0.41
1:C:241:ARG:HG3	1:C:242:LEU:H	1.86	0.41
1:C:404:GLU:HG3	5:C:465:HOH:O	2.19	0.41
1:D:297:SER:OG	1:D:320:ARG:HD3	2.20	0.41
1:D:348:GLY:O	1:D:352:ILE:HG13	2.19	0.41
3:A:454:FLC:OG2	1:B:293:HIS:NE2	2.53	0.41
1:C:192:ARG:HA	1:C:193:PRO:HD3	1.92	0.41
1:C:234:VAL:O	1:C:238:HIS:HB2	2.20	0.41
1:B:29:ASP:HA	1:B:57:LEU:HD12	2.03	0.41
1:C:297:SER:OG	1:C:320:ARG:HD3	2.21	0.41
1:D:48:ASP:HA	1:D:49:PRO:HD2	1.81	0.41
1:A:5:PRO:HA	1:A:17:HIS:ND1	2.36	0.41
1:B:404:GLU:CD	1:B:404:GLU:N	2.71	0.41
1:D:365:VAL:HA	1:D:366:PRO:HD3	1.92	0.41
1:B:204:PHE:HB2	1:B:374:LEU:HD13	2.03	0.41
1:C:3:ILE:HG23	1:C:3:ILE:O	2.21	0.41
1:C:14:GLY:O	1:C:15:SER:C	2.59	0.41
1:C:33:PHE:CD2	1:C:40:ARG:HB2	2.55	0.41
1:C:224:ALA:O	1:C:257:VAL:HG21	2.21	0.41
1:C:386:LEU:HD23	1:C:409:LEU:CD1	2.51	0.41
1:D:89:LEU:HD23	1:D:260:LEU:HD23	2.03	0.41
1:D:98:LEU:HD12	1:D:111:VAL:HG21	2.03	0.41
1:D:269:SER:HB2	2:D:436:SO4:O2	2.21	0.41
1:D:381:ALA:HB3	1:D:386:LEU:CD1	2.50	0.41
1:D:191:ASP:CG	1:D:405:LYS:HD2	2.41	0.41
1:A:157:LEU:HG	1:A:158:VAL:N	2.32	0.40
1:C:200:THR:HG21	1:C:376:GLY:CA	2.51	0.40
1:D:165:ASN:HD21	1:D:194:HIS:CE1	2.39	0.40
1:A:235:LEU:HD13	1:A:247:ILE:HD13	2.04	0.40
1:A:194:HIS:HB3	1:A:378:GLN:CD	2.41	0.40
1:B:40:ARG:C	1:B:42:HIS:H	2.25	0.40
1:C:196:PRO:HB2	1:C:199:GLU:HG2	2.03	0.40
1:C:343:PRO:O	1:C:349:ALA:HB2	2.22	0.40
1:D:336:LEU:HD23	1:D:336:LEU:C	2.41	0.40
1:A:288:LEU:HD12	1:A:289:GLU:H	1.87	0.40
1:B:233:TYR:CE1	1:B:282:PRO:HB2	2.56	0.40
1:C:301:ASN:HB2	1:C:327:HIS:CG	2.57	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	429/431 (100%)	400 (93%)	29 (7%)	0	100	100
1	B	429/431 (100%)	398 (93%)	27 (6%)	4 (1%)	17	31
1	C	429/431 (100%)	363 (85%)	59 (14%)	7 (2%)	9	17
1	D	429/431 (100%)	368 (86%)	51 (12%)	10 (2%)	6	10
All	All	1716/1724 (100%)	1529 (89%)	166 (10%)	21 (1%)	13	24

All (21) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	36	LYS
1	B	8	ALA
1	B	38	GLU
1	B	240	HIS
1	C	193	PRO
1	D	292	GLU
1	D	295	GLU
1	D	400	HIS
1	C	15	SER
1	D	102	ASP
1	D	187	GLY
1	D	328	GLY
1	C	227	ARG
1	C	38	GLU
1	C	285	PRO
1	D	317	ALA
1	C	400	HIS
1	D	38	GLU
1	D	215	GLY
1	C	426	GLY
1	D	251	SER

