



Full wwPDB X-ray Structure Validation Report ⓘ

May 5, 2019 – 12:25 PM EDT

PDB ID : 1E4M
Title : MYROSINASE FROM SINAPIS ALBA
Authors : Burmeister, W.P.
Deposited on : 2000-07-10
Resolution : 1.20 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.0 (224370), CSD as540be (2019)
Xtriage (Phenix) : 1.13
EDS : rb-20031633
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)
Refmac : 5.8.0158
CCP4 : 7.0 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : rb-20031633

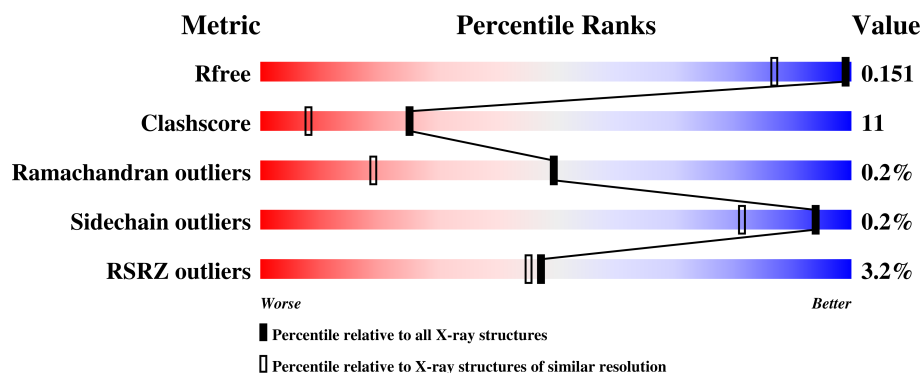
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.20 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}	111664	1010 (1.22-1.18)
Clashscore	122126	1064 (1.22-1.18)
Ramachandran outliers	120053	1024 (1.22-1.18)
Sidechain outliers	120020	1023 (1.22-1.18)
RSRZ outliers	108989	1278 (1.24-1.16)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	M	501	<div> <div>3%</div> <div>89%</div> <div>10%</div> </div>

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	NAG	M	961	X	-	-	X

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	NAG	M	971	-	-	-	X
2	NAG	M	991	-	-	-	X
4	BMA	M	954	-	-	X	-
6	MAN	M	957	X	-	X	X
8	SO4	M	1505	-	-	X	-
8	SO4	M	1507	-	X	-	-
8	SO4	M	1510	-	X	X	-

2 Entry composition [i](#)

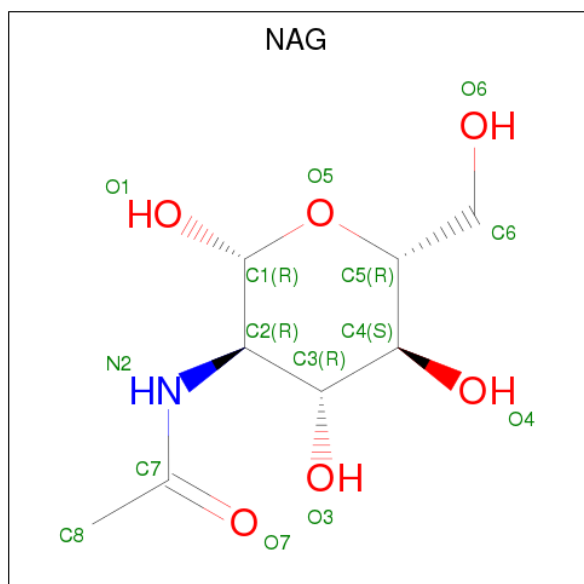
There are 10 unique types of molecules in this entry. The entry contains 5201 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 MYROSINASE MA1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	M	499	Total	C	N	O	S	0	21	0
			4082	2618	660	788	16			

- Molecule 2 is N-ACETYL-D-GLUCOSAMINE (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



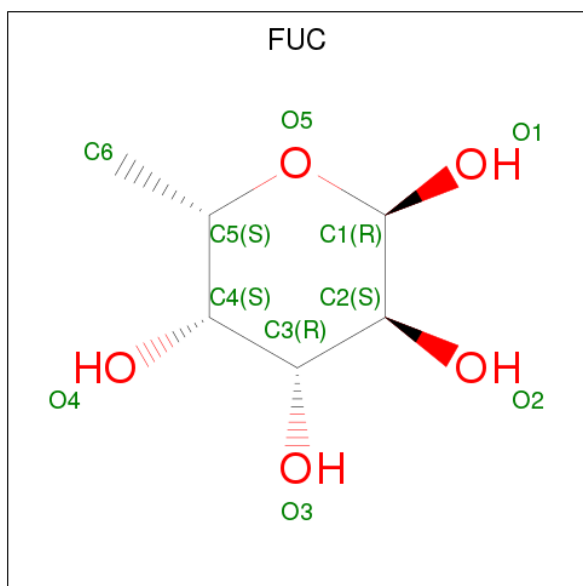
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	M	1	Total	C	N	O	0	0
			14	8	1	5		
2	M	1	Total	C	N	O	0	0
			14	8	1	5		
2	M	1	Total	C	N	O	0	0
			14	8	1	5		
2	M	1	Total	C	N	O	0	0
			14	8	1	5		
2	M	1	Total	C	N	O	0	0
			14	8	1	5		

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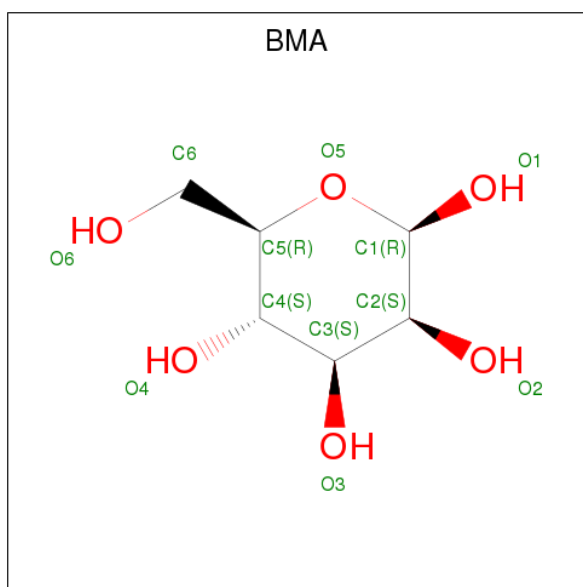
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	M	1	Total	C	N	O	0	0
			14	8	1	5		
2	M	1	Total	C	N	O	0	0
			14	8	1	5		
2	M	1	Total	C	N	O	0	0
			14	8	1	5		
2	M	1	Total	C	N	O	0	0
			14	8	1	5		
2	M	1	Total	C	N	O	0	0
			14	8	1	5		
2	M	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 3 is ALPHA-L-FUCOSE (three-letter code: FUC) (formula: C₆H₁₂O₅).



