



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 18, 2026 – 05:19 AM UTC

PDB ID : 6Q8M / pdb_00006q8m
Title : GH10 endo-xylanase
Authors : Davies, G.J.; Rowland, R.J.; Wu, L.; Moroz, O.; Blagova, E.
Deposited on : 2018-12-15
Resolution : 1.42 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	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

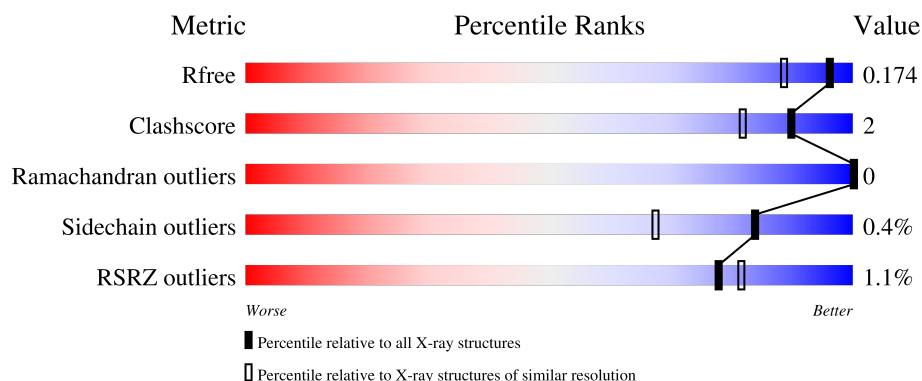
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

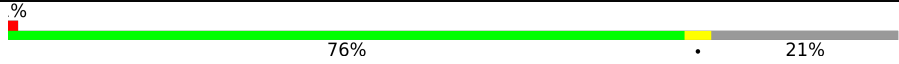

The reported resolution of this entry is 1.42 Å.

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}	180053	4041 (1.44-1.40)
Clashscore	190562	4154 (1.44-1.40)
Ramachandran outliers	187476	4083 (1.44-1.40)
Sidechain outliers	187428	4082 (1.44-1.40)
RSRZ outliers	180081	4039 (1.44-1.40)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments 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	406	
1	B	406	

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 6060 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 Beta-xylanase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	321	Total	C	N	O	S	0	11	0
			2516	1600	413	497	6			
1	B	321	Total	C	N	O	S	0	11	0
			2515	1600	412	497	6			

There are 4 discrepancies between the modelled and reference sequences:

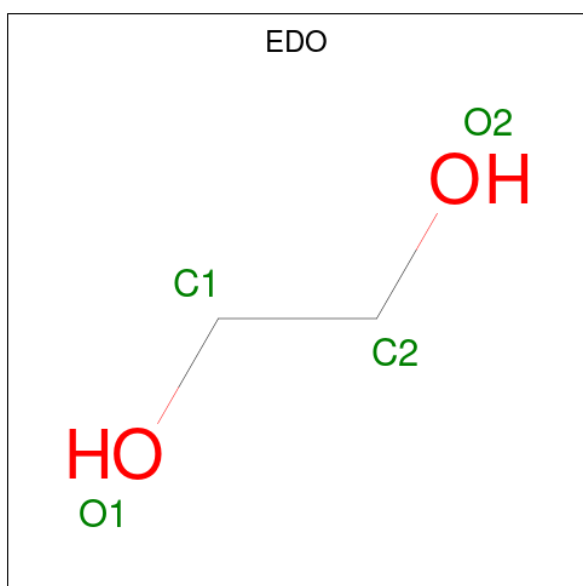
Chain	Residue	Modelled	Actual	Comment	Reference
A	86	LYS	ASN	conflict	UNP A0A1L9WG58
A	243	VAL	ILE	conflict	UNP A0A1L9WG58
B	86	LYS	ASN	conflict	UNP A0A1L9WG58
B	243	VAL	ILE	conflict	UNP A0A1L9WG58

- Molecule 2 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).



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

- Molecule 3 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: C₂H₆O₂).



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

Continued on next page...

Continued from previous page...

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

Continued on next page...

Continued from previous page...

