



Full wwPDB X-ray Structure Validation Report

Feb 27, 2014 – 07:36 AM GMT

PDB ID : 3FG1
Title : Crystal structure of Delta413-417:GS LOX
Authors : Neau, D.B.; Newcomer, M.E.
Deposited on : 2008-12-04
Resolution : 1.85 Å(reported)

This is a full wwPDB 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/ValidationPDFNotes.html>

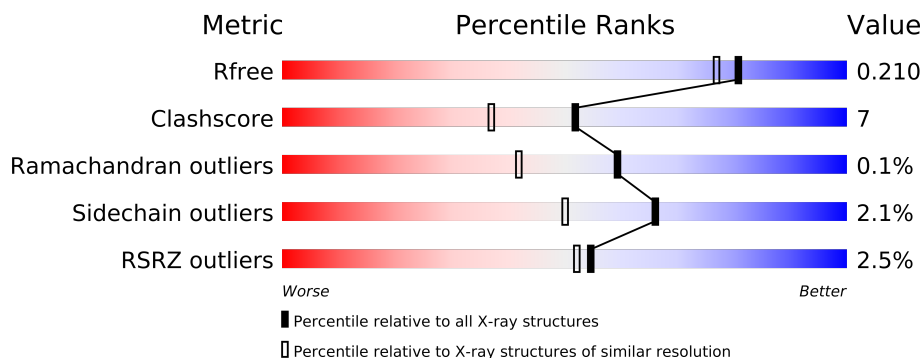
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.15 2013
Xtriage (Phenix) : dev-1323
EDS : stable22639
Percentile statistics : 21963
Refmac : 5.8.0049
CCP4 : 6.3.0 (Settle)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP) : stable22683

1 Overall quality at a glance

The reported resolution of this entry is 1.85 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}	66092	1269 (1.86-1.86)
Clashscore	79885	1470 (1.86-1.86)
Ramachandran outliers	78287	1451 (1.86-1.86)
Sidechain outliers	78261	1451 (1.86-1.86)
RSRZ outliers	66119	1269 (1.86-1.86)

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. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Mol	Chain	Length	Quality of chain
1	A	696	
1	B	696	
1	C	696	
1	D	696	

The following table lists non-polymeric compounds that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Geometry	Electron density
4	ACY	A	2202	-	X
4	ACY	A	2203	-	X
4	ACY	A	2204	-	X
4	ACY	A	2205	-	X

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Mol	Type	Chain	Res	Geometry	Electron density
4	ACY	A	2206	-	X
4	ACY	A	2207	-	X
4	ACY	B	2201	-	X
4	ACY	B	2202	-	X
4	ACY	B	2203	-	X
4	ACY	C	2201[A]	-	X
4	ACY	C	2201[B]	-	X
4	ACY	C	2205	-	X
4	ACY	C	2207	-	X
4	ACY	D	2201	-	X
4	ACY	D	2204	-	X
4	ACY	D	2206	-	X
5	GOL	A	2304	-	X
5	GOL	A	2306	-	X
5	GOL	A	2307	-	X
5	GOL	A	2308	-	X
5	GOL	A	2309[B]	-	X
5	GOL	A	2310	-	X
5	GOL	B	2308	-	X
5	GOL	D	2303	-	X

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 25092 atoms, of which 0 are hydrogen and 0 are deuterium.

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 Allene oxide synthase-lipoxygenaseprotein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	684	Total	C	N	O	S	1	16	0
			5523	3527	933	1050	13			
1	B	682	Total	C	N	O	S	0	22	0
			5547	3542	933	1059	13			
1	C	683	Total	C	N	O	S	0	18	0
			5536	3536	933	1054	13			
1	D	681	Total	C	N	O	S	0	21	0
			5535	3540	932	1050	13			

There are 52 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	368	MET	-	EXPRESSION TAG	UNP O16025
A	369	HIS	-	EXPRESSION TAG	UNP O16025
A	370	HIS	-	EXPRESSION TAG	UNP O16025
A	371	HIS	-	EXPRESSION TAG	UNP O16025
A	372	HIS	-	EXPRESSION TAG	UNP O16025
A	373	HIS	-	EXPRESSION TAG	UNP O16025
A	?	-	TRP	DELETION	UNP O16025
A	?	-	PHE	DELETION	UNP O16025
A	?	-	HIS	DELETION	UNP O16025
A	413	GLY	ASN	ENGINEERED	UNP O16025
A	414	SER	ASP	ENGINEERED	UNP O16025
A	782	ILE	VAL	SEE REMARK 999	UNP O16025
A	963	ILE	VAL	SEE REMARK 999	UNP O16025
B	368	MET	-	EXPRESSION TAG	UNP O16025
B	369	HIS	-	EXPRESSION TAG	UNP O16025
B	370	HIS	-	EXPRESSION TAG	UNP O16025
B	371	HIS	-	EXPRESSION TAG	UNP O16025
B	372	HIS	-	EXPRESSION TAG	UNP O16025
B	373	HIS	-	EXPRESSION TAG	UNP O16025
B	?	-	TRP	DELETION	UNP O16025
B	?	-	PHE	DELETION	UNP O16025

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Chain	Residue	Modelled	Actual	Comment	Reference
B	?	-	HIS	DELETION	UNP O16025
B	413	GLY	ASN	ENGINEERED	UNP O16025
B	414	SER	ASP	ENGINEERED	UNP O16025
B	782	ILE	VAL	SEE REMARK 999	UNP O16025
B	963	ILE	VAL	SEE REMARK 999	UNP O16025
C	368	MET	-	EXPRESSION TAG	UNP O16025
C	369	HIS	-	EXPRESSION TAG	UNP O16025
C	370	HIS	-	EXPRESSION TAG	UNP O16025
C	371	HIS	-	EXPRESSION TAG	UNP O16025
C	372	HIS	-	EXPRESSION TAG	UNP O16025
C	373	HIS	-	EXPRESSION TAG	UNP O16025
C	?	-	TRP	DELETION	UNP O16025
C	?	-	PHE	DELETION	UNP O16025
C	?	-	HIS	DELETION	UNP O16025
C	413	GLY	ASN	ENGINEERED	UNP O16025
C	414	SER	ASP	ENGINEERED	UNP O16025
C	782	ILE	VAL	SEE REMARK 999	UNP O16025
C	963	ILE	VAL	SEE REMARK 999	UNP O16025
D	368	MET	-	EXPRESSION TAG	UNP O16025
D	369	HIS	-	EXPRESSION TAG	UNP O16025
D	370	HIS	-	EXPRESSION TAG	UNP O16025
D	371	HIS	-	EXPRESSION TAG	UNP O16025
D	372	HIS	-	EXPRESSION TAG	UNP O16025
D	373	HIS	-	EXPRESSION TAG	UNP O16025
D	?	-	TRP	DELETION	UNP O16025
D	?	-	PHE	DELETION	UNP O16025
D	?	-	HIS	DELETION	UNP O16025
D	413	GLY	ASN	ENGINEERED	UNP O16025
D	414	SER	ASP	ENGINEERED	UNP O16025
D	782	ILE	VAL	SEE REMARK 999	UNP O16025
D	963	ILE	VAL	SEE REMARK 999	UNP O16025

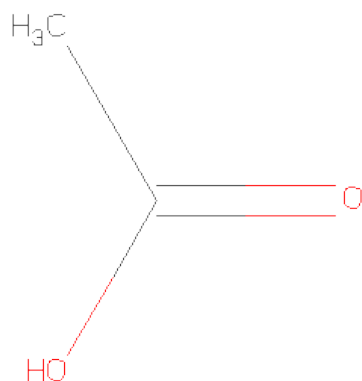
- Molecule 2 is FE (II) ION (three-letter code: FE2) (formula: Fe).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	B	1	Total Fe 1 1	0	0
2	A	1	Total Fe 1 1	0	0
2	D	1	Total Fe 1 1	0	0
2	C	1	Total Fe 1 1	0	0

- Molecule 3 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	1	Total	Ca	0	0
			1	1		
3	A	3	Total	Ca	0	0
			3	3		
3	D	1	Total	Ca	0	0
			1	1		
3	C	3	Total	Ca	0	0
			3	3		

- Molecule 4 is ACETIC ACID (three-letter code: ACY) (formula: C₂H₄O₂).