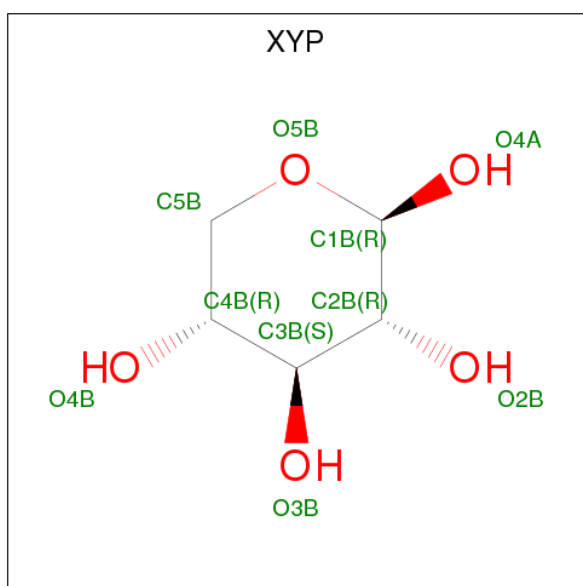
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	M	1	Total	C	O	0	0
			10	6	4		
3	M	1	Total	C	O	0	0
			10	6	4		

- Molecule 4 is BETA-D-MANNOSE (three-letter code: BMA) (formula: C₆H₁₂O₆).



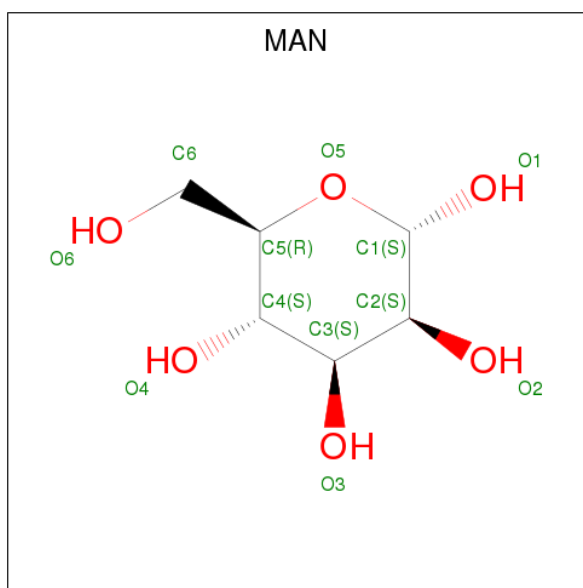
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	M	1	Total	C	O	0	0
			11	6	5		
4	M	1	Total	C	O	0	0
			11	6	5		

- Molecule 5 is BETA-D-XYLOPYRANOSE (three-letter code: XYP) (formula: $C_5H_{10}O_5$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	M	1	Total	C	O	0	0
			9	5	4		
5	M	1	Total	C	O	0	0
			9	5	4		

- Molecule 6 is ALPHA-D-MANNOSE (three-letter code: MAN) (formula: $C_6H_{12}O_6$).

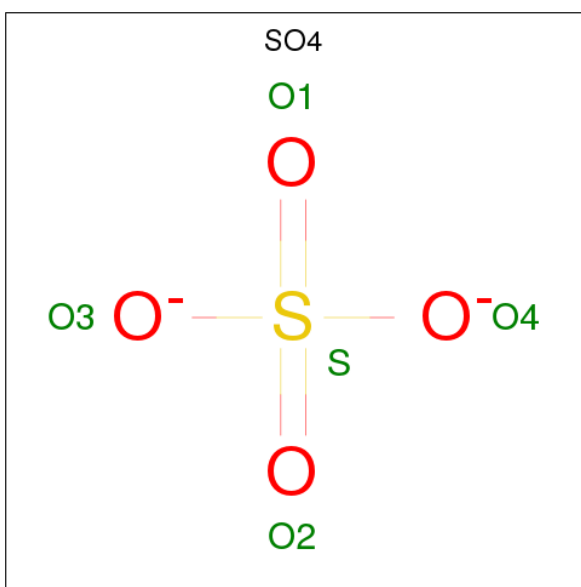


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	M	1	Total	C	O	0	0
			11	6	5		
6	M	1	Total	C	O	0	0
			11	6	5		

- Molecule 7 is ZINC ION (three-letter code: ZN) (formula: Zn).

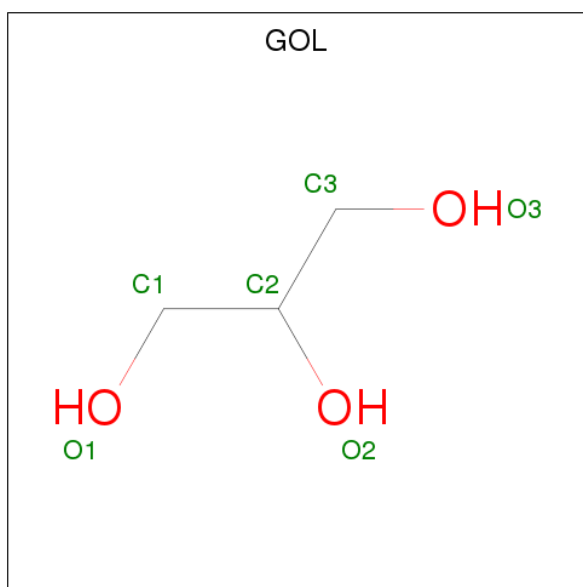
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	M	1	Total	Zn	0	0
			1	1		