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	342/342 (100%)	318 (93%)	24 (7%)	15	29
1	B	342/342 (100%)	318 (93%)	24 (7%)	15	29
1	C	342/342 (100%)	326 (95%)	16 (5%)	26	49
1	D	342/342 (100%)	329 (96%)	13 (4%)	33	58
All	All	1368/1368 (100%)	1291 (94%)	77 (6%)	21	40

All (77) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	55	VAL
1	A	57	LEU
1	A	94	LEU
1	A	98	LEU
1	A	163	LEU
1	A	165	ASN
1	A	171	LEU
1	A	179	LEU
1	A	186	GLU
1	A	195	ARG
1	A	199	GLU
1	A	211	THR
1	A	229	GLN
1	A	241	ARG
1	A	264	LEU
1	A	325	LEU
1	A	329	LEU
1	A	336	LEU
1	A	361	LEU
1	A	386	LEU
1	A	390	LEU
1	A	406	LEU
1	A	407	LEU
1	A	409	LEU

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Mol	Chain	Res	Type
1	B	27	LEU
1	B	57	LEU
1	B	62	LEU
1	B	94	LEU
1	B	98	LEU
1	B	155	ARG
1	B	165	ASN
1	B	171	LEU
1	B	175	SER
1	B	186	GLU
1	B	195	ARG
1	B	211	THR
1	B	219	LEU
1	B	229	GLN
1	B	253	MET
1	B	264	LEU
1	B	329	LEU
1	B	336	LEU
1	B	341	TYR
1	B	365	VAL
1	B	386	LEU
1	B	390	LEU
1	B	407	LEU
1	B	409	LEU
1	C	55	VAL
1	C	57	LEU
1	C	98	LEU
1	C	103	GLU
1	C	155	ARG
1	C	165	ASN
1	C	171	LEU
1	C	192	ARG
1	C	195	ARG
1	C	235	LEU
1	C	264	LEU
1	C	302	ARG
1	C	308	VAL
1	C	315	MET
1	C	354	ARG
1	C	398	LEU
1	D	27	LEU
1	D	38	GLU

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Mol	Chain	Res	Type
1	D	55	VAL
1	D	96	ASP
1	D	109	GLU
1	D	132	LEU
1	D	165	ASN
1	D	171	LEU
1	D	192	ARG
1	D	195	ARG
1	D	265	VAL
1	D	292	GLU
1	D	409	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (31) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	41	ASN
1	A	59	HIS
1	A	165	ASN
1	A	229	GLN
1	A	344	GLN
1	A	378	GLN
1	B	41	ASN
1	B	61	HIS
1	B	165	ASN
1	B	229	GLN
1	B	238	HIS
1	B	240	HIS
1	B	380	HIS
1	B	383	GLN
1	C	41	ASN
1	C	117	HIS
1	C	165	ASN
1	C	323	HIS
1	C	342	GLN
1	C	344	GLN
1	D	41	ASN
1	D	151	GLN
1	D	165	ASN
1	D	229	GLN
1	D	238	HIS
1	D	240	HIS
1	D	293	HIS

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Mol	Chain	Res	Type
1	D	301	ASN
1	D	327	HIS
1	D	344	GLN
1	D	372	HIS