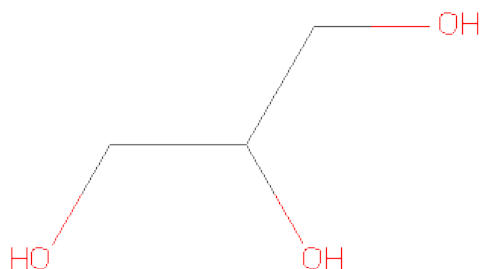
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	1
			8	4	4		
4	A	1	Total	C	O	0	1
			8	4	4		
4	A	1	Total	C	O	0	0
			4	2	2		
4	A	1	Total	C	O	0	0
			4	2	2		
4	A	1	Total	C	O	0	0
			4	2	2		
4	A	1	Total	C	O	0	0
			4	2	2		
4	A	1	Total	C	O	0	0
			4	2	2		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	1
			8	4	4		
4	C	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: C₃H₈O₃).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	1
			12	6	6		
5	A	1	Total	C	O	0	0
			6	3	3		
5	B	1	Total	C	O	0	0
			6	3	3		
5	B	1	Total	C	O	0	0
			6	3	3		
5	B	1	Total	C	O	0	1
			12	6	6		
5	B	1	Total	C	O	0	0
			6	3	3		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	C	1	Total C O 12 6 6	0	1
5	C	1	Total C O 6 3 3	0	0
5	C	1	Total C O 6 3 3	0	0
5	C	1	Total C O 6 3 3	0	0
5	C	1	Total C O 6 3 3	0	0
5	C	1	Total C O 6 3 3	0	0
5	D	1	Total C O 6 3 3	0	0
5	D	1	Total C O 12 6 6	0	1
5	D	1	Total C O 6 3 3	0	0

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

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	B	1	Total Cl 1 1	0	0
6	A	2	Total Cl 2 2	0	0
6	D	1	Total Cl 1 1	0	0
6	C	2	Total Cl 2 2	0	0

- Molecule 7 is water.

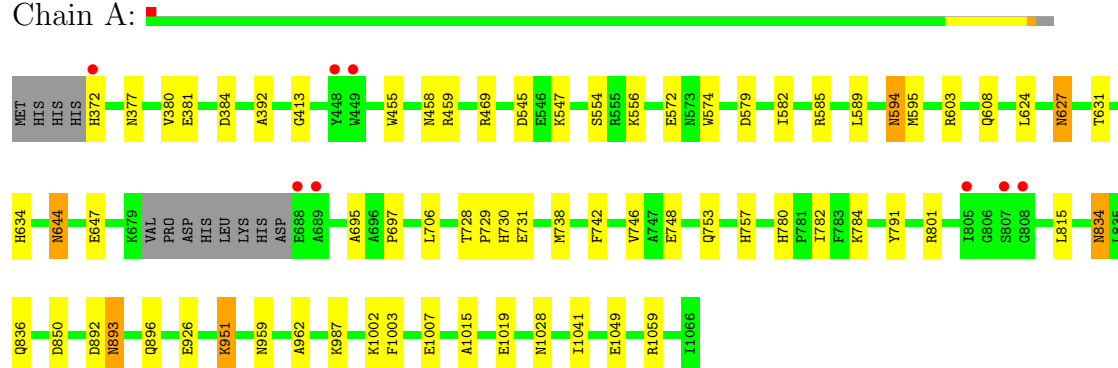
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	821	Total O 821 821	0	0
7	B	565	Total O 565 565	0	0
7	C	705	Total O 705 705	0	0
7	D	576	Total O 576 576	0	0

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 ($RSRZ > 2$). 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.

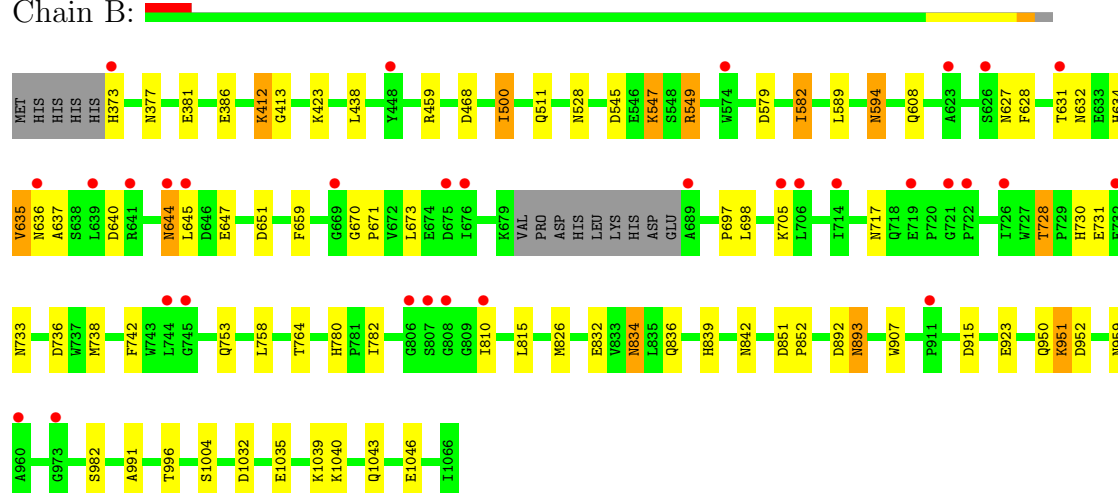
- Molecule 1: Allene oxide synthase-lipoxygenaseprotein

Chain A:



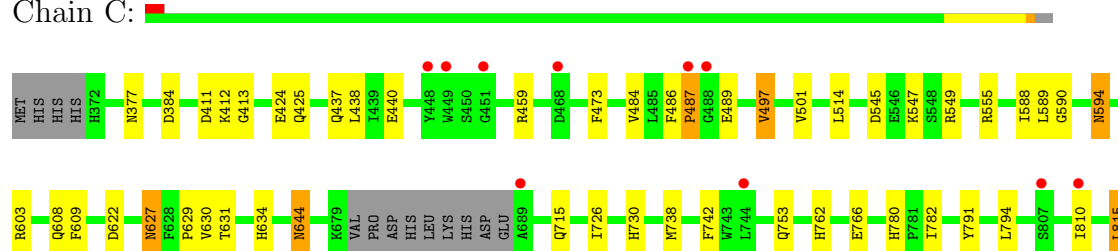
- Molecule 1: Allene oxide synthase-lipoxygenaseprotein

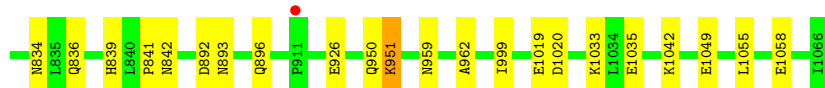
Chain B:



- Molecule 1: Allene oxide synthase-lipoxygenaseprotein

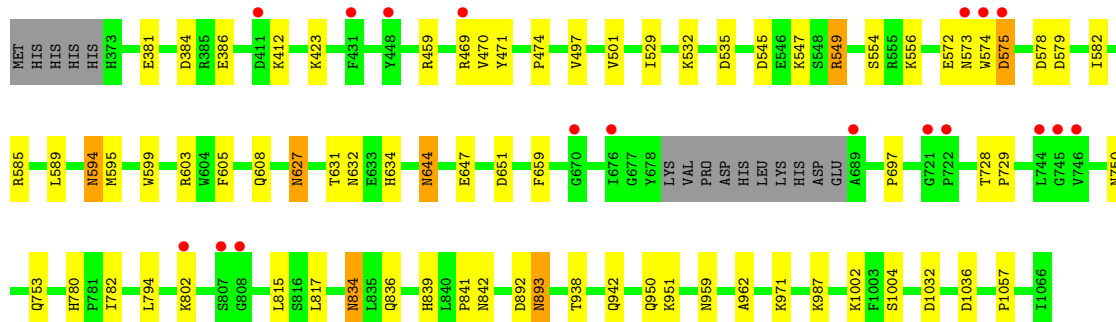
Chain C:





- Molecule 1: Allene oxide synthase-lipoxygenaseprotein

Chain D:



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	103.98Å 170.22Å 104.50Å 90.00° 95.88° 90.00°	Depositor
Resolution (Å)	30.00 – 1.85 27.72 – 1.85	Depositor EDS
% Data completeness (in resolution range)	98.6 (30.00-1.85) 98.7 (27.72-1.85)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.57 (at 1.85Å)	Xtriage
Refinement program	REFMAC 5.4.0066	Depositor
R, R_{free}	0.174 , 0.209 0.174 , 0.210	Depositor DCC
R_{free} test set	15295 reflections (5.31%)	DCC
Wilson B-factor (Å ²)	23.4	Xtriage
Anisotropy	0.230	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.38 , 51.2	EDS
Estimated twinning fraction	0.076 for l,-k,h	Xtriage
L-test for twinning	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.35$	Xtriage
Outliers	0 of 303069 reflections	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	25092	wwPDB-VP
Average B, all atoms (Å ²)	27.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.17% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: GOL, CA, FE2, ACY, CL