- Molecule 8 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	M	1	Total	O	S	0	0
			5	4	1		
8	M	1	Total	O	S	0	0
			5	4	1		
8	M	1	Total	O	S	0	0
			5	4	1		
8	M	1	Total	O	S	0	0
			5	4	1		
8	M	1	Total	O	S	0	0
			5	4	1		
8	M	1	Total	O	S	0	0
			5	4	1		

- Molecule 9 is GLYCEROL (three-letter code: GOL) (formula: C₃H₈O₃).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
9	M	1	Total	C	O	0	0
			6	3	3		
9	M	1	Total	C	O	0	1
			7	3	4		
9	M	1	Total	C	O	0	0
			6	3	3		
9	M	1	Total	C	O	0	0
			6	3	3		
9	M	1	Total	C	O	0	0
			6	3	3		

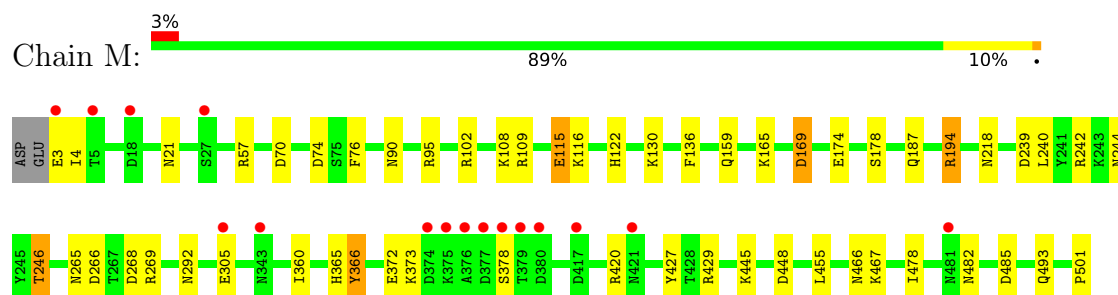
- Molecule 10 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	M	797	Total	O	0	0
			797	797		

3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of 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: MYROSINASE MA1



4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	135.30Å 137.20Å 80.60Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	10.00 – 1.20 9.99 – 1.20	Depositor EDS
% Data completeness (in resolution range)	99.6 (10.00-1.20) 96.1 (9.99-1.20)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	0.08	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.10 (at 1.20Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.124 , 0.142 0.137 , 0.151	Depositor DCC
R_{free} test set	11150 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å ²)	8.1	Xtriage
Anisotropy	0.110	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.50 , 56.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	0.012 for -k,-h,-l	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	5201	wwPDB-VP
Average B, all atoms (Å ²)	14.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.41% 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 ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: XYP, GOL, ZN, BMA, NAG, SO4, MAN, FUC

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	M	0.77	2/4290 (0.0%)	1.16	31/5833 (0.5%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	M	178	SER	CB-OG	6.28	1.50	1.42
1	M	501	PRO	N-CD	5.94	1.56	1.47

All (31) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	M	115	GLU	OE1-CD-OE2	-12.07	108.81	123.30
1	M	194	ARG	NE-CZ-NH2	-10.71	114.94	120.30
1	M	269	ARG	NE-CZ-NH1	9.32	124.96	120.30
1	M	109	ARG	NE-CZ-NH1	-9.27	115.67	120.30
1	M	268	ASP	CB-CG-OD1	8.34	125.80	118.30
1	M	242	ARG	NE-CZ-NH2	-8.13	116.23	120.30
1	M	266	ASP	CB-CG-OD2	-8.11	111.00	118.30
1	M	169[A]	ASP	CB-CG-OD2	-7.95	111.14	118.30
1	M	169[B]	ASP	CB-CG-OD2	-7.95	111.14	118.30
1	M	372	GLU	OE1-CD-OE2	-7.33	114.50	123.30
1	M	269	ARG	NE-CZ-NH2	-7.30	116.65	120.30
1	M	74	ASP	CB-CG-OD1	7.15	124.73	118.30
1	M	482	ASN	CB-CG-OD1	6.47	134.54	121.60
1	M	429	ARG	NE-CZ-NH1	6.16	123.38	120.30
1	M	482	ASN	CA-CB-CG	-6.04	100.12	113.40
1	M	420	ARG	CD-NE-CZ	5.87	131.82	123.60
1	M	109	ARG	NH1-CZ-NH2	5.73	125.70	119.40
1	M	246	THR	OG1-CB-CG2	-5.70	96.90	110.00
1	M	70	ASP	CB-CG-OD1	5.68	123.41	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	M	366[A]	TYR	CB-CG-CD2	-5.65	117.61	121.00
1	M	366[B]	TYR	CB-CG-CD2	-5.65	117.61	121.00
1	M	57	ARG	NE-CZ-NH2	-5.58	117.51	120.30
1	M	427	TYR	CG-CD1-CE1	-5.56	116.86	121.30
1	M	366[A]	TYR	CB-CG-CD1	5.30	124.18	121.00
1	M	366[B]	TYR	CB-CG-CD1	5.30	124.18	121.00
1	M	194	ARG	NE-CZ-NH1	5.23	122.91	120.30
1	M	76	PHE	CB-CG-CD1	-5.17	117.18	120.80
1	M	478	ILE	CB-CG1-CD1	5.14	128.28	113.90
1	M	102	ARG	NE-CZ-NH1	5.12	122.86	120.30
1	M	448	ASP	CB-CG-OD1	5.12	122.91	118.30
1	M	70	ASP	CB-CG-OD2	-5.07	113.74	118.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	M	4082	0	3834	69	0
2	M	168	0	147	23	0
3	M	20	0	20	0	0
4	M	22	0	15	10	0
5	M	18	0	16	0	0
6	M	22	0	18	12	0
7	M	1	0	0	0	0
8	M	40	0	0	7	0
9	M	31	0	37	0	0
10	M	797	0	0	30	0
All	All	5201	0	4087	90	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 11.