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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 77 ligands modelled in this entry, 8 are monoatomic - leaving 69 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	SO4	B	433	-	4,4,4	1.01	0	6,6,6	0.64	0
2	SO4	C	436	-	4,4,4	1.04	0	6,6,6	0.64	0
2	SO4	A	446	-	4,4,4	1.03	0	6,6,6	0.65	0
2	SO4	A	432	-	4,4,4	1.02	0	6,6,6	0.65	0
2	SO4	B	448	-	4,4,4	1.05	0	6,6,6	0.63	0
2	SO4	C	437	-	4,4,4	1.01	0	6,6,6	0.66	0
2	SO4	B	446	-	4,4,4	1.01	0	6,6,6	0.67	0
2	SO4	A	448	-	4,4,4	1.04	0	6,6,6	0.65	0
2	SO4	B	447	-	4,4,4	1.01	0	6,6,6	0.66	0
2	SO4	B	449	-	4,4,4	1.03	0	6,6,6	0.64	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	SO4	B	453	-	4,4,4	0.95	0	6,6,6	0.70	0
2	SO4	B	445	-	4,4,4	0.96	0	6,6,6	0.70	0
2	SO4	A	452	-	4,4,4	1.01	0	6,6,6	0.68	0
2	SO4	D	434	-	4,4,4	1.01	0	6,6,6	0.67	0
2	SO4	D	437	-	4,4,4	1.01	0	6,6,6	0.66	0
2	SO4	A	435	-	4,4,4	0.98	0	6,6,6	0.67	0
2	SO4	B	434	-	4,4,4	0.99	0	6,6,6	0.69	0
2	SO4	B	444	-	4,4,4	1.02	0	6,6,6	0.62	0
2	SO4	B	443	-	4,4,4	1.01	0	6,6,6	0.65	0
2	SO4	A	438	-	4,4,4	0.99	0	6,6,6	0.67	0
2	SO4	C	446	-	4,4,4	1.01	0	6,6,6	0.66	0
2	SO4	A	433	-	4,4,4	1.05	0	6,6,6	0.70	0
2	SO4	C	444	-	4,4,4	1.03	0	6,6,6	0.66	0
2	SO4	C	439	-	4,4,4	1.01	0	6,6,6	0.64	0
3	FLC	A	454	-	12,12,12	2.10	5 (41%)	17,17,17	1.33	1 (5%)
2	SO4	A	442	-	4,4,4	1.01	0	6,6,6	0.64	0
2	SO4	B	442	-	4,4,4	1.02	0	6,6,6	0.66	0
2	SO4	C	433	-	4,4,4	1.02	0	6,6,6	0.68	0
2	SO4	B	452	-	4,4,4	1.01	0	6,6,6	0.69	0
2	SO4	C	434	-	4,4,4	0.99	0	6,6,6	0.66	0
2	SO4	C	441	-	4,4,4	0.99	0	6,6,6	0.66	0
2	SO4	C	440	-	4,4,4	1.01	0	6,6,6	0.66	0
2	SO4	A	451	-	4,4,4	1.02	0	6,6,6	0.66	0
2	SO4	B	432	-	4,4,4	1.01	0	6,6,6	0.66	0
2	SO4	B	451	-	4,4,4	1.01	0	6,6,6	0.65	0
2	SO4	A	436	-	4,4,4	1.00	0	6,6,6	0.66	0
2	SO4	B	436	-	4,4,4	1.02	0	6,6,6	0.66	0
2	SO4	A	443	-	4,4,4	1.01	0	6,6,6	0.65	0
2	SO4	B	440	-	4,4,4	1.02	0	6,6,6	0.65	0
2	SO4	C	445	-	4,4,4	1.04	0	6,6,6	0.64	0
2	SO4	C	438	-	4,4,4	1.03	0	6,6,6	0.66	0
2	SO4	A	441	-	4,4,4	1.00	0	6,6,6	0.66	0
2	SO4	A	434	-	4,4,4	1.02	0	6,6,6	0.68	0
3	FLC	B	455	-	12,12,12	1.56	2 (16%)	17,17,17	1.48	1 (5%)
2	SO4	A	437	-	4,4,4	1.01	0	6,6,6	0.66	0
2	SO4	A	445	-	4,4,4	1.03	0	6,6,6	0.67	0
2	SO4	B	454	-	4,4,4	0.98	0	6,6,6	0.68	0
2	SO4	C	442	-	4,4,4	1.02	0	6,6,6	0.64	0
2	SO4	A	450	-	4,4,4	1.03	0	6,6,6	0.67	0
2	SO4	D	435	-	4,4,4	1.03	0	6,6,6	0.65	0
2	SO4	B	437	-	4,4,4	0.97	0	6,6,6	0.59	0
2	SO4	B	435	-	4,4,4	1.02	0	6,6,6	0.64	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	SO4	D	433	-	4,4,4	1.03	0	6,6,6	0.64	0
2	SO4	A	453	-	4,4,4	1.01	0	6,6,6	0.66	0
2	SO4	C	432	-	4,4,4	1.03	0	6,6,6	0.65	0
3	FLC	B	456	-	12,12,12	2.11	5 (41%)	17,17,17	1.31	1 (5%)
2	SO4	A	439	-	4,4,4	1.00	0	6,6,6	0.66	0
2	SO4	B	450	-	4,4,4	0.98	0	6,6,6	0.67	0
2	SO4	B	441	-	4,4,4	1.01	0	6,6,6	0.65	0
2	SO4	C	435	-	4,4,4	1.03	0	6,6,6	0.64	0
2	SO4	C	443	-	4,4,4	1.01	0	6,6,6	0.66	0
2	SO4	D	432	-	4,4,4	1.02	0	6,6,6	0.65	0
2	SO4	A	444	-	4,4,4	1.00	0	6,6,6	0.68	0
2	SO4	A	440	-	4,4,4	1.00	0	6,6,6	0.66	0
2	SO4	A	447	-	4,4,4	1.02	0	6,6,6	0.64	0
2	SO4	D	436	-	4,4,4	0.98	0	6,6,6	0.69	0
2	SO4	A	449	-	4,4,4	1.01	0	6,6,6	0.67	0
2	SO4	B	439	-	4,4,4	1.05	0	6,6,6	0.63	0
2	SO4	B	438	-	4,4,4	1.01	0	6,6,6	0.66	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	FLC	B	456	-	-	0/16/16/16	-
3	FLC	B	455	-	-	0/16/16/16	-
3	FLC	A	454	-	-	0/16/16/16	-