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	0.77	0/5720	0.71	0/7778
1	B	0.68	0/5754	0.66	1/7830 (0.0%)
1	C	0.76	0/5737	0.72	2/7804 (0.0%)
1	D	0.70	0/5740	0.70	4/7806 (0.1%)
All	All	0.73	0/22951	0.70	7/31218 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	D	0	1

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	549	ARG	NE-CZ-NH2	-10.97	114.81	120.30
1	D	549	ARG	NE-CZ-NH1	7.64	124.12	120.30
1	B	549	ARG	NE-CZ-NH2	-6.92	116.84	120.30
1	C	438	LEU	CA-CB-CG	6.14	129.42	115.30
1	C	549	ARG	NE-CZ-NH2	-5.67	117.47	120.30
1	D	535	ASP	CB-CG-OD2	5.59	123.33	118.30
1	D	585	ARG	NE-CZ-NH1	-5.11	117.74	120.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	D	574	TRP	Peptide

5.2 Close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5523	0	5257	86	0
1	B	5547	0	5257	68	0
1	C	5536	0	5263	77	1
1	D	5535	0	5271	70	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
3	A	3	0	0	0	0
3	B	1	0	0	0	0
3	C	3	0	0	0	0
3	D	1	0	0	0	0
4	A	40	0	30	5	0
4	B	16	0	12	2	0
4	C	28	0	21	2	0
4	D	20	0	15	6	0
5	A	66	0	88	21	0
5	B	30	0	40	14	0
5	C	42	0	56	14	0
5	D	24	0	32	5	0
6	A	2	0	0	0	0
6	B	1	0	0	0	0
6	C	2	0	0	1	0
6	D	1	0	0	0	0
7	A	821	0	0	25	0
7	B	565	0	0	10	1
7	C	705	0	0	20	0
7	D	576	0	0	10	0
All	All	25092	0	21342	314	1

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including

hydrogens) of the entry. The overall clashscore for this entry is 7.

All (314) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:547:LYS:HE2	7:A:2315:HOH:O	1.28	1.29
1:D:1002:LYS:HE2	7:D:1226:HOH:O	1.45	1.17
1:A:372:HIS:O	7:A:1076:HOH:O	1.66	1.12
1:C:412:LYS:HE2	7:C:1159:HOH:O	1.48	1.12
1:A:603[B]:ARG:HG2	1:A:603[B]:ARG:HH11	1.09	1.10
1:A:459:ARG:NH2	7:A:2102:HOH:O	1.80	1.10
1:C:1020[B]:ASP:OD2	6:C:2401:CL:CL	2.09	1.07
1:B:459:ARG:NH2	7:B:1911:HOH:O	1.89	1.04
1:C:547:LYS:HE3	1:C:791[B]:TYR:HE2	1.21	1.03
1:D:608:GLN:HE22	1:D:959:ASN:HD21	1.09	1.01
1:C:547:LYS:HD2	1:C:791[B]:TYR:OH	1.63	0.98
1:A:547:LYS:HE3	1:A:791[B]:TYR:HE2	1.28	0.98
1:C:413:GLY:O	5:C:2305:GOL:H11	1.63	0.97
1:A:547:LYS:HD2	1:A:791[B]:TYR:OH	1.63	0.97
1:B:893[A]:ASN:HD22	1:B:893[A]:ASN:H	1.13	0.94
1:C:631:THR:H	1:C:634:HIS:HD2	1.14	0.94
1:D:608:GLN:HB2	4:D:2206:ACY:H3	1.50	0.93
1:A:631:THR:H	1:A:634:HIS:HD2	1.09	0.92
1:C:489:GLU:CB	1:C:1020[B]:ASP:OD1	2.18	0.92
1:A:608:GLN:HE22	1:A:959:ASN:HD21	1.16	0.92
1:C:1049:GLU:OE1	7:C:2072:HOH:O	1.88	0.92
1:A:603[B]:ARG:HH11	1:A:603[B]:ARG:CG	1.82	0.91
1:A:780:HIS:HD2	1:A:782:ILE:H	1.17	0.90
1:C:608:GLN:HE22	1:C:959:ASN:HD21	1.17	0.89
1:C:547:LYS:HE3	1:C:791[B]:TYR:CE2	2.08	0.88
1:A:834:ASN:HD22	1:A:836:GLN:H	1.19	0.88
1:C:834:ASN:HD22	1:C:836:GLN:H	1.22	0.88
1:D:780:HIS:HD2	1:D:782:ILE:H	1.21	0.87
1:B:780:HIS:HD2	1:B:782:ILE:H	1.19	0.87
1:C:780:HIS:HD2	1:C:782:ILE:H	1.19	0.87
1:C:1049:GLU:OE2	7:C:2153:HOH:O	1.91	0.86
1:D:579:ASP:OD2	5:D:2302[A]:GOL:H2	1.74	0.86
1:B:728:THR:HG23	1:B:730:HIS:H	1.39	0.85
1:D:834:ASN:HD22	1:D:836:GLN:H	1.24	0.85
1:B:893[A]:ASN:H	1:B:893[A]:ASN:ND2	1.73	0.85
1:C:627:ASN:H	1:C:627:ASN:HD22	1.25	0.83
1:D:599:TRP:HE1	4:D:2204:ACY:H3	1.43	0.83
1:D:579:ASP:CG	5:D:2302[A]:GOL:H2	2.01	0.81
5:A:2309[A]:GOL:H31	1:B:413:GLY:O	1.80	0.81
1:C:459:ARG:NH2	7:C:1938:HOH:O	2.12	0.81

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:834:ASN:HD22	1:B:836:GLN:H	1.29	0.80
1:B:381[B]:GLU:HG2	1:B:423:LYS:HG2	1.62	0.80
1:A:413:GLY:O	5:B:2306:GOL:C1	2.30	0.80
1:A:1049:GLU:OE2	7:A:2119:HOH:O	2.00	0.79
5:A:2309[B]:GOL:H2	7:A:2549:HOH:O	1.83	0.79
1:C:753[A]:GLN:HE22	1:C:950:GLN:NE2	1.81	0.78
1:D:459:ARG:HH21	1:D:474:PRO:HB3	1.46	0.78
1:A:1049:GLU:OE1	7:A:2081:HOH:O	2.02	0.78
1:B:631:THR:H	1:B:634:HIS:HD2	1.30	0.78
1:B:608:GLN:HE22	1:B:959:ASN:HD21	1.31	0.78
1:D:631:THR:H	1:D:634:HIS:HD2	1.29	0.77
1:A:547:LYS:HE3	1:A:791[B]:TYR:CE2	2.19	0.77
5:C:2305:GOL:H12	7:C:1287:HOH:O	1.83	0.76
1:B:839:HIS:HD2	1:B:842:ASN:H	1.33	0.76
1:D:753[A]:GLN:HE22	1:D:950:GLN:NE2	1.82	0.76
1:C:1035:GLU:OE2	5:C:2301[B]:GOL:O3	2.04	0.76
1:D:578:ASP:OD1	4:D:2204:ACY:H2	1.86	0.76
1:D:627:ASN:HD22	1:D:627:ASN:H	1.31	0.75
1:D:459:ARG:NH2	7:D:1967:HOH:O	2.06	0.75
5:C:2301[B]:GOL:H32	7:C:2551:HOH:O	1.86	0.75
1:B:511[B]:GLN:OE1	7:B:1948:HOH:O	2.04	0.75
1:C:473:PHE:CE2	1:C:487:PRO:HB3	2.21	0.75
1:A:384:ASP:H	5:A:2306:GOL:H31	1.52	0.74
1:A:413:GLY:O	5:B:2306:GOL:H11	1.88	0.74
1:D:631:THR:H	1:D:634:HIS:CD2	2.07	0.73
1:A:603[B]:ARG:HD3	7:A:1219:HOH:O	1.89	0.72
1:C:631:THR:H	1:C:634:HIS:CD2	2.04	0.72
1:A:748:GLU:OE1	4:A:2200[B]:ACY:CH3	2.37	0.72
1:D:1036[B]:ASP:OD1	7:D:1730:HOH:O	2.06	0.72
1:A:1059:ARG:HA	4:A:2204:ACY:H1	1.72	0.71
1:A:730:HIS:ND1	7:A:2216:HOH:O	2.23	0.71
1:D:839:HIS:HD2	1:D:842:ASN:H	1.39	0.71
1:A:413:GLY:O	5:B:2306:GOL:H12	1.91	0.70
1:B:640:ASP:OD2	1:B:705:LYS:HG2	1.92	0.70
1:C:622:ASP:OD1	7:C:2142:HOH:O	2.10	0.69
1:D:497:VAL:HG13	1:D:501:VAL:HB	1.75	0.69
5:A:2303:GOL:O1	5:B:2306:GOL:H2	1.93	0.69
1:A:780:HIS:CD2	1:A:782:ILE:H	2.07	0.68
1:C:497:VAL:HG13	1:C:501:VAL:HB	1.75	0.68
1:C:547:LYS:CE	1:C:791[B]:TYR:HE2	2.03	0.68
1:A:631:THR:H	1:A:634:HIS:CD2	2.02	0.68
5:C:2301[A]:GOL:O3	5:C:2301[A]:GOL:O1	2.10	0.68