All (90) 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:M:21:ASN:HD21	2:M:901:NAG:C1	0.93	1.57
1:M:244:ASN:HD21	2:M:931:NAG:C1	0.96	1.55
1:M:90:ASN:HD21	2:M:911:NAG:C1	0.90	1.52
1:M:360[B]:ILE:HD11	1:M:366[B]:TYR:CZ	1.53	1.41
1:M:360[B]:ILE:CD1	1:M:366[B]:TYR:CZ	2.13	1.31
1:M:360[B]:ILE:HD11	1:M:366[B]:TYR:OH	1.33	1.24
1:M:360[B]:ILE:CG1	1:M:366[B]:TYR:CE1	2.25	1.19
1:M:360[B]:ILE:HD11	1:M:366[B]:TYR:CE1	1.83	1.12
6:M:957:MAN:H61	10:M:2748:HOH:O	1.51	1.11
1:M:360[B]:ILE:CD1	1:M:366[B]:TYR:CE1	2.39	1.06
1:M:360[B]:ILE:HG12	1:M:366[B]:TYR:CD1	1.95	1.01
1:M:360[B]:ILE:HG12	1:M:366[B]:TYR:CE1	1.93	1.00
1:M:360[B]:ILE:CD1	1:M:366[B]:TYR:OH	2.09	0.97
1:M:467:LYS:HE3	10:M:2671:HOH:O	1.63	0.97
1:M:165:LYS:NZ	2:M:931:NAG:H82	1.80	0.96
1:M:246:THR:HG22	10:M:2392:HOH:O	1.64	0.96
4:M:954:BMA:H61	6:M:957:MAN:C6	1.98	0.93
4:M:954:BMA:C4	10:M:2748:HOH:O	2.17	0.91
4:M:954:BMA:H61	6:M:957:MAN:H61	1.55	0.88
8:M:1505:SO4:O2	8:M:1510:SO4:S	2.37	0.83
1:M:165:LYS:HZ1	2:M:931:NAG:H82	1.41	0.81
4:M:954:BMA:C5	10:M:2748:HOH:O	2.28	0.81
4:M:954:BMA:C6	6:M:957:MAN:H61	2.10	0.81
1:M:21:ASN:HD21	2:M:901:NAG:C2	1.92	0.79
4:M:954:BMA:C6	6:M:957:MAN:C6	2.61	0.77
4:M:954:BMA:H61	6:M:957:MAN:H62	1.67	0.75
1:M:130:LYS:HG3	10:M:2246:HOH:O	1.85	0.75
1:M:130:LYS:HB3	10:M:2262:HOH:O	1.86	0.74
8:M:1510:SO4:O1	10:M:2785:HOH:O	2.05	0.73
1:M:265:ASN:ND2	2:M:941:NAG:C2	2.52	0.73
1:M:360[B]:ILE:CG1	1:M:366[B]:TYR:CD1	2.65	0.72
1:M:360[B]:ILE:CG1	1:M:366[B]:TYR:CZ	2.64	0.71
1:M:130:LYS:HB3	10:M:2095:HOH:O	1.90	0.70
1:M:90:ASN:HD21	2:M:911:NAG:C2	1.97	0.70
1:M:265:ASN:CG	2:M:941:NAG:C1	2.59	0.69
1:M:218:ASN:ND2	2:M:921:NAG:C2	2.54	0.69
1:M:360[B]:ILE:HG13	1:M:366[B]:TYR:CE1	2.24	0.69
1:M:116:LYS:HG2	10:M:2224:HOH:O	1.94	0.68
1:M:4:ILE:HD11	1:M:445:LYS:HD2	1.77	0.67
1:M:485:ASP:HB2	10:M:2690:HOH:O	1.95	0.66
8:M:1505:SO4:S	8:M:1510:SO4:O3	2.55	0.65
1:M:360[B]:ILE:HD13	1:M:366[B]:TYR:CZ	2.25	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:115:GLU:HG3	10:M:2230:HOH:O	1.98	0.64
1:M:365:HIS:HD2	10:M:2249:HOH:O	1.79	0.64
1:M:466:ASN:HB2	10:M:2671:HOH:O	1.98	0.63
1:M:169[B]:ASP:HB2	1:M:240:LEU:HD21	1.81	0.63
1:M:493:GLN:NE2	10:M:2699:HOH:O	2.30	0.63
1:M:90:ASN:ND2	2:M:911:NAG:C2	2.57	0.63
1:M:239:ASP:OD1	10:M:2385:HOH:O	2.16	0.61
1:M:292:ASN:ND2	2:M:951:NAG:C2	2.58	0.61
1:M:360[B]:ILE:HG12	1:M:366[B]:TYR:CZ	2.32	0.59
1:M:365:HIS:HE1	10:M:2552:HOH:O	1.84	0.59
1:M:108:LYS:HD2	10:M:2316:HOH:O	2.02	0.58
1:M:165:LYS:HZ2	2:M:931:NAG:H82	1.68	0.58
8:M:1505:SO4:O1	8:M:1510:SO4:O3	2.22	0.57
6:M:957:MAN:C5	10:M:2757:HOH:O	2.53	0.56
1:M:292:ASN:ND2	2:M:951:NAG:O5	2.37	0.56
1:M:360[B]:ILE:HG12	1:M:366[B]:TYR:CG	2.40	0.55
4:M:954:BMA:O6	6:M:957:MAN:C6	2.49	0.55
1:M:218:ASN:CG	2:M:921:NAG:C1	2.66	0.55
4:M:954:BMA:C6	10:M:2748:HOH:O	2.53	0.55
1:M:292:ASN:CG	2:M:951:NAG:C1	2.68	0.54
1:M:4:ILE:HD11	1:M:445:LYS:CD	2.38	0.54
1:M:218:ASN:ND2	2:M:921:NAG:O5	2.37	0.53
1:M:159:GLN:NE2	10:M:2307:HOH:O	2.41	0.53
1:M:21:ASN:CG	2:M:901:NAG:C1	2.71	0.53
1:M:265:ASN:ND2	2:M:941:NAG:O5	2.37	0.53
1:M:466:ASN:CB	10:M:2671:HOH:O	2.57	0.52
8:M:1505:SO4:S	8:M:1510:SO4:S	3.07	0.52
1:M:21:ASN:ND2	2:M:901:NAG:C2	2.63	0.50
8:M:1505:SO4:O2	8:M:1510:SO4:O3	2.30	0.48
1:M:21:ASN:ND2	2:M:901:NAG:O5	2.42	0.48
1:M:115:GLU:CD	10:M:2230:HOH:O	2.52	0.48
1:M:373:LYS:NZ	1:M:378:SER:OG	2.45	0.48
1:M:90:ASN:CG	2:M:911:NAG:C1	2.73	0.47
1:M:95:ARG:HA	1:M:136:PHE:O	2.14	0.47
1:M:194:ARG:NH1	8:M:1510:SO4:O4	2.48	0.47
1:M:130:LYS:CB	10:M:2262:HOH:O	2.56	0.47
1:M:90:ASN:ND2	2:M:911:NAG:O5	2.39	0.45
1:M:4:ILE:CD1	1:M:445:LYS:HD2	2.47	0.44
1:M:95:ARG:HB2	1:M:455:LEU:HD13	2.00	0.44
4:M:954:BMA:C6	6:M:957:MAN:H62	2.41	0.43
6:M:957:MAN:H62	10:M:2758:HOH:O	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:122:HIS:HE1	1:M:174:GLU:O	2.01	0.42
1:M:115:GLU:CG	10:M:2230:HOH:O	2.62	0.42
1:M:360[A]:ILE:HG23	10:M:2539:HOH:O	2.18	0.42
1:M:360[A]:ILE:CG2	10:M:2539:HOH:O	2.67	0.42
6:M:957:MAN:C6	10:M:2759:HOH:O	2.66	0.42
6:M:957:MAN:C6	10:M:2758:HOH:O	2.68	0.41