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

- Molecule 4 is POTASSIUM ION (CCD ID: K) (formula: K).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	2	Total K 2 2	0	0
4	B	2	Total K 2 2	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	407	Total O 407 407	0	0
5	B	422	Total O 422 422	0	0

4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	47.34Å 74.07Å 213.90Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	70.09 – 1.42 70.09 – 1.42	Depositor EDS
% Data completeness (in resolution range)	99.7 (70.09-1.42) 99.7 (70.09-1.42)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.67 (at 1.42Å)	Xtriage
Refinement program	REFMAC 5.8.0238	Depositor
R, R_{free}	0.148 , 0.170 0.151 , 0.174	Depositor DCC
R_{free} test set	7076 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å ²)	11.6	Xtriage
Anisotropy	0.154	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.38 , 43.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	6060	wwPDB-VP
Average B, all atoms (Å ²)	15.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.22% 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: EDO, NAG, K

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	1.08	1/2577 (0.0%)	1.14	1/3529 (0.0%)
1	B	1.02	0/2576	1.08	0/3526
All	All	1.05	1/5153 (0.0%)	1.11	1/7055 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	230	HIS	CE1-NE2	5.30	1.37	1.32

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	262	ASP	CA-CB-CG	5.44	118.04	112.60

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	2516	0	2404	7	0
1	B	2515	0	2410	5	0
2	A	28	0	26	0	0
2	B	28	0	26	1	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	60	0	87	5	0
3	B	80	0	109	4	0
4	A	2	0	0	0	0
4	B	2	0	0	0	0
5	A	407	0	0	4	1
5	B	422	0	0	3	1
All	All	6060	0	5062	17	2

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 2.

All (17) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:163[B]:THR:O	5:B:601:HOH:O	1.85	0.93
3:A:511:EDO:H12	5:A:702:HOH:O	1.66	0.93
3:A:511:EDO:C1	5:A:702:HOH:O	2.19	0.90
1:A:110:ASN:O	3:A:512:EDO:H11	1.94	0.67
2:B:502:NAG:O3	3:B:514:EDO:H12	1.96	0.65
1:B:172[A]:GLU:H	1:B:172[A]:GLU:CD	2.16	0.53
3:A:511:EDO:H11	5:A:702:HOH:O	1.96	0.53
1:A:206:ALA:HB2	3:B:514:EDO:H21	1.96	0.48
1:A:86:LYS:HE2	5:A:878:HOH:O	2.16	0.46
1:B:343:VAL:HG23	5:B:784:HOH:O	2.16	0.46
3:B:515:EDO:H11	5:B:606:HOH:O	2.17	0.45
1:B:286:GLN:NE2	1:B:338:GLY:O	2.48	0.44
1:B:236:VAL:HG21	1:B:280:ASP:HB3	2.01	0.42
1:A:187:PRO:O	1:A:221[B]:LYS:NZ	2.53	0.41
1:A:244[A]:SER:OG	3:B:515:EDO:H22	2.21	0.40
1:A:115:TRP:HB3	3:A:515:EDO:H21	2.04	0.40
1:A:75:THR:O	1:A:82:PHE:HA	2.22	0.40

All (2) 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	Interatomic distance (Å)	Clash overlap (Å)
5:A:740:HOH:O	5:A:902:HOH:O[4_445]	2.13	0.07
5:B:656:HOH:O	5:B:880:HOH:O[3_655]	2.17	0.03

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	330/406 (81%)	326 (99%)	4 (1%)	0	100	100
1	B	330/406 (81%)	324 (98%)	6 (2%)	0	100	100
All	All	660/812 (81%)	650 (98%)	10 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	266/318 (84%)	265 (100%)	1 (0%)	84	67
1	B	265/318 (83%)	264 (100%)	1 (0%)	84	67
All	All	531/636 (84%)	529 (100%)	2 (0%)	84	67