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:D:780:HIS:CD2	1:D:782:ILE:H	2.10	0.67
1:D:381[B]:GLU:HG2	1:D:423:LYS:HG2	1.76	0.67
1:A:603[B]:ARG:NH1	7:A:2319:HOH:O	2.27	0.67
1:A:627:ASN:HD22	1:A:627:ASN:H	1.42	0.67
1:C:753[A]:GLN:HE22	1:C:950:GLN:HE21	1.42	0.66
1:C:437:GLN:O	1:C:487:PRO:HG3	1.96	0.66
5:A:2305:GOL:H12	7:A:2361:HOH:O	1.96	0.66
5:C:2302:GOL:H12	7:C:2555:HOH:O	1.94	0.65
1:A:987:LYS:NZ	7:A:2594:HOH:O	2.28	0.65
1:D:839:HIS:HE1	7:D:1165:HOH:O	1.80	0.65
1:D:893[A]:ASN:ND2	1:D:893[A]:ASN:H	1.92	0.65
5:A:2306:GOL:H31	7:A:1110:HOH:O	1.97	0.64
1:C:839:HIS:HE1	7:C:1121:HOH:O	1.80	0.64
1:A:753[A]:GLN:HE22	1:A:757:HIS:HD1	1.44	0.64
1:B:1035:GLU:OE1	5:B:2306:GOL:H31	1.97	0.64
1:A:603[B]:ARG:HG2	1:A:603[B]:ARG:NH1	1.92	0.63
1:D:780:HIS:HE1	1:D:892:ASP:OD2	1.82	0.63
1:D:632[B]:ASN:HD22	1:D:632[B]:ASN:H	1.45	0.63
1:B:915:ASP:OD1	7:B:1824:HOH:O	2.15	0.63
5:C:2302:GOL:C1	7:C:2555:HOH:O	2.47	0.62
1:C:608:GLN:HB2	4:C:2201[A]:ACY:H3	1.81	0.62
1:D:589:LEU:HB3	1:D:951:LYS:HG3	1.80	0.62
1:B:780:HIS:CD2	1:B:782:ILE:H	2.09	0.62
1:C:839:HIS:HD2	1:C:842:ASN:H	1.47	0.62
1:D:386[A]:GLU:OE2	1:D:549:ARG:NH2	2.30	0.61
1:B:753[B]:GLN:OE1	1:B:815:LEU:HD11	2.00	0.61
1:D:753[A]:GLN:HE22	1:D:950:GLN:HE21	1.46	0.61
1:C:780:HIS:CD2	1:C:782:ILE:H	2.10	0.61
1:A:582:ILE:HD11	1:D:582:ILE:HD11	1.83	0.61
1:A:631:THR:N	1:A:634:HIS:HD2	1.92	0.61
5:C:2301[B]:GOL:C3	7:C:2551:HOH:O	2.46	0.60
1:C:730:HIS:ND1	7:C:1676:HOH:O	2.00	0.60
1:A:589:LEU:HB3	1:A:951:LYS:HG3	1.84	0.60
1:D:573[A]:ASN:O	5:D:2302[A]:GOL:O2	2.20	0.59
1:A:748:GLU:OE1	4:A:2200[B]:ACY:H2	2.00	0.59
1:D:644:ASN:C	1:D:644:ASN:HD22	2.06	0.59
1:B:753[A]:GLN:HE22	1:B:950:GLN:NE2	2.00	0.59
1:A:753[A]:GLN:NE2	1:A:757:HIS:HD1	2.00	0.59
5:A:2309[A]:GOL:H2	7:B:2550:HOH:O	2.01	0.58
1:A:644[A]:ASN:ND2	1:A:647:GLU:H	2.01	0.58
1:C:412:LYS:CE	7:C:1159:HOH:O	2.25	0.58
1:D:547:LYS:HD3	1:D:1004:SER:HB3	1.85	0.58

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:780:HIS:HD2	1:A:782:ILE:N	1.97	0.58
1:A:547:LYS:CE	1:A:791[B]:TYR:HE2	2.09	0.58
1:A:579:ASP:OD2	5:A:2305:GOL:H2	2.03	0.57
1:D:644:ASN:ND2	1:D:647:GLU:H	2.02	0.57
1:B:839:HIS:CD2	1:B:842:ASN:H	2.17	0.57
1:B:547:LYS:O	1:B:547:LYS:HD2	2.05	0.57
1:C:547:LYS:CD	1:C:791[B]:TYR:OH	2.46	0.57
1:B:834:ASN:ND2	1:B:836:GLN:H	2.01	0.57
1:C:411:ASP:OD1	5:C:2305:GOL:H31	2.05	0.57
1:C:609:PHE:CE1	4:C:2201[A]:ACY:H2	2.40	0.56
5:A:2303:GOL:HO1	5:B:2306:GOL:H2	1.68	0.56
1:A:1003:PHE:CE1	4:A:2204:ACY:H2	2.41	0.56
5:A:2305:GOL:C1	7:A:2361:HOH:O	2.51	0.56
1:C:377:ASN:ND2	7:C:1220:HOH:O	2.39	0.56
1:D:469[A]:ARG:NH2	7:D:1531:HOH:O	2.37	0.56
1:D:632[B]:ASN:ND2	1:D:632[B]:ASN:H	2.04	0.56
1:B:631:THR:N	1:B:634:HIS:HD2	2.02	0.56
1:A:384:ASP:H	5:A:2306:GOL:C3	2.17	0.56
1:A:392:ALA:O	5:A:2303:GOL:H2	2.06	0.56
1:B:959:ASN:O	4:B:2201:ACY:H1	2.06	0.56
1:B:589:LEU:HB3	1:B:951:LYS:HG3	1.87	0.56
1:C:631:THR:N	1:C:634:HIS:HD2	1.94	0.55
1:C:489:GLU:CB	7:C:1245:HOH:O	2.54	0.55
1:D:532:LYS:O	1:D:802:LYS:HE3	2.06	0.55
1:C:547:LYS:CE	1:C:791[B]:TYR:CE2	2.86	0.55
1:C:834:ASN:ND2	1:C:836:GLN:H	1.99	0.55
1:B:1035:GLU:CD	5:B:2306:GOL:H31	2.26	0.55
7:C:1118:HOH:O	1:D:412:LYS:HE2	2.07	0.55
1:B:631:THR:H	1:B:634:HIS:CD2	2.17	0.55
1:C:377:ASN:HB3	1:C:425[A]:GLN:HE22	1.72	0.55
1:B:839:HIS:HE1	7:B:1473:HOH:O	1.89	0.55
1:C:589:LEU:HB3	1:C:951:LYS:HG3	1.89	0.55
1:D:627:ASN:ND2	1:D:627:ASN:H	2.04	0.54
5:A:2305:GOL:H31	7:A:2595:HOH:O	2.07	0.54
1:C:627:ASN:H	1:C:627:ASN:ND2	1.98	0.54
1:A:458:ASN:OD1	5:A:2306:GOL:H2	2.06	0.54
1:D:839:HIS:CD2	1:D:842:ASN:H	2.22	0.54
1:B:386[A]:GLU:OE2	1:B:549:ARG:NH2	2.37	0.54
1:C:738:MET:HG3	1:C:742:PHE:CE1	2.43	0.54
1:B:780:HIS:HE1	1:B:892:ASP:OD2	1.91	0.54
1:A:603[B]:ARG:CG	1:A:603[B]:ARG:NH1	2.54	0.54
1:B:386[B]:GLU:OE1	1:B:549:ARG:NH2	2.35	0.54