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	M	518/501 (103%)	505 (98%)	12 (2%)	1 (0%)	49 19

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	M	187	GLN

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	M	456/437 (104%)	455 (100%)	1 (0%)	94 81

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	M	3	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	M	90	ASN
1	M	159	GLN
1	M	244	ASN
1	M	365	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 carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 35 ligands modelled in this entry, 1 is monoatomic - leaving 34 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	$\# Z > 2$
8	SO4	M	1503	-	4,4,4	0.75	0	6,6,6	1.12	0
8	SO4	M	1504	-	4,4,4	0.60	0	6,6,6	0.43	0
8	SO4	M	1505	8	4,4,4	1.16	1 (25%)	6,6,6	1.26	1 (16%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
8	SO4	M	1506	-	4,4,4	0.30	0	6,6,6	0.29	0
8	SO4	M	1507	-	4,4,4	1.69	1 (25%)	6,6,6	2.09	3 (50%)
8	SO4	M	1508	-	4,4,4	0.96	0	6,6,6	1.02	0
8	SO4	M	1509	-	4,4,4	0.76	0	6,6,6	0.23	0
8	SO4	M	1510	8	4,4,4	1.32	1 (25%)	6,6,6	2.49	4 (66%)
9	GOL	M	1511	-	5,5,5	0.46	0	5,5,5	0.73	0
9	GOL	M	1512[A]	-	5,5,5	1.04	0	5,5,5	0.99	0
9	GOL	M	1512[B]	-	5,5,5	0.96	0	5,5,5	2.69	1 (20%)
9	GOL	M	1513	-	5,5,5	2.59	2 (40%)	5,5,5	1.74	2 (40%)
9	GOL	M	1514	-	5,5,5	0.33	0	5,5,5	0.88	0
9	GOL	M	1515	-	5,5,5	0.60	0	5,5,5	1.12	1 (20%)
2	NAG	M	901	1	14,14,15	1.12	1 (7%)	17,19,21	2.13	4 (23%)
2	NAG	M	911	1	14,14,15	1.25	1 (7%)	17,19,21	2.05	3 (17%)
2	NAG	M	921	1,2	14,14,15	3.24	5 (35%)	17,19,21	3.35	8 (47%)
2	NAG	M	923	2	14,14,15	3.22	2 (14%)	17,19,21	5.30	7 (41%)
2	NAG	M	931	1	14,14,15	1.89	4 (28%)	17,19,21	8.54	9 (52%)
2	NAG	M	941	1,3,2	14,14,15	0.46	0	17,19,21	1.95	4 (23%)
3	FUC	M	942	2	9,10,11	1.51	1 (11%)	13,14,16	2.03	4 (30%)
2	NAG	M	943	2,4	14,14,15	0.99	1 (7%)	17,19,21	1.07	1 (5%)
4	BMA	M	944	2,5	11,11,12	1.74	2 (18%)	15,15,17	1.52	3 (20%)
5	XYP	M	945	4	9,9,10	0.93	0	10,12,14	2.29	4 (40%)
2	NAG	M	951	1,3,2	14,14,15	1.69	3 (21%)	17,19,21	2.55	4 (23%)
3	FUC	M	952	2	9,10,11	2.23	4 (44%)	13,14,16	1.61	1 (7%)
2	NAG	M	953	2,4	14,14,15	1.32	2 (14%)	17,19,21	1.57	3 (17%)
4	BMA	M	954	2,5,6	11,11,12	2.12	2 (18%)	15,15,17	4.85	9 (60%)
5	XYP	M	955	4	9,9,10	1.47	3 (33%)	10,12,14	1.84	4 (40%)
6	MAN	M	956	4	11,11,12	1.46	2 (18%)	15,15,17	2.34	7 (46%)
6	MAN	M	957	4	11,11,12	2.64	4 (36%)	15,15,17	6.51	11 (73%)
2	NAG	M	961	1	14,14,15	1.38	2 (14%)	17,19,21	2.45	5 (29%)
2	NAG	M	971	1	14,14,15	1.32	1 (7%)	17,19,21	2.04	5 (29%)
2	NAG	M	991	1	14,14,15	1.25	1 (7%)	17,19,21	1.90	4 (23%)