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	456	FLC	CB-CBC	-4.77	1.48	1.53
3	A	454	FLC	CB-CBC	-4.68	1.48	1.53
3	B	455	FLC	OA2-CAC	-2.84	1.21	1.30
3	B	456	FLC	OG2-CGC	-2.63	1.21	1.30
3	A	454	FLC	OG2-CGC	-2.63	1.21	1.30
3	B	456	FLC	CA-CB	2.45	1.56	1.53
3	B	455	FLC	OG2-CGC	-2.40	1.22	1.30
3	A	454	FLC	OA2-CAC	-2.39	1.22	1.30
3	B	456	FLC	OA2-CAC	-2.37	1.22	1.30
3	A	454	FLC	CA-CB	2.35	1.56	1.53
3	A	454	FLC	CG-CB	2.29	1.56	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	456	FLC	CG-CB	2.23	1.56	1.53

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	455	FLC	OB2-CBC-CB	4.21	120.36	113.05
3	A	454	FLC	OB2-CBC-CB	3.46	119.06	113.05
3	B	456	FLC	OB2-CBC-CB	3.42	118.99	113.05

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

12 monomers are involved in 30 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	448	SO4	1	0
2	C	439	SO4	1	0
3	A	454	FLC	7	0
2	A	436	SO4	1	0
2	A	443	SO4	5	0
2	C	445	SO4	1	0
3	B	455	FLC	3	0
3	B	456	FLC	4	0
2	B	441	SO4	2	0
2	D	432	SO4	3	0
2	D	436	SO4	1	0
2	A	449	SO4	1	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	431/431 (100%)	0.09	2 (0%) 91 91	24, 43, 67, 82	0
1	B	431/431 (100%)	0.12	8 (1%) 66 69	24, 43, 68, 88	0
1	C	431/431 (100%)	1.16	98 (22%) 0 0	28, 75, 133, 137	0
1	D	431/431 (100%)	1.52	113 (26%) 0 0	36, 80, 142, 146	0
All	All	1724/1724 (100%)	0.72	221 (12%) 3 3	24, 53, 132, 146	0

All (221) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	374	LEU	9.9
1	D	326	LYS	9.9
1	C	219	LEU	9.2
1	D	322	LEU	9.2
1	D	219	LEU	9.2
1	C	326	LYS	8.4
1	D	212	LEU	8.2
1	D	208	LEU	8.2
1	C	329	LEU	8.2
1	C	216	GLY	8.0
1	C	336	LEU	7.9
1	D	300	LEU	7.9
1	C	337	VAL	7.8
1	D	242	LEU	7.8
1	D	338	PHE	7.8
1	D	329	LEU	7.5
1	D	245	ALA	7.1
1	C	242	LEU	7.0
1	D	218	VAL	6.9
1	D	330	SER	6.8
1	C	335	ALA	6.6