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:D:971:LYS:HE3	7:D:2371:HOH:O	2.08	0.54
1:A:603[B]:ARG:CD	7:A:1219:HOH:O	2.53	0.53
1:A:1041:ILE:HG13	5:A:2307:GOL:H32	1.89	0.53
1:A:582:ILE:CD1	1:D:582:ILE:HD11	2.38	0.53
1:B:632:ASN:O	1:B:636:ASN:HB2	2.09	0.53
1:A:554:SER:HB3	1:A:1002:LYS:HD3	1.90	0.53
1:A:1015:ALA:HB2	5:A:2306:GOL:H11	1.89	0.53
1:D:750:ASN:ND2	1:D:815:LEU:HG	2.24	0.53
1:B:670:GLY:N	1:B:671:PRO:CD	2.72	0.52
1:C:815:LEU:HD12	1:C:962:ALA:HB1	1.91	0.52
5:B:2307[B]:GOL:H31	7:B:1699:HOH:O	2.10	0.52
1:A:381[A]:GLU:OE1	1:B:423:LYS:HE2	2.10	0.52
1:B:1043:GLN:O	1:B:1046:GLU:HG2	2.10	0.51
1:A:624:LEU:O	4:A:2205:ACY:H1	2.09	0.51
1:A:579:ASP:OD2	5:A:2305:GOL:C2	2.59	0.51
1:A:547:LYS:CE	1:A:791[B]:TYR:CE2	2.90	0.50
1:A:547:LYS:CD	1:A:791[B]:TYR:OH	2.48	0.50
1:A:834:ASN:ND2	1:A:836:GLN:H	2.00	0.50
1:B:579:ASP:OD1	5:B:2307[B]:GOL:H32	2.10	0.50
1:D:815:LEU:HD12	1:D:962:ALA:HB1	1.94	0.50
1:A:556:LYS:NZ	7:A:2385:HOH:O	2.45	0.50
1:B:659:PHE:HB2	1:B:697:PRO:HD2	1.94	0.50
1:D:659:PHE:HB2	1:D:697:PRO:HD2	1.94	0.49
1:A:603[A]:ARG:HD2	7:A:1219:HOH:O	2.11	0.49
1:C:1049:GLU:HG3	7:C:2072:HOH:O	2.11	0.49
1:A:728:THR:O	1:A:731:GLU:HG2	2.12	0.49
1:C:780:HIS:HE1	1:C:892:ASP:OD2	1.96	0.49
1:A:1041:ILE:HG13	5:A:2307:GOL:C3	2.43	0.49
1:C:839:HIS:CD2	1:C:842:ASN:H	2.27	0.49
1:D:753[B]:GLN:HE22	4:D:2201:ACY:C	2.26	0.49
1:C:1035:GLU:CD	5:C:2301[B]:GOL:O3	2.51	0.49
1:A:706:LEU:HG	7:A:1682:HOH:O	2.13	0.49
1:C:780:HIS:HD2	1:C:782:ILE:N	2.00	0.48
1:D:938:THR:HA	1:D:942:GLN:HB3	1.94	0.48
1:D:631:THR:N	1:D:634:HIS:HD2	2.04	0.48
1:D:579:ASP:OD1	5:D:2302[A]:GOL:H2	2.13	0.48
1:B:594:ASN:ND2	1:B:952:ASP:HB3	2.28	0.48
1:B:579:ASP:O	1:B:582:ILE:HG22	2.14	0.48
1:B:810:ILE:HG23	1:B:996:THR:OG1	2.14	0.48
1:D:605:PHE:O	4:D:2206:ACY:CH3	2.61	0.47
1:B:764:THR:HB	1:B:907:TRP:CZ2	2.48	0.47
1:B:627:ASN:HD22	1:B:627:ASN:H	1.63	0.47

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:1015:ALA:CB	5:A:2306:GOL:H11	2.44	0.47
1:C:839:HIS:CD2	1:C:841:PRO:HD2	2.49	0.47
1:A:926[A]:GLU:H	1:A:926[A]:GLU:CD	2.18	0.47
1:D:497:VAL:CG1	1:D:501:VAL:HB	2.43	0.47
1:C:384[B]:ASP:OD2	7:C:1194:HOH:O	2.20	0.47
1:A:377:ASN:ND2	7:A:1182:HOH:O	2.47	0.47
1:A:892:ASP:O	1:A:896:GLN:HG2	2.15	0.47
1:D:893[A]:ASN:HD22	1:D:893[A]:ASN:H	1.60	0.47
1:D:728:THR:HB	1:D:729:PRO:HD2	1.97	0.47
1:C:893:ASN:H	1:C:893:ASN:ND2	2.13	0.47
1:C:555:ARG:HD3	1:C:999:ILE:HD13	1.96	0.47
1:B:438:LEU:HD21	1:B:500:ILE:HD13	1.95	0.47
1:A:815:LEU:HD23	1:A:962:ALA:HB1	1.96	0.47
1:A:738:MET:HG3	1:A:742:PHE:CE1	2.51	0.47
1:A:780:HIS:HE1	1:A:892:ASP:OD2	1.98	0.46
1:B:728:THR:O	1:B:731:GLU:HG2	2.14	0.46
1:B:738:MET:HG3	1:B:742:PHE:CE1	2.50	0.46
1:C:1042:LYS:HE3	1:C:1058[B]:GLU:OE1	2.16	0.46
1:A:572:GLU:HB3	5:A:2305:GOL:O3	2.15	0.46
1:A:951:LYS:NZ	7:A:2615:HOH:O	2.48	0.46
1:A:850:ASP:OD1	7:A:1829:HOH:O	2.21	0.46
5:A:2304:GOL:H31	7:A:1551:HOH:O	2.14	0.46
5:C:2305:GOL:H12	1:D:1032:ASP:OD1	2.16	0.46
1:B:758:LEU:HD23	1:B:826:MET:SD	2.55	0.46
1:B:753[A]:GLN:HE22	1:B:950:GLN:HE21	1.62	0.45
1:D:644:ASN:HD22	1:D:647:GLU:H	1.64	0.45
1:C:892:ASP:O	1:C:896:GLN:HG2	2.16	0.45
1:B:1040:LYS:HA	1:B:1043:GLN:HE21	1.81	0.45
1:C:594:ASN:HD22	1:C:594:ASN:C	2.19	0.45
1:B:644[A]:ASN:ND2	1:B:647:GLU:HG3	2.32	0.45
1:B:753[A]:GLN:CG	7:B:2350:HOH:O	2.64	0.45
1:C:589:LEU:N	1:C:590:GLY:HA2	2.31	0.45
1:B:386[A]:GLU:CD	1:B:549:ARG:HH22	2.16	0.45
1:D:575:ASP:HB3	5:D:2302[B]:GOL:O2	2.16	0.45
1:B:377:ASN:ND2	7:B:1446:HOH:O	2.49	0.45
1:B:579:ASP:OD2	5:B:2307[A]:GOL:H31	2.17	0.44
1:D:554:SER:HB3	1:D:1002:LYS:HD3	2.00	0.44
1:C:766:GLU:HG3	1:C:794:LEU:HD23	2.00	0.44
1:A:801:ARG:HD3	7:A:1353:HOH:O	2.16	0.44
1:C:926:GLU:CD	1:C:926:GLU:H	2.21	0.44
1:B:635:VAL:HG11	1:B:645:LEU:HD13	1.98	0.44
4:D:2204:ACY:H1	7:D:2265:HOH:O	2.17	0.44

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:628:PHE:HB2	1:B:698:LEU:HD22	2.00	0.44
1:B:733:ASN:HB3	1:B:736:ASP:OD2	2.17	0.43
1:A:1007:GLU:HB2	7:A:1234:HOH:O	2.19	0.43
1:A:627:ASN:H	1:A:627:ASN:ND2	2.11	0.43
1:B:594:ASN:C	1:B:594:ASN:HD22	2.21	0.43
1:C:413:GLY:O	5:C:2305:GOL:C1	2.51	0.43
1:D:780:HIS:HD2	1:D:782:ILE:N	2.01	0.43
1:C:588:ILE:HD11	1:D:556:LYS:NZ	2.33	0.43
1:C:590:GLY:HA2	7:C:250:HOH:O	2.17	0.43
1:C:440:GLU:HG2	1:C:484:VAL:HG22	2.01	0.43
1:A:585:ARG:HE	1:D:572:GLU:CD	2.22	0.43
1:A:413:GLY:C	5:B:2306:GOL:H12	2.38	0.43
1:D:750:ASN:HD22	1:D:817:LEU:HB2	1.84	0.43
1:C:412:LYS:HD2	7:D:1325:HOH:O	2.19	0.43
1:C:547:LYS:HD2	1:C:791[B]:TYR:CZ	2.51	0.43
1:A:893:ASN:ND2	1:A:893:ASN:H	2.17	0.43
1:C:1033:LYS:CG	7:C:1963:HOH:O	2.66	0.43
1:D:572:GLU:O	1:D:987:LYS:NZ	2.52	0.43
1:D:594:ASN:C	1:D:594:ASN:HD22	2.22	0.43
1:C:753[A]:GLN:NE2	1:C:950:GLN:NE2	2.60	0.42
1:B:673:LEU:HD11	1:B:717:ASN:OD1	2.19	0.42
1:A:594:ASN:HD22	1:A:594:ASN:C	2.22	0.42
1:B:832:GLU:HB2	5:B:2308:GOL:H12	2.00	0.42
1:A:380:VAL:HG11	1:A:455:TRP:CZ2	2.54	0.42
1:B:547:LYS:HD3	1:B:1004[A]:SER:HB3	2.01	0.42
1:D:529:ILE:HB	1:D:794:LEU:HD22	2.02	0.42
1:C:1055:LEU:HA	1:C:1055:LEU:HD23	1.93	0.42
1:C:459:ARG:HE	1:C:459:ARG:HB2	1.61	0.42
1:A:594:ASN:HD22	1:A:595:MET:N	2.17	0.42
1:A:784:LYS:HE3	7:A:1348:HOH:O	2.19	0.42
1:B:373[B]:HIS:N	7:B:1421:HOH:O	2.52	0.41
1:C:627:ASN:HD22	1:C:627:ASN:N	2.05	0.41
1:D:594:ASN:HD22	1:D:595:MET:N	2.19	0.41
1:C:486:PHE:HA	1:C:487:PRO:HD3	1.88	0.41
1:A:728:THR:HB	1:A:729:PRO:HD2	2.03	0.41
1:A:695:ALA:C	1:A:697:PRO:HD3	2.40	0.41
1:C:630:VAL:HG22	1:C:726:ILE:HD13	2.02	0.41
1:A:469:ARG:HB3	1:A:469:ARG:HE	1.57	0.41
1:D:834:ASN:ND2	1:D:836:GLN:H	2.04	0.41
1:B:991:ALA:HB1	4:B:2203:ACY:H3	2.03	0.41
1:C:424:GLU:OE2	1:C:424:GLU:HA	2.20	0.41
1:D:780:HIS:CE1	1:D:892:ASP:OD2	2.67	0.41