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
8	SO4	M	1503	-	-	0/0/0/0	0/0/0/0
8	SO4	M	1504	-	-	0/0/0/0	0/0/0/0
8	SO4	M	1505	8	-	0/0/0/0	0/0/0/0
8	SO4	M	1506	-	-	0/0/0/0	0/0/0/0
8	SO4	M	1507	-	-	0/0/0/0	0/0/0/0
8	SO4	M	1508	-	-	0/0/0/0	0/0/0/0
8	SO4	M	1509	-	-	0/0/0/0	0/0/0/0
8	SO4	M	1510	8	-	0/0/0/0	0/0/0/0
9	GOL	M	1511	-	-	0/4/4/4	0/0/0/0
9	GOL	M	1512[A]	-	-	0/4/4/4	0/0/0/0
9	GOL	M	1512[B]	-	-	0/4/4/4	0/0/0/0
9	GOL	M	1513	-	-	0/4/4/4	0/0/0/0
9	GOL	M	1514	-	-	0/4/4/4	0/0/0/0
9	GOL	M	1515	-	-	0/4/4/4	0/0/0/0
2	NAG	M	901	1	-	0/6/23/26	0/1/1/1
2	NAG	M	911	1	-	0/6/23/26	0/1/1/1
2	NAG	M	921	1,2	-	0/6/23/26	0/1/1/1
2	NAG	M	923	2	-	0/6/23/26	0/1/1/1
2	NAG	M	931	1	-	0/6/23/26	0/1/1/1
2	NAG	M	941	1,3,2	-	0/6/23/26	0/1/1/1
3	FUC	M	942	2	-	0/0/17/20	0/1/1/1
2	NAG	M	943	2,4	-	0/6/23/26	0/1/1/1
4	BMA	M	944	2,5	-	0/2/19/22	0/1/1/1
5	XYP	M	945	4	-	0/0/14/17	0/1/1/1
2	NAG	M	951	1,3,2	-	0/6/23/26	0/1/1/1
3	FUC	M	952	2	-	0/0/17/20	0/1/1/1
2	NAG	M	953	2,4	-	0/6/23/26	0/1/1/1
4	BMA	M	954	2,5,6	-	0/2/19/22	0/1/1/1
5	XYP	M	955	4	-	0/0/14/17	0/1/1/1
6	MAN	M	956	4	-	0/2/19/22	0/1/1/1
6	MAN	M	957	4	1/1/4/5	0/2/19/22	0/1/1/1
2	NAG	M	961	1	1/1/5/7	0/6/23/26	0/1/1/1
2	NAG	M	971	1	-	0/6/23/26	0/1/1/1
2	NAG	M	991	1	-	0/6/23/26	0/1/1/1

All (46) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	M	921	NAG	O7-C7	-7.23	1.06	1.23
2	M	921	NAG	C4-C5	-7.20	1.37	1.53
4	M	954	BMA	C2-C3	-5.75	1.44	1.52
2	M	951	NAG	C1-C2	-4.25	1.45	1.52
2	M	931	NAG	O7-C7	-4.12	1.13	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	M	944	BMA	C2-C3	-4.10	1.46	1.52
2	M	971	NAG	O7-C7	-3.90	1.14	1.23
2	M	991	NAG	O7-C7	-3.68	1.14	1.23
2	M	911	NAG	O7-C7	-3.59	1.15	1.23
2	M	961	NAG	O7-C7	-3.56	1.15	1.23
2	M	931	NAG	C2-N2	-3.40	1.40	1.46
2	M	901	NAG	O7-C7	-3.27	1.15	1.23
2	M	953	NAG	C3-C2	-2.90	1.46	1.52
2	M	951	NAG	C2-N2	-2.46	1.42	1.46
2	M	951	NAG	O5-C1	-2.45	1.39	1.43
2	M	931	NAG	C1-C2	-2.17	1.49	1.52
2	M	931	NAG	O5-C1	-2.15	1.40	1.43
2	M	961	NAG	C2-N2	2.08	1.49	1.46
5	M	955	XYP	O5B-C5B	2.13	1.47	1.42
5	M	955	XYP	O3B-C3B	2.22	1.48	1.43
8	M	1505	SO4	O1-S	2.23	1.57	1.45
2	M	953	NAG	C1-C2	2.28	1.55	1.52
8	M	1510	SO4	O1-S	2.31	1.57	1.45
6	M	957	MAN	O5-C1	2.33	1.47	1.43
4	M	944	BMA	C4-C5	2.34	1.58	1.53
5	M	955	XYP	C2B-C3B	2.35	1.56	1.52
2	M	943	NAG	C1-C2	2.39	1.55	1.52
2	M	921	NAG	C6-C5	2.44	1.60	1.51
6	M	956	MAN	C4-C5	2.47	1.58	1.53
3	M	952	FUC	C1-C2	2.47	1.57	1.52
3	M	952	FUC	O4-C4	2.54	1.49	1.43
3	M	942	FUC	C2-C3	2.83	1.56	1.52
2	M	921	NAG	C3-C2	2.89	1.58	1.52
4	M	954	BMA	C4-C5	2.93	1.59	1.53
8	M	1507	SO4	O2-S	3.15	1.62	1.45
6	M	956	MAN	O5-C5	3.27	1.50	1.43
6	M	957	MAN	C1-C2	3.34	1.59	1.52
9	M	1513	GOL	C1-C2	3.52	1.66	1.51
3	M	952	FUC	C4-C5	3.57	1.60	1.52
3	M	952	FUC	C2-C3	3.77	1.58	1.52
9	M	1513	GOL	O1-C1	4.02	1.59	1.42
2	M	921	NAG	C8-C7	4.05	1.59	1.50
6	M	957	MAN	C2-C3	4.18	1.58	1.52
6	M	957	MAN	O5-C5	5.90	1.55	1.43
2	M	923	NAG	C6-C5	6.68	1.74	1.51
2	M	923	NAG	C4-C5	9.29	1.72	1.53