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Mol	Chain	Res	Type	RSRZ
1	D	307	MET	6.6
1	C	306	PRO	6.5
1	D	244	ARG	6.5
1	C	371	VAL	6.4
1	C	218	VAL	6.3
1	C	214	GLN	6.3
1	C	305	GLY	6.2
1	C	303	ALA	6.0
1	C	338	PHE	6.0
1	D	332	PRO	5.9
1	C	217	LYS	5.8
1	D	361	LEU	5.7
1	D	249	LEU	5.6
1	D	306	PRO	5.5
1	D	339	VAL	5.5
1	C	241	ARG	5.5
1	D	360	ILE	5.5
1	D	309	VAL	5.5
1	D	368	ARG	5.4
1	D	211	THR	5.4
1	C	333	ARG	5.4
1	D	239	GLY	5.3
1	D	288	LEU	5.3
1	D	328	GLY	5.3
1	D	228	ALA	5.2
1	D	325	LEU	5.2
1	D	302	ARG	5.2
1	D	250	ASP	5.1
1	D	371	VAL	5.0
1	D	220	ILE	5.0
1	C	245	ALA	5.0
1	D	377	PHE	4.9
1	C	304	PRO	4.9
1	D	369	ALA	4.8
1	D	213	SER	4.8
1	C	354	ARG	4.7
1	D	335	ALA	4.7
1	D	201	VAL	4.6
1	C	213	SER	4.6
1	D	192	ARG	4.6
1	D	316	LEU	4.6
1	D	324	HIS	4.6

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Mol	Chain	Res	Type	RSRZ
1	D	231	ILE	4.5
1	D	367	LEU	4.5
1	C	366	PRO	4.4
1	D	304	PRO	4.4
1	C	250	ASP	4.4
1	C	353	ALA	4.3
1	D	333	ARG	4.3
1	C	238	HIS	4.3
1	C	301	ASN	4.3
1	C	209	GLU	4.3
1	D	362	GLY	4.3
1	C	302	ARG	4.3
1	D	214	GLN	4.2
1	D	287	GLY	4.2
1	D	305	GLY	4.2
1	C	368	ARG	4.2
1	D	312	GLY	4.2
1	C	247	ILE	4.2
1	D	323	HIS	4.1
1	D	286	ALA	4.1
1	D	308	VAL	4.1
1	D	246	PRO	4.1
1	C	294	THR	4.0
1	D	337	VAL	4.0
1	C	367	LEU	4.0
1	D	194	HIS	4.0
1	D	217	LYS	4.0
1	C	300	LEU	4.0
1	C	291	VAL	3.9
1	C	343	PRO	3.9
1	C	244	ARG	3.9
1	D	209	GLU	3.9
1	D	248	TYR	3.9
1	C	307	MET	3.8
1	C	377	PHE	3.8
1	D	207	ILE	3.8
1	C	370	SER	3.8
1	C	322	LEU	3.7
1	C	240	HIS	3.7
1	C	358	VAL	3.7
1	D	334	ASN	3.7
1	C	208	LEU	3.7

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Mol	Chain	Res	Type	RSRZ
1	C	210	LYS	3.6
1	C	293	HIS	3.6
1	C	369	ALA	3.6
1	D	204	PHE	3.6
1	D	303	ALA	3.6
1	D	331	ASP	3.6
1	D	235	LEU	3.6
1	D	336	LEU	3.6
1	C	205	LEU	3.6
1	D	99	LYS	3.5
1	D	216	GLY	3.5
1	C	311	ALA	3.5
1	D	340	GLY	3.5
1	D	342	GLN	3.5
1	C	372	HIS	3.4
1	C	316	LEU	3.4
1	B	78	GLY	3.4
1	D	297	SER	3.4
1	C	332	PRO	3.3
1	C	373	THR	3.3
1	D	294	THR	3.3
1	D	205	LEU	3.3
1	C	376	GLY	3.3
1	A	341	TYR	3.2
1	C	415	LEU	3.2
1	C	325	LEU	3.2
1	D	92	ILE	3.2
1	C	334	ASN	3.2
1	D	341	TYR	3.2
1	C	248	TYR	3.1
1	C	252	PRO	3.1
1	D	101	MET	3.1
1	C	342	GLN	3.1
1	D	102	ASP	3.1
1	D	98	LEU	3.1
1	C	374	LEU	3.0
1	D	224	ALA	3.0
1	C	360	ILE	3.0
1	C	295	GLU	3.0
1	D	240	HIS	3.0
1	D	310	LEU	3.0
1	C	243	PRO	3.0