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:1032:ASP:OD1	5:B:2306:GOL:H12	2.20	0.41
5:C:2301[B]:GOL:H11	7:D:1207:HOH:O	2.20	0.41
1:D:469[A]:ARG:HD3	1:D:471:TYR:CE2	2.55	0.41
1:D:750:ASN:HD21	1:D:817:LEU:H	1.67	0.41
1:B:1039:LYS:O	1:B:1043:GLN:HG3	2.21	0.41
1:A:1028:ASN:ND2	1:B:412:LYS:HE3	2.35	0.41
1:B:851:ASP:HA	1:B:852:PRO:HD3	1.92	0.41
1:A:459:ARG:CZ	1:A:1019:GLU:OE2	2.69	0.41
1:B:637:ALA:HB3	1:B:730:HIS:CE1	2.56	0.41
1:D:839:HIS:CD2	1:D:841:PRO:HD2	2.56	0.41
1:D:469[A]:ARG:HG2	1:D:470:VAL:N	2.37	0.40
1:C:459:ARG:NH1	1:C:1019:GLU:OE2	2.55	0.40
1:B:412:LYS:HD3	7:B:158:HOH:O	2.21	0.40
1:C:1035:GLU:OE2	5:C:2301[A]:GOL:H32	2.22	0.40
1:A:582:ILE:CD1	1:D:582:ILE:CD1	3.00	0.40
1:C:629:PRO:HD2	1:C:715:GLN:HE22	1.85	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:622:ASP:OD2	7:B:1108:HOH:O[1_556]	1.97	0.23

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	696/696 (100%)	674 (97%)	22 (3%)	0	100	100
1	B	699/696 (100%)	677 (97%)	22 (3%)	0	100	100
1	C	697/696 (100%)	667 (96%)	28 (4%)	2 (0%)	50	32
1	D	698/696 (100%)	674 (97%)	24 (3%)	0	100	100
All	All	2790/2784 (100%)	2692 (96%)	96 (3%)	2 (0%)	59	42

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	487	PRO
1	C	762	HIS

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	585/602 (97%)	575 (98%)	10 (2%)	73	59
1	B	588/602 (98%)	568 (97%)	20 (3%)	49	28
1	C	587/602 (98%)	576 (98%)	11 (2%)	69	55
1	D	584/602 (97%)	572 (98%)	12 (2%)	66	50
All	All	2344/2408 (97%)	2291 (98%)	53 (2%)	66	46

All (53) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	545	ASP
1	A	574	TRP
1	A	594	ASN
1	A	627	ASN
1	A	644[A]	ASN
1	A	644[B]	ASN
1	A	746	VAL
1	A	834	ASN
1	A	893	ASN
1	A	951	LYS
1	B	412	LYS
1	B	468[A]	ASP
1	B	468[B]	ASP
1	B	500	ILE
1	B	528	ASN
1	B	545	ASP
1	B	547	LYS
1	B	582	ILE
1	B	594	ASN
1	B	635	VAL
1	B	644[A]	ASN

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Mol	Chain	Res	Type
1	B	644[B]	ASN
1	B	651	ASP
1	B	728	THR
1	B	834	ASN
1	B	893[A]	ASN
1	B	893[B]	ASN
1	B	923	GLU
1	B	951	LYS
1	B	982	SER
1	C	497	VAL
1	C	514	LEU
1	C	545	ASP
1	C	594	ASN
1	C	603	ARG
1	C	627	ASN
1	C	644[A]	ASN
1	C	644[B]	ASN
1	C	810	ILE
1	C	815	LEU
1	C	951	LYS
1	D	384	ASP
1	D	545	ASP
1	D	575	ASP
1	D	594	ASN
1	D	603	ARG
1	D	627	ASN
1	D	644	ASN
1	D	651	ASP
1	D	834	ASN
1	D	893[A]	ASN
1	D	893[B]	ASN
1	D	1057	PRO

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (75) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	377	ASN
1	A	458	ASN
1	A	594	ASN
1	A	614	ASN
1	A	627	ASN
1	A	634	HIS

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Mol	Chain	Res	Type
1	A	718	GLN
1	A	730	HIS
1	A	750	ASN
1	A	780	HIS
1	A	834	ASN
1	A	842	ASN
1	A	893	ASN
1	A	947	ASN
1	A	950	GLN
1	A	959	ASN
1	B	377	ASN
1	B	458	ASN
1	B	467	GLN
1	B	504	GLN
1	B	594	ASN
1	B	614	ASN
1	B	627	ASN
1	B	634	HIS
1	B	636	ASN
1	B	730	HIS
1	B	750	ASN
1	B	780	HIS
1	B	834	ASN
1	B	839	HIS
1	B	842	ASN
1	B	905	ASN
1	B	947	ASN
1	B	950	GLN
1	B	959	ASN
1	B	1043	GLN
1	C	377	ASN
1	C	458	ASN
1	C	504	GLN
1	C	594	ASN
1	C	614	ASN
1	C	627	ASN
1	C	634	HIS
1	C	715	GLN
1	C	750	ASN
1	C	780	HIS
1	C	834	ASN
1	C	839	HIS

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Mol	Chain	Res	Type
1	C	842	ASN
1	C	893	ASN
1	C	905	ASN
1	C	947	ASN
1	C	950	GLN
1	C	959	ASN
1	C	1043	GLN
1	D	458	ASN
1	D	467	GLN
1	D	504	GLN
1	D	517	GLN
1	D	594	ASN
1	D	614	ASN
1	D	627	ASN
1	D	634	HIS
1	D	644	ASN
1	D	730	HIS
1	D	750	ASN
1	D	780	HIS
1	D	834	ASN
1	D	839	HIS
1	D	842	ASN
1	D	905	ASN
1	D	947	ASN
1	D	950	GLN
1	D	959	ASN
1	D	1043	GLN

5.3.3 RNA ⓘ

There are no RNA chains in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry ⓘ