All (112) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	M	957	MAN	C1-O5-C5	-13.76	93.51	112.20
2	M	923	NAG	C1-O5-C5	-13.41	93.98	112.20
2	M	923	NAG	C6-C5-C4	-9.87	89.81	113.00
2	M	931	NAG	O7-C7-N2	-9.12	104.95	121.95
2	M	923	NAG	O5-C5-C6	-9.00	92.91	107.15
6	M	957	MAN	O5-C5-C6	-8.92	93.03	107.15
2	M	921	NAG	C1-O5-C5	-8.69	100.39	112.20
2	M	923	NAG	O5-C5-C4	-8.45	90.27	110.83
4	M	954	BMA	O5-C5-C6	-8.35	93.92	107.15
4	M	954	BMA	O4-C4-C3	-7.27	93.46	110.34
2	M	901	NAG	C1-O5-C5	-6.38	103.54	112.20
2	M	911	NAG	C1-O5-C5	-6.26	103.69	112.20
2	M	951	NAG	C1-O5-C5	-6.26	103.70	112.20
2	M	931	NAG	C1-O5-C5	-6.25	103.71	112.20
2	M	921	NAG	C2-N2-C7	-6.00	114.33	122.92
2	M	941	NAG	C1-O5-C5	-5.64	104.54	112.20
6	M	957	MAN	O5-C1-C2	-5.24	102.71	110.79
2	M	921	NAG	C8-C7-N2	-5.05	107.39	116.10
2	M	971	NAG	O5-C1-C2	-4.94	103.59	111.36
6	M	957	MAN	C2-C3-C4	-4.93	102.36	110.89
4	M	954	BMA	C1-C2-C3	-4.86	103.68	109.66
3	M	942	FUC	O3-C3-C2	-4.74	101.23	110.02
6	M	957	MAN	O4-C4-C3	-4.58	99.71	110.34
4	M	954	BMA	O5-C5-C4	-4.57	99.72	110.83
3	M	952	FUC	C1-C2-C3	-4.50	104.12	109.66
5	M	945	XYP	O2B-C2B-C3B	-4.30	101.76	110.16
2	M	991	NAG	C4-C3-C2	-4.21	104.85	111.02
4	M	954	BMA	O2-C2-C3	-3.83	102.68	110.16
6	M	956	MAN	O5-C5-C6	-3.70	101.30	107.15
2	M	911	NAG	C4-C3-C2	-3.67	105.64	111.02
2	M	961	NAG	O3-C3-C2	-3.61	101.77	109.38
5	M	955	XYP	C5B-C4B-C3B	-3.56	105.27	109.66
3	M	942	FUC	C1-C2-C3	-3.55	105.29	109.66
5	M	945	XYP	C5B-C4B-C3B	-3.33	105.56	109.66
6	M	956	MAN	C2-C3-C4	-3.32	105.14	110.89
2	M	951	NAG	O5-C5-C6	-3.28	101.96	107.15
2	M	921	NAG	C4-C3-C2	-3.26	106.24	111.02
2	M	961	NAG	C1-C2-N2	-3.14	105.12	110.49
6	M	956	MAN	O2-C2-C3	-3.11	104.09	110.16
2	M	991	NAG	O3-C3-C2	-3.09	102.86	109.38
3	M	942	FUC	O2-C2-C3	-3.05	104.20	110.16
6	M	956	MAN	C3-C4-C5	-3.00	104.84	110.23
4	M	944	BMA	O5-C5-C6	-2.93	102.51	107.15

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	M	941	NAG	C2-N2-C7	-2.88	118.80	122.92
8	M	1510	SO4	O3-S-O1	-2.88	93.94	109.37
2	M	931	NAG	O5-C5-C6	-2.87	102.60	107.15
2	M	931	NAG	C4-C3-C2	-2.78	106.95	111.02
8	M	1507	SO4	O3-S-O2	-2.78	94.48	109.37
2	M	921	NAG	O5-C5-C6	-2.72	102.85	107.15
2	M	953	NAG	O4-C4-C3	-2.71	104.06	110.34
6	M	957	MAN	O2-C2-C1	-2.65	103.77	109.17
4	M	954	BMA	C1-O5-C5	-2.63	108.63	112.20
2	M	971	NAG	O5-C5-C4	-2.60	104.49	110.83
2	M	931	NAG	O4-C4-C5	-2.59	102.80	109.29
2	M	901	NAG	O5-C5-C4	-2.59	104.53	110.83
5	M	955	XYP	C4B-C3B-C2B	-2.57	107.79	110.90
2	M	923	NAG	C4-C3-C2	-2.53	107.31	111.02
8	M	1507	SO4	O2-S-O1	-2.50	90.12	109.19
5	M	955	XYP	O4B-C4B-C3B	-2.49	105.29	110.16
2	M	901	NAG	C4-C3-C2	-2.46	107.42	111.02
5	M	945	XYP	O3B-C3B-C2B	-2.46	105.46	110.02
2	M	953	NAG	C2-N2-C7	-2.44	119.42	122.92
2	M	971	NAG	O5-C5-C6	-2.42	103.31	107.15
8	M	1510	SO4	O2-S-O1	-2.37	91.16	109.19
2	M	953	NAG	O5-C1-C2	-2.35	107.66	111.36
2	M	911	NAG	O5-C5-C4	-2.34	105.12	110.83
2	M	943	NAG	C2-N2-C7	-2.33	119.58	122.92
9	M	1515	GOL	C3-C2-C1	-2.30	102.80	111.75
2	M	961	NAG	O4-C4-C5	-2.22	103.73	109.29
2	M	941	NAG	C1-C2-N2	-2.18	106.76	110.49
2	M	921	NAG	O4-C4-C5	-2.17	103.85	109.29
2	M	921	NAG	O4-C4-C3	-2.15	105.35	110.34
5	M	955	XYP	O2B-C2B-C3B	-2.14	105.99	110.16
6	M	956	MAN	C6-C5-C4	-2.12	108.03	113.00
2	M	923	NAG	O6-C6-C5	-2.10	103.99	111.29
3	M	942	FUC	O3-C3-C4	-2.09	105.48	110.34
2	M	951	NAG	O3-C3-C2	-2.09	104.98	109.38
2	M	941	NAG	C8-C7-N2	-2.02	112.61	116.10
2	M	991	NAG	O5-C5-C4	-2.01	105.93	110.83
2	M	971	NAG	O4-C4-C3	2.03	115.06	110.34
6	M	957	MAN	C1-C2-C3	2.05	112.18	109.66
8	M	1507	SO4	O4-S-O3	2.09	118.18	108.98
8	M	1510	SO4	O3-S-O2	2.12	120.73	109.37
4	M	944	BMA	O3-C3-C4	2.18	115.41	110.34
9	M	1513	GOL	O3-C3-C2	2.37	121.54	110.12