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Mol	Chain	Res	Type	RSRZ
1	D	298	LYS	3.0
1	D	299	ALA	3.0
1	C	207	ILE	2.9
1	B	240	HIS	2.9
1	C	364	GLU	2.9
1	D	293	HIS	2.9
1	C	330	SER	2.9
1	C	195	ARG	2.9
1	C	251	SER	2.8
1	D	301	ASN	2.8
1	C	194	HIS	2.8
1	C	323	HIS	2.8
1	D	370	SER	2.8
1	C	328	GLY	2.8
1	D	197	TYR	2.7
1	D	291	VAL	2.7
1	D	321	ILE	2.7
1	C	212	LEU	2.7
1	D	247	ILE	2.7
1	C	352	ILE	2.6
1	C	215	GLY	2.6
1	C	288	LEU	2.6
1	C	310	LEU	2.6
1	D	352	ILE	2.6
1	C	202	ARG	2.6
1	D	210	LYS	2.6
1	D	366	PRO	2.6
1	D	387	LEU	2.6
1	D	363	GLU	2.6
1	C	344	GLN	2.5
1	D	411	LYS	2.5
1	D	252	PRO	2.5
1	D	327	HIS	2.5
1	C	356	PRO	2.5
1	C	289	GLU	2.5
1	C	324	HIS	2.4
1	D	94	LEU	2.4
1	D	108	PRO	2.4
1	C	404	GLU	2.4
1	D	35	GLY	2.4
1	B	72	PHE	2.3
1	D	320	ARG	2.3