Of 71 ligands modelled in this entry, 18 are monoatomic - leaving 53 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$
4	ACY	A	2200[A]	-	3,3,3	0.54	0	3,3,3	1.17	0
4	ACY	A	2200[B]	-	3,3,3	0.74	0	3,3,3	0.87	0
4	ACY	A	2201[A]	-	3,3,3	0.58	0	3,3,3	0.91	0
4	ACY	A	2201[B]	-	3,3,3	0.67	0	3,3,3	0.64	0
4	ACY	A	2202	-	3,3,3	0.47	0	3,3,3	1.49	1 (33%)
4	ACY	A	2203	-	3,3,3	0.50	0	3,3,3	1.11	0
4	ACY	A	2204	-	3,3,3	0.55	0	3,3,3	1.18	0
4	ACY	A	2205	-	3,3,3	0.69	0	3,3,3	1.18	0
4	ACY	A	2206	-	3,3,3	0.68	0	3,3,3	0.50	0
4	ACY	A	2207	-	3,3,3	0.69	0	3,3,3	0.58	0
5	GOL	A	2301	-	5,5,5	0.50	0	5,5,5	0.41	0
5	GOL	A	2302	-	5,5,5	0.45	0	5,5,5	0.69	0
5	GOL	A	2303	-	5,5,5	0.31	0	5,5,5	0.39	0
5	GOL	A	2304	-	5,5,5	0.43	0	5,5,5	0.38	0
5	GOL	A	2305	-	5,5,5	0.43	0	5,5,5	0.90	0
5	GOL	A	2306	-	5,5,5	0.32	0	5,5,5	0.90	0
5	GOL	A	2307	-	5,5,5	0.76	0	5,5,5	0.69	0
5	GOL	A	2308	-	5,5,5	0.32	0	5,5,5	0.20	0
5	GOL	A	2309[A]	-	5,5,5	0.26	0	5,5,5	0.72	0
5	GOL	A	2309[B]	-	5,5,5	0.30	0	5,5,5	0.62	0
5	GOL	A	2310	-	5,5,5	0.41	0	5,5,5	0.41	0
4	ACY	B	2201	-	3,3,3	0.64	0	3,3,3	0.90	0
4	ACY	B	2202	-	3,3,3	0.52	0	3,3,3	1.27	0
4	ACY	B	2203	-	3,3,3	0.64	0	3,3,3	0.75	0
4	ACY	B	2204	-	3,3,3	0.65	0	3,3,3	0.58	0
5	GOL	B	2305	-	5,5,5	0.23	0	5,5,5	0.33	0
5	GOL	B	2306	-	5,5,5	0.49	0	5,5,5	1.91	2 (40%)
5	GOL	B	2307[A]	-	5,5,5	0.29	0	5,5,5	0.84	0
5	GOL	B	2307[B]	-	5,5,5	0.36	0	5,5,5	0.34	0
5	GOL	B	2308	-	5,5,5	0.30	0	5,5,5	0.77	0
4	ACY	C	2201[A]	-	3,3,3	0.37	0	3,3,3	1.27	0
4	ACY	C	2201[B]	-	3,3,3	0.83	0	3,3,3	0.58	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	ACY	C	2202	-	3,3,3	0.70	0	3,3,3	0.33	0
4	ACY	C	2203	-	3,3,3	0.61	0	3,3,3	0.96	0
4	ACY	C	2204	-	3,3,3	0.58	0	3,3,3	0.85	0
4	ACY	C	2205	-	3,3,3	0.68	0	3,3,3	0.94	0
4	ACY	C	2207	-	3,3,3	0.60	0	3,3,3	0.80	0
5	GOL	C	2301[A]	-	5,5,5	0.34	0	5,5,5	0.78	0
5	GOL	C	2301[B]	-	5,5,5	0.23	0	5,5,5	0.70	0
5	GOL	C	2302	-	5,5,5	0.86	0	5,5,5	1.03	0
5	GOL	C	2303	-	5,5,5	0.56	0	5,5,5	0.72	0
5	GOL	C	2304	-	5,5,5	0.30	0	5,5,5	0.40	0
5	GOL	C	2305	-	5,5,5	0.32	0	5,5,5	0.41	0
5	GOL	C	2307	-	5,5,5	0.34	0	5,5,5	1.00	0
4	ACY	D	2201	-	3,3,3	0.58	0	3,3,3	1.01	0
4	ACY	D	2202	-	3,3,3	0.61	0	3,3,3	0.88	0
4	ACY	D	2203	-	3,3,3	0.69	0	3,3,3	0.77	0
4	ACY	D	2204	-	3,3,3	0.72	0	3,3,3	0.24	0
4	ACY	D	2206	-	3,3,3	0.77	0	3,3,3	0.66	0
5	GOL	D	2301	-	5,5,5	0.37	0	5,5,5	0.56	0
5	GOL	D	2302[A]	-	5,5,5	0.43	0	5,5,5	0.55	0
5	GOL	D	2302[B]	-	5,5,5	0.39	0	5,5,5	0.35	0
5	GOL	D	2303	-	5,5,5	0.32	0	5,5,5	0.23	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
4	ACY	A	2200[A]	-	-	0/0/0/0	0/0/0/0
4	ACY	A	2200[B]	-	-	0/0/0/0	0/0/0/0
4	ACY	A	2201[A]	-	-	0/0/0/0	0/0/0/0
4	ACY	A	2201[B]	-	-	0/0/0/0	0/0/0/0
4	ACY	A	2202	-	-	0/0/0/0	0/0/0/0
4	ACY	A	2203	-	-	0/0/0/0	0/0/0/0
4	ACY	A	2204	-	-	0/0/0/0	0/0/0/0
4	ACY	A	2205	-	-	0/0/0/0	0/0/0/0
4	ACY	A	2206	-	-	0/0/0/0	0/0/0/0
4	ACY	A	2207	-	-	0/0/0/0	0/0/0/0
5	GOL	A	2301	-	-	0/4/4/4	0/0/0/0
5	GOL	A	2302	-	-	0/4/4/4	0/0/0/0
5	GOL	A	2303	-	-	0/4/4/4	0/0/0/0
5	GOL	A	2304	-	-	0/4/4/4	0/0/0/0
5	GOL	A	2305	-	-	0/4/4/4	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	GOL	A	2306	-	-	0/4/4/4	0/0/0/0
5	GOL	A	2307	-	-	0/4/4/4	0/0/0/0
5	GOL	A	2308	-	-	0/4/4/4	0/0/0/0
5	GOL	A	2309[A]	-	-	0/4/4/4	0/0/0/0
5	GOL	A	2309[B]	-	-	0/4/4/4	0/0/0/0
5	GOL	A	2310	-	-	0/4/4/4	0/0/0/0
4	ACY	B	2201	-	-	0/0/0/0	0/0/0/0
4	ACY	B	2202	-	-	0/0/0/0	0/0/0/0
4	ACY	B	2203	-	-	0/0/0/0	0/0/0/0
4	ACY	B	2204	-	-	0/0/0/0	0/0/0/0
5	GOL	B	2305	-	-	0/4/4/4	0/0/0/0
5	GOL	B	2306	-	-	0/4/4/4	0/0/0/0
5	GOL	B	2307[A]	-	-	0/4/4/4	0/0/0/0
5	GOL	B	2307[B]	-	-	0/4/4/4	0/0/0/0
5	GOL	B	2308	-	-	0/4/4/4	0/0/0/0
4	ACY	C	2201[A]	-	-	0/0/0/0	0/0/0/0
4	ACY	C	2201[B]	-	-	0/0/0/0	0/0/0/0
4	ACY	C	2202	-	-	0/0/0/0	0/0/0/0
4	ACY	C	2203	-	-	0/0/0/0	0/0/0/0
4	ACY	C	2204	-	-	0/0/0/0	0/0/0/0
4	ACY	C	2205	-	-	0/0/0/0	0/0/0/0
4	ACY	C	2207	-	-	0/0/0/0	0/0/0/0
5	GOL	C	2301[A]	-	-	0/4/4/4	0/0/0/0
5	GOL	C	2301[B]	-	-	0/4/4/4	0/0/0/0
5	GOL	C	2302	-	-	0/4/4/4	0/0/0/0
5	GOL	C	2303	-	-	0/4/4/4	0/0/0/0
5	GOL	C	2304	-	-	0/4/4/4	0/0/0/0
5	GOL	C	2305	-	-	0/4/4/4	0/0/0/0
5	GOL	C	2307	-	-	0/4/4/4	0/0/0/0
4	ACY	D	2201	-	-	0/0/0/0	0/0/0/0
4	ACY	D	2202	-	-	0/0/0/0	0/0/0/0
4	ACY	D	2203	-	-	0/0/0/0	0/0/0/0
4	ACY	D	2204	-	-	0/0/0/0	0/0/0/0
4	ACY	D	2206	-	-	0/0/0/0	0/0/0/0
5	GOL	D	2301	-	-	0/4/4/4	0/0/0/0
5	GOL	D	2302[A]	-	-	0/4/4/4	0/0/0/0
5	GOL	D	2302[B]	-	-	0/4/4/4	0/0/0/0
5	GOL	D	2303	-	-	0/4/4/4	0/0/0/0

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
5	B	2306	GOL	O3-C3-C2	-3.32	93.51	109.71
5	B	2306	GOL	O2-C2-C1	2.10	117.79	108.22
4	A	2202	ACY	O-C-CH3	-2.06	113.08	122.06

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	684/696 (98%)	-0.31	8 (1%) 75 73	13, 21, 33, 51	8 (1%)
1	B	682/696 (97%)	0.06	32 (4%) 30 28	17, 28, 53, 64	6 (0%)
1	C	683/696 (98%)	-0.23	11 (1%) 68 68	15, 22, 34, 55	12 (1%)
1	D	681/696 (97%)	-0.03	18 (2%) 53 50	16, 27, 44, 58	4 (0%)
All	All	2730/2784 (98%)	-0.13	69 (2%) 54 52	13, 24, 44, 64	30 (1%)