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	303	THR
1	B	303	THR

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

Mol	Chain	Res	Type
1	A	79	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	276	GLN
1	B	213	GLN
1	B	277	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 43 ligands modelled in this entry, 4 are monoatomic - leaving 39 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	EDO	B	517	-	3,3,3	0.11	0	2,2,2	0.14	0
3	EDO	A	515	-	3,3,3	0.32	0	2,2,2	0.09	0
3	EDO	A	509	-	3,3,3	0.31	0	2,2,2	0.25	0
3	EDO	B	509	-	3,3,3	0.41	0	2,2,2	0.25	0
3	EDO	B	519	3	3,3,3	0.24	0	2,2,2	0.13	0
3	EDO	B	515	-	3,3,3	0.11	0	2,2,2	0.47	0
3	EDO	B	516	-	3,3,3	0.15	0	2,2,2	0.23	0
3	EDO	B	507	-	3,3,3	0.39	0	2,2,2	0.29	0
3	EDO	A	504	-	3,3,3	0.03	0	2,2,2	0.22	0
3	EDO	B	514	-	3,3,3	0.83	0	2,2,2	0.46	0
3	EDO	B	513	-	3,3,3	0.18	0	2,2,2	0.55	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	EDO	A	517	-	3,3,3	0.48	0	2,2,2	0.77	0
3	EDO	A	516	-	3,3,3	0.19	0	2,2,2	0.07	0
3	EDO	A	511	-	3,3,3	0.19	0	2,2,2	0.78	0
3	EDO	A	514	-	3,3,3	0.42	0	2,2,2	0.26	0
3	EDO	B	520	-	3,3,3	0.39	0	2,2,2	0.13	0
2	NAG	A	501	1	14,14,15	1.25	2 (14%)	17,19,21	1.15	1 (5%)
3	EDO	A	508	-	3,3,3	0.23	0	2,2,2	0.32	0
2	NAG	A	502	1	14,14,15	1.07	1 (7%)	17,19,21	1.72	5 (29%)
2	NAG	B	502	1	14,14,15	1.04	1 (7%)	17,19,21	2.22	6 (35%)
3	EDO	B	511	-	3,3,3	0.09	0	2,2,2	0.08	0
3	EDO	B	522	-	3,3,3	0.64	0	2,2,2	0.12	0
2	NAG	B	501	1	14,14,15	1.04	1 (7%)	17,19,21	1.18	1 (5%)
3	EDO	A	510	-	3,3,3	0.80	0	2,2,2	1.01	0
3	EDO	B	506	4	3,3,3	0.75	0	2,2,2	0.37	0
3	EDO	B	510	-	3,3,3	0.43	0	2,2,2	0.79	0
3	EDO	A	506	4	3,3,3	0.39	0	2,2,2	0.51	0
3	EDO	B	503	4	3,3,3	0.82	0	2,2,2	0.29	0
3	EDO	B	521	-	3,3,3	0.74	0	2,2,2	0.25	0
3	EDO	B	504	-	3,3,3	0.98	0	2,2,2	0.66	0
3	EDO	B	505	-	3,3,3	0.34	0	2,2,2	0.08	0
3	EDO	B	508	-	3,3,3	0.23	0	2,2,2	0.52	0
3	EDO	B	518	3	3,3,3	0.17	0	2,2,2	0.21	0
3	EDO	A	503	-	3,3,3	0.24	0	2,2,2	0.53	0
3	EDO	A	505	-	3,3,3	0.49	0	2,2,2	0.61	0
3	EDO	A	512	-	3,3,3	1.74	1 (33%)	2,2,2	1.11	0
3	EDO	A	507	-	3,3,3	0.74	0	2,2,2	0.29	0
3	EDO	A	513	-	3,3,3	0.33	0	2,2,2	0.43	0
3	EDO	B	512	-	3,3,3	0.30	0	2,2,2	0.18	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	EDO	B	517	-	-	1/1/1/1	-
3	EDO	A	515	-	-	0/1/1/1	-
3	EDO	A	509	-	-	0/1/1/1	-
3	EDO	B	509	-	-	0/1/1/1	-
3	EDO	B	519	3	-	1/1/1/1	-
3	EDO	B	515	-	-	1/1/1/1	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	EDO	B	516	-	-	0/1/1/1	-
3	EDO	B	507	-	-	0/1/1/1	-
3	EDO	A	504	-	-	0/1/1/1	-
3	EDO	B	514	-	-	0/1/1/1	-
3	EDO	B	513	-	-	0/1/1/1	-
3	EDO	A	517	-	-	1/1/1/1	-
3	EDO	A	516	-	-	1/1/1/1	-
3	EDO	A	511	-	-	0/1/1/1	-
3	EDO	A	514	-	-	0/1/1/1	-
3	EDO	B	520	-	-	1/1/1/1	-
2	NAG	A	501	1	-	1/6/23/26	0/1/1/1
3	EDO	A	508	-	-	0/1/1/1	-
2	NAG	A	502	1	-	0/6/23/26	0/1/1/1
2	NAG	B	502	1	-	0/6/23/26	0/1/1/1
3	EDO	B	511	-	-	1/1/1/1	-
3	EDO	B	522	-	-	0/1/1/1	-
2	NAG	B	501	1	-	0/6/23/26	0/1/1/1
3	EDO	A	510	-	-	1/1/1/1	-
3	EDO	B	506	4	-	0/1/1/1	-
3	EDO	B	510	-	-	1/1/1/1	-
3	EDO	A	506	4	-	0/1/1/1	-
3	EDO	B	503	4	-	0/1/1/1	-
3	EDO	B	521	-	-	0/1/1/1	-
3	EDO	B	504	-	-	0/1/1/1	-
3	EDO	B	505	-	-	0/1/1/1	-
3	EDO	B	508	-	-	1/1/1/1	-
3	EDO	B	518	3	-	1/1/1/1	-
3	EDO	A	503	-	-	0/1/1/1	-
3	EDO	A	505	-	-	0/1/1/1	-
3	EDO	A	512	-	-	1/1/1/1	-
3	EDO	A	507	-	-	0/1/1/1	-
3	EDO	A	513	-	-	0/1/1/1	-
3	EDO	B	512	-	-	0/1/1/1	-