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Mol	Chain	Res	Type	RSRZ
1	D	243	PRO	2.3
1	C	327	HIS	2.3
1	C	308	VAL	2.3
1	C	201	VAL	2.3
1	C	351	ILE	2.3
1	B	192	ARG	2.2
1	C	411	LYS	2.2
1	C	223	PHE	2.2
1	C	276	PHE	2.2
1	C	292	GLU	2.2
1	D	415	LEU	2.2
1	B	225	VAL	2.2
1	C	365	VAL	2.2
1	C	297	SER	2.2
1	D	290	VAL	2.2
1	C	349	ALA	2.2
1	B	77	ARG	2.2
1	C	192	ARG	2.2
1	D	376	GLY	2.2
1	C	235	LEU	2.1
1	B	280	LYS	2.1
1	C	204	PHE	2.1
1	D	258	LEU	2.1
1	A	149	VAL	2.1
1	C	211	THR	2.1
1	D	190	GLY	2.1
1	D	292	GLU	2.1
1	D	364	GLU	2.1
1	B	51	GLU	2.0
1	D	365	VAL	2.0
1	D	386	LEU	2.0
1	D	398	LEU	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, 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	B-factors(Å ²)	Q<0.9
3	FLC	B	455	13/13	0.60	0.39	110,110,111,112	0
2	SO4	C	439	5/5	0.65	0.41	149,149,149,149	0
3	FLC	A	454	13/13	0.67	0.38	103,106,110,110	0
2	SO4	A	449	5/5	0.67	0.24	135,135,135,136	0
2	SO4	C	438	5/5	0.69	0.39	143,143,144,144	0
2	SO4	B	447	5/5	0.70	0.36	143,143,143,143	0
2	SO4	B	451	5/5	0.72	0.37	140,140,140,140	0
2	SO4	C	435	5/5	0.72	0.22	155,155,155,155	0
3	FLC	B	456	13/13	0.72	0.45	98,104,109,109	0
2	SO4	A	445	5/5	0.73	0.68	137,138,138,139	0
2	SO4	A	432	5/5	0.75	0.16	138,138,138,139	0
2	SO4	A	443	5/5	0.78	0.18	135,136,136,136	0
2	SO4	B	434	5/5	0.79	0.45	148,148,148,149	0
2	SO4	A	440	5/5	0.79	0.17	122,123,123,123	0
2	SO4	C	440	5/5	0.79	0.33	148,148,148,148	0
2	SO4	B	454	5/5	0.80	0.17	123,124,124,124	0
2	SO4	A	447	5/5	0.80	0.20	128,128,128,129	0
2	SO4	B	439	5/5	0.81	0.35	135,135,135,136	0
2	SO4	A	452	5/5	0.82	0.28	128,128,128,129	0
4	ZN	C	447	1/1	0.82	0.11	117,117,117,117	0
2	SO4	C	433	5/5	0.83	0.24	121,121,121,122	0
2	SO4	B	445	5/5	0.83	0.30	142,142,142,142	0
2	SO4	A	451	5/5	0.83	0.29	137,137,138,138	0
2	SO4	B	441	5/5	0.84	0.33	159,159,160,160	0
2	SO4	C	437	5/5	0.84	0.25	144,144,144,145	0
2	SO4	A	453	5/5	0.84	0.18	122,122,122,123	0
2	SO4	A	446	5/5	0.85	0.29	131,131,132,132	0
2	SO4	B	448	5/5	0.85	0.34	145,145,145,145	0
2	SO4	C	442	5/5	0.85	0.15	111,111,111,112	0
2	SO4	D	435	5/5	0.85	0.17	132,132,132,132	0
4	ZN	C	448	1/1	0.85	0.10	115,115,115,115	0
2	SO4	C	445	5/5	0.86	0.15	128,128,128,128	0
2	SO4	D	432	5/5	0.86	0.15	117,117,117,117	0
2	SO4	C	436	5/5	0.86	0.27	138,138,139,139	0
2	SO4	B	449	5/5	0.86	0.36	144,144,144,145	0
2	SO4	A	436	5/5	0.87	0.40	156,156,156,156	0
2	SO4	B	436	5/5	0.87	0.17	120,121,121,121	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	SO4	B	440	5/5	0.88	0.23	110,110,110,111	0
2	SO4	A	441	5/5	0.88	0.13	136,137,137,137	0
2	SO4	D	433	5/5	0.88	0.12	123,124,124,124	0
2	SO4	C	444	5/5	0.89	0.12	113,113,113,113	0
2	SO4	A	448	5/5	0.89	0.18	98,98,99,99	0
2	SO4	A	438	5/5	0.89	0.21	116,116,116,116	0
2	SO4	B	452	5/5	0.89	0.28	98,98,99,99	0
2	SO4	B	444	5/5	0.89	0.23	116,116,117,117	0
2	SO4	D	437	5/5	0.90	0.22	126,127,127,127	0
2	SO4	A	444	5/5	0.90	0.14	109,109,110,110	0
2	SO4	A	439	5/5	0.91	0.13	136,136,136,136	0
2	SO4	A	450	5/5	0.91	0.14	98,98,99,100	0
2	SO4	B	443	5/5	0.91	0.19	118,119,119,119	0
2	SO4	C	432	5/5	0.92	0.19	90,91,92,92	0
2	SO4	A	442	5/5	0.92	0.18	96,96,96,98	0
2	SO4	B	435	5/5	0.92	0.12	98,99,100,100	0
2	SO4	B	442	5/5	0.92	0.19	119,119,119,119	0
4	ZN	B	458	1/1	0.93	0.06	79,79,79,79	0
4	ZN	D	438	1/1	0.93	0.15	101,101,101,101	0
2	SO4	B	446	5/5	0.94	0.10	84,84,85,85	0
2	SO4	D	436	5/5	0.94	0.18	90,90,91,91	0
2	SO4	C	446	5/5	0.94	0.20	101,101,101,102	0
4	ZN	B	457	1/1	0.94	0.05	72,72,72,72	0
2	SO4	C	434	5/5	0.95	0.09	111,111,111,111	0
2	SO4	C	443	5/5	0.95	0.11	102,103,103,103	0
2	SO4	D	434	5/5	0.96	0.12	81,82,82,83	0
2	SO4	B	433	5/5	0.96	0.12	91,91,92,92	0
2	SO4	A	437	5/5	0.96	0.10	77,77,78,78	0
2	SO4	B	453	5/5	0.96	0.13	54,55,57,57	0
2	SO4	B	432	5/5	0.96	0.15	110,110,110,110	0
2	SO4	B	450	5/5	0.96	0.10	79,79,80,81	0
2	SO4	A	433	5/5	0.97	0.16	52,56,58,59	0
2	SO4	B	438	5/5	0.97	0.15	64,65,66,67	0
4	ZN	A	456	1/1	0.97	0.07	72,72,72,72	0
2	SO4	A	435	5/5	0.97	0.16	52,53,55,58	0
4	ZN	D	439	1/1	0.97	0.06	94,94,94,94	0
2	SO4	A	434	5/5	0.98	0.17	41,42,44,45	0
2	SO4	B	437	5/5	0.98	0.13	47,47,51,52	0
2	SO4	C	441	5/5	0.98	0.13	71,71,72,73	0
4	ZN	A	455	1/1	0.99	0.04	67,67,67,67	0

6.5 Other polymers

There are no such residues in this entry.