All (69) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	448	TYR	4.3
1	B	722	PRO	4.3
1	A	448	TYR	4.3
1	B	644[A]	ASN	4.0
1	B	676	ILE	4.0
1	C	449	TRP	4.0
1	A	807	SER	3.9
1	C	448	TYR	3.9
1	C	807	SER	3.7
1	D	807	SER	3.7
1	B	744	LEU	3.5
1	B	807	SER	3.5
1	D	670	GLY	3.2
1	D	808	GLY	3.0
1	A	689	ALA	2.9
1	A	372	HIS	2.9
1	A	449	TRP	2.9
1	B	973	GLY	2.9
1	B	448	TYR	2.9
1	B	706	LEU	2.8
1	A	688	GLU	2.8

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Mol	Chain	Res	Type	RSRZ
1	D	721	GLY	2.8
1	D	722	PRO	2.7
1	B	675[A]	ASP	2.7
1	B	745	GLY	2.7
1	B	705	LYS	2.7
1	B	373[A]	HIS	2.7
1	C	689	ALA	2.7
1	B	806	GLY	2.6
1	D	689	ALA	2.6
1	B	960	ALA	2.6
1	B	645	LEU	2.6
1	B	721	GLY	2.6
1	B	623	ALA	2.5
1	B	714	ILE	2.5
1	B	574	TRP	2.5
1	D	411	ASP	2.5
1	B	636	ASN	2.5
1	D	745	GLY	2.5
1	D	574	TRP	2.4
1	D	744	LEU	2.4
1	D	676	ILE	2.4
1	B	626	SER	2.4
1	C	468	ASP	2.4
1	D	802	LYS	2.4
1	C	451	GLY	2.3
1	C	911	PRO	2.3
1	D	746	VAL	2.3
1	B	726	ILE	2.3
1	C	487	PRO	2.2
1	D	469[A]	ARG	2.2
1	B	641	ARG	2.2
1	B	689	ALA	2.1
1	C	810	ILE	2.1
1	A	808	GLY	2.1
1	B	669	GLY	2.1
1	C	488	GLY	2.1
1	C	744	LEU	2.1
1	D	575	ASP	2.1
1	A	805	ILE	2.1
1	B	732	GLU	2.1
1	D	431	PHE	2.1
1	B	631	THR	2.0

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Mol	Chain	Res	Type	RSRZ
1	B	911	PRO	2.0
1	D	573[A]	ASN	2.0
1	B	808	GLY	2.0
1	B	810	ILE	2.0
1	B	639	LEU	2.0
1	B	719	GLU	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 ⓘ

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	RSR	LLDF	B-factors(Å ²)	Q<0.9
4	ACY	A	2204	4/4	0.18	8.76	43,44,44,44	0
5	GOL	A	2308	6/6	0.17	6.57	50,53,54,55	0
4	ACY	B	2203	4/4	0.19	6.11	43,43,44,44	0
5	GOL	A	2310	6/6	0.12	5.72	26,37,40,47	0
4	ACY	A	2206	4/4	0.19	5.45	48,48,49,49	0
4	ACY	B	2202	4/4	0.15	5.43	41,42,43,43	0
5	GOL	A	2307	6/6	0.20	5.31	38,43,45,45	0
4	ACY	A	2207	4/4	0.17	4.53	46,46,47,47	0
5	GOL	A	2306	6/6	0.16	4.45	24,34,35,39	0
5	GOL	B	2308	6/6	0.15	4.34	36,40,42,43	0
4	ACY	D	2201	4/4	0.28	4.16	41,41,42,43	0
4	ACY	D	2206	4/4	0.27	4.13	36,36,37,37	0
4	ACY	C	2201[A]	4/4	0.23	3.90	15,16,17,17	4
4	ACY	C	2201[B]	4/4	0.23	3.77	17,18,19,19	4
4	ACY	C	2207	4/4	0.18	3.75	42,43,43,44	0

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Mol	Type	Chain	Res	Atoms	RSR	LLDF	B-factors(\AA^2)	Q<0.9
4	ACY	C	2205	4/4	0.24	3.60	36,37,38,39	0
4	ACY	D	2204	4/4	0.23	3.56	43,44,44,45	0
4	ACY	A	2202	4/4	0.20	3.43	37,38,39,40	0
5	GOL	A	2304	6/6	0.16	3.31	22,31,35,36	0
4	ACY	A	2205	4/4	0.21	3.24	34,35,37,37	0
4	ACY	A	2203	4/4	0.13	2.70	41,41,41,41	0
4	ACY	B	2201	4/4	0.26	2.29	37,37,37,38	0
5	GOL	A	2309[B]	6/6	0.21	2.17	33,36,37,37	6
5	GOL	D	2303	6/6	0.22	2.05	62,63,64,64	0
5	GOL	A	2309[A]	6/6	0.21	1.88	15,20,23,25	6
5	GOL	C	2307	6/6	0.15	1.87	32,36,38,38	0
4	ACY	A	2200[A]	4/4	0.16	1.85	17,17,17,19	4
4	ACY	A	2200[B]	4/4	0.16	1.84	16,16,17,18	4
4	ACY	C	2203	4/4	0.11	1.80	44,44,44,45	0
4	ACY	D	2202	4/4	0.12	1.53	45,46,46,46	0
5	GOL	C	2303	6/6	0.11	1.50	27,28,34,37	0
4	ACY	D	2203	4/4	0.14	1.22	50,51,51,51	0
5	GOL	C	2301[B]	6/6	0.19	1.18	35,41,41,42	6
5	GOL	C	2301[A]	6/6	0.19	1.06	12,15,16,21	6
4	ACY	C	2202	4/4	0.16	0.97	51,51,51,51	0
4	ACY	C	2204	4/4	0.11	0.56	38,38,38,39	0
5	GOL	C	2305	6/6	0.12	0.55	26,33,35,41	0
5	GOL	B	2306	6/6	0.14	0.52	26,37,38,39	0
5	GOL	A	2301	6/6	0.10	0.40	25,32,33,34	0
5	GOL	A	2303	6/6	0.12	0.27	30,37,39,42	0
5	GOL	C	2304	6/6	0.09	0.26	28,29,30,31	0
4	ACY	A	2201[A]	4/4	0.12	0.24	42,42,42,42	4
4	ACY	A	2201[B]	4/4	0.12	0.24	30,30,31,31	4
5	GOL	B	2307[A]	6/6	0.18	0.20	20,32,33,36	6
5	GOL	B	2307[B]	6/6	0.18	0.20	39,42,42,44	6
4	ACY	B	2204	4/4	0.12	0.13	50,50,50,51	0
5	GOL	C	2302	6/6	0.13	0.09	21,35,37,41	0
5	GOL	B	2305	6/6	0.10	0.01	27,30,32,32	0
5	GOL	D	2302[B]	6/6	0.16	-0.13	35,36,37,37	6
5	GOL	D	2302[A]	6/6	0.16	-0.13	22,24,25,25	6
5	GOL	A	2302	6/6	0.08	-0.21	24,26,30,31	0
5	GOL	D	2301	6/6	0.09	-0.23	29,29,31,35	0
5	GOL	A	2305	6/6	0.12	-0.47	20,31,35,41	0
3	CA	A	1067	1/1	0.06	-0.47	19,19,19,19	0
6	CL	A	2402	1/1	0.07	-0.49	41,41,41,41	0
6	CL	C	2402	1/1	0.06	-0.94	22,22,22,22	0
3	CA	C	1067	1/1	0.05	-0.99	20,20,20,20	0

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Mol	Type	Chain	Res	Atoms	RSR	LLDF	B-factors(\AA^2)	Q<0.9
6	CL	C	2401	1/1	0.06	-1.20	34,34,34,34	0
3	CA	D	1501	1/1	0.05	-1.26	21,21,21,21	0
3	CA	C	1502	1/1	0.04	-1.29	20,20,20,20	0
3	CA	A	1502	1/1	0.04	-1.59	20,20,20,20	0
6	CL	D	2401	1/1	0.04	-1.94	26,26,26,26	0
6	CL	B	2401	1/1	0.04	-2.04	25,25,25,25	0
3	CA	A	1501	1/1	0.04	-2.09	22,22,22,22	0
3	CA	B	1501	1/1	0.04	-2.60	22,22,22,22	0
3	CA	C	1501	1/1	0.03	-2.82	22,22,22,22	0
6	CL	A	2401	1/1	0.04	-3.29	22,22,22,22	0
2	FE2	A	1500	1/1	0.03	-3.38	19,19,19,19	0
2	FE2	C	1500	1/1	0.03	-4.06	20,20,20,20	0
2	FE2	D	1500	1/1	0.03	-4.15	23,23,23,23	0
2	FE2	B	1500	1/1	0.02	-4.27	24,24,24,24	0

6.5 Other polymers ⓘ

There are no such residues in this entry.