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	501	NAG	C1-C2	2.86	1.56	1.52
2	A	501	NAG	C2-N2	-2.75	1.41	1.46
2	B	502	NAG	C1-C2	2.75	1.56	1.52
3	A	512	EDO	O2-C2	-2.43	1.29	1.42
2	A	501	NAG	C1-C2	2.38	1.55	1.52

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	502	NAG	C1-C2	-2.07	1.49	1.52

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	502	NAG	C1-O5-C5	5.61	119.71	112.19
2	B	502	NAG	O3-C3-C2	3.63	116.94	109.40
2	B	501	NAG	O5-C1-C2	-3.40	106.03	111.29
2	B	502	NAG	O3-C3-C4	-2.98	103.35	110.38
2	A	502	NAG	C2-N2-C7	2.91	126.80	122.90
2	A	502	NAG	C3-C4-C5	2.89	115.47	110.23
2	B	502	NAG	O7-C7-N2	2.52	126.43	121.98
2	B	502	NAG	O5-C5-C4	-2.44	104.90	110.83
2	A	502	NAG	C1-C2-N2	2.33	114.10	110.43
2	A	502	NAG	O6-C6-C5	-2.08	104.25	111.33
2	A	502	NAG	O7-C7-N2	-2.04	118.38	121.98
2	A	501	NAG	O5-C5-C4	-2.03	105.89	110.83
2	B	502	NAG	O4-C4-C5	-2.01	104.36	109.32

There are no chirality outliers.

All (13) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	510	EDO	O1-C1-C2-O2
3	A	517	EDO	O1-C1-C2-O2
3	B	518	EDO	O1-C1-C2-O2
3	A	512	EDO	O1-C1-C2-O2
3	B	511	EDO	O1-C1-C2-O2
3	B	519	EDO	O1-C1-C2-O2
3	B	517	EDO	O1-C1-C2-O2
2	A	501	NAG	C1-C2-N2-C7
3	A	516	EDO	O1-C1-C2-O2
3	B	508	EDO	O1-C1-C2-O2
3	B	510	EDO	O1-C1-C2-O2
3	B	515	EDO	O1-C1-C2-O2
3	B	520	EDO	O1-C1-C2-O2

There are no ring outliers.