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	M	944	BMA	C2-C3-C4	2.53	115.27	110.89
8	M	1505	SO4	O4-S-O3	2.53	120.14	108.98
6	M	956	MAN	O2-C2-C1	2.54	114.34	109.17
2	M	961	NAG	O5-C1-C2	2.55	115.37	111.36
9	M	1513	GOL	O2-C2-C1	2.92	122.00	109.12
2	M	921	NAG	O7-C7-N2	3.09	127.70	121.95
6	M	957	MAN	O6-C6-C5	3.57	123.67	111.29
5	M	945	XYP	C1B-C2B-C3B	3.67	114.17	109.66
2	M	901	NAG	O5-C1-C2	3.85	117.41	111.36
2	M	971	NAG	C1-O5-C5	3.96	117.58	112.20
8	M	1510	SO4	O4-S-O3	4.08	127.00	108.98
6	M	956	MAN	C1-C2-C3	4.39	115.06	109.66
2	M	991	NAG	O5-C1-C2	4.59	118.58	111.36
2	M	931	NAG	C3-C4-C5	4.81	118.88	110.23
2	M	923	NAG	O5-C1-C2	4.97	119.16	111.36
4	M	954	BMA	C3-C4-C5	5.06	119.33	110.23
6	M	957	MAN	O5-C5-C4	5.52	124.26	110.83
9	M	1512[B]	GOL	O1-C1-C2	5.62	137.24	110.12
2	M	951	NAG	O5-C1-C2	6.22	121.13	111.36
4	M	954	BMA	C6-C5-C4	6.72	128.78	113.00
2	M	961	NAG	C1-O5-C5	7.65	122.59	112.20
6	M	957	MAN	O4-C4-C5	8.68	130.98	109.29
4	M	954	BMA	O4-C4-C5	9.37	132.72	109.29
2	M	931	NAG	C8-C7-N2	11.16	135.34	116.10
6	M	957	MAN	C6-C5-C4	12.64	142.68	113.00
2	M	931	NAG	O5-C1-C2	12.70	131.30	111.36
2	M	931	NAG	C2-N2-C7	27.80	162.74	122.92

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	M	961	NAG	C1
6	M	957	MAN	C5

There are no torsion outliers.

There are no ring outliers.

10 monomers are involved in 45 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	M	1505	SO4	5	0
8	M	1510	SO4	7	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	M	901	NAG	5	0
2	M	911	NAG	5	0
2	M	921	NAG	3	0
2	M	931	NAG	4	0
2	M	941	NAG	3	0
2	M	951	NAG	3	0
4	M	954	BMA	10	0
6	M	957	MAN	12	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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	M	499/501 (99%)	-0.15	16 (3%) 47 45	5, 9, 22, 46	0

All (16) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	M	376	ALA	9.0
1	M	417	ASP	4.6
1	M	3	GLU	4.5
1	M	380	ASP	4.5
1	M	375	LYS	4.3
1	M	374	ASP	2.9
1	M	377	ASP	2.7
1	M	481	ASN	2.7
1	M	18	ASP	2.6
1	M	343	ASN	2.3
1	M	27	SER	2.3
1	M	378	SER	2.3
1	M	421	ASN	2.2
1	M	305[A]	GLU	2.1
1	M	5	THR	2.0
1	M	379	THR	2.0

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

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

6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.4 Ligands ⓘ

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
2	NAG	M	971	14/15	0.39	0.52	48,55,56,57	0
9	GOL	M	1511	6/6	0.55	0.30	30,35,35,36	6
2	NAG	M	961	14/15	0.56	0.48	30,37,45,45	0
8	SO4	M	1508	5/5	0.58	0.30	20,26,27,29	5
5	XYP	M	955	9/10	0.65	0.29	27,30,33,36	0
2	NAG	M	923	14/15	0.66	0.34	28,34,39,41	0
5	XYP	M	945	9/10	0.69	0.32	35,37,39,40	0
6	MAN	M	957	11/12	0.71	0.43	30,35,40,45	0
9	GOL	M	1514	6/6	0.72	0.26	24,24,26,28	6
4	BMA	M	944	11/12	0.73	0.33	29,33,35,38	0
2	NAG	M	931	14/15	0.74	0.33	28,35,40,40	0
2	NAG	M	991	14/15	0.75	0.40	27,31,39,40	0
8	SO4	M	1505	5/5	0.80	0.24	18,21,24,26	5
6	MAN	M	956	11/12	0.81	0.28	19,26,32,32	0
8	SO4	M	1510	5/5	0.83	0.35	32,33,36,38	1
8	SO4	M	1509	5/5	0.83	0.22	30,31,31,32	5
2	NAG	M	901	14/15	0.85	0.16	26,29,32,34	0
8	SO4	M	1507	5/5	0.89	0.20	22,23,26,27	5
2	NAG	M	911	14/15	0.91	0.17	18,20,24,24	0
9	GOL	M	1513	6/6	0.91	0.18	9,16,21,23	6
8	SO4	M	1504	5/5	0.92	0.19	17,21,25,26	5
4	BMA	M	954	11/12	0.92	0.10	16,21,25,25	0
9	GOL	M	1512[A]	6/6	0.93	0.13	6,11,12,12	2
3	FUC	M	942	10/11	0.93	0.18	20,25,29,31	0
9	GOL	M	1512[B]	6/6	0.93	0.13	8,12,12,15	2
3	FUC	M	952	10/11	0.94	0.13	12,14,16,18	0
2	NAG	M	943	14/15	0.95	0.09	18,21,25,30	0
2	NAG	M	921	14/15	0.96	0.08	12,17,23,24	0
9	GOL	M	1515	6/6	0.97	0.08	9,11,15,15	0
8	SO4	M	1503	5/5	0.97	0.16	16,18,23,25	5
2	NAG	M	953	14/15	0.97	0.08	14,16,23,25	0
2	NAG	M	951	14/15	0.97	0.07	12,13,17,21	0
2	NAG	M	941	14/15	0.98	0.06	13,15,17,19	0
8	SO4	M	1506	5/5	0.99	0.05	13,14,19,21	0
7	ZN	M	1502	1/1	1.00	0.03	5,5,5,5	1

6.5 Other polymers [i](#)

There are no such residues in this entry.