6 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	515	EDO	1	0
3	B	515	EDO	2	0
3	B	514	EDO	2	0
3	A	511	EDO	3	0
2	B	502	NAG	1	0
3	A	512	EDO	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 [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	A	321/406 (79%)	-0.15	4 (1%) 76 80	5, 12, 20, 37	11 (3%)
1	B	321/406 (79%)	-0.29	3 (0%) 81 84	5, 12, 18, 49	11 (3%)
All	All	642/812 (79%)	-0.22	7 (1%) 78 81	5, 12, 19, 49	22 (3%)

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	343	VAL	6.0
1	B	343	VAL	5.7
1	B	23	VAL	3.3
1	B	342	THR	3.1
1	A	49	ILE	2.4
1	A	23	VAL	2.3
1	A	327	VAL	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 oligosaccharides 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(\AA^2)	Q<0.9
3	EDO	B	521	4/4	0.55	0.26	31,32,34,36	0
3	EDO	B	517	4/4	0.74	0.23	51,52,53,54	0
3	EDO	B	516	4/4	0.75	0.22	38,44,46,46	0
3	EDO	B	520	4/4	0.77	0.19	35,35,39,41	0
3	EDO	B	512	4/4	0.77	0.19	36,40,41,42	0
3	EDO	B	515	4/4	0.79	0.18	39,41,43,48	0
3	EDO	A	517	4/4	0.80	0.20	33,39,41,43	0
3	EDO	B	511	4/4	0.81	0.18	37,42,42,48	0
3	EDO	B	508	4/4	0.82	0.17	31,32,34,40	0
3	EDO	A	515	4/4	0.82	0.15	31,32,37,37	0
3	EDO	A	516	4/4	0.83	0.19	41,44,47,55	0
3	EDO	A	514	4/4	0.83	0.18	26,28,32,39	0
3	EDO	A	508	4/4	0.84	0.14	24,28,29,30	0
3	EDO	A	511	4/4	0.87	0.14	23,28,28,30	0
3	EDO	A	513	4/4	0.89	0.13	28,31,33,34	0
3	EDO	B	506	4/4	0.89	0.12	25,27,28,30	0
3	EDO	B	514	4/4	0.90	0.12	21,27,28,32	0
2	NAG	A	501	14/15	0.90	0.11	18,21,24,25	0
3	EDO	B	509	4/4	0.90	0.21	8,10,11,11	4
3	EDO	B	510	4/4	0.91	0.12	23,27,27,35	0
3	EDO	B	507	4/4	0.91	0.13	21,26,27,31	0
2	NAG	B	502	14/15	0.91	0.11	16,21,29,33	0
3	EDO	B	518	4/4	0.91	0.08	18,18,19,19	4
3	EDO	B	513	4/4	0.91	0.12	23,27,31,33	0
3	EDO	A	506	4/4	0.91	0.11	19,21,24,30	0
2	NAG	A	502	14/15	0.92	0.09	15,18,23,25	0
3	EDO	A	510	4/4	0.92	0.11	18,18,21,31	0
3	EDO	B	504	4/4	0.92	0.13	18,18,20,20	0
3	EDO	B	503	4/4	0.93	0.10	15,17,19,26	0
3	EDO	B	519	4/4	0.93	0.08	17,17,18,18	4
3	EDO	A	507	4/4	0.93	0.11	16,21,24,28	0
3	EDO	B	505	4/4	0.93	0.11	19,20,21,22	0
3	EDO	B	522	4/4	0.93	0.14	13,19,21,21	0
3	EDO	A	503	4/4	0.94	0.10	16,19,22,27	0
3	EDO	A	505	4/4	0.94	0.09	17,19,21,24	0
3	EDO	A	512	4/4	0.95	0.13	16,18,22,27	0
3	EDO	A	509	4/4	0.95	0.10	15,19,23,27	0
3	EDO	A	504	4/4	0.96	0.07	12,13,14,15	0
2	NAG	B	501	14/15	0.97	0.06	12,13,15,15	0
4	K	A	518	1/1	0.98	0.06	17,17,17,17	0
4	K	A	519	1/1	0.99	0.05	15,15,15,15	0
4	K	B	523	1/1	0.99	0.05	14,14,14,14	0
4	K	B	524	1/1	0.99	0.05	15,15,15,15	0

6.5 Other polymers [i](#)

There are no such residues in this entry.