



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 11, 2024 – 12:15 PM EDT

PDB ID : 8V99
Title : GII.26 Leon 4509 norovirus protruding domain
Authors : Kher, G.; Reese, T.; Pancera, M.; Hansman, G.
Deposited on : 2023-12-07
Resolution : 1.47 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36.2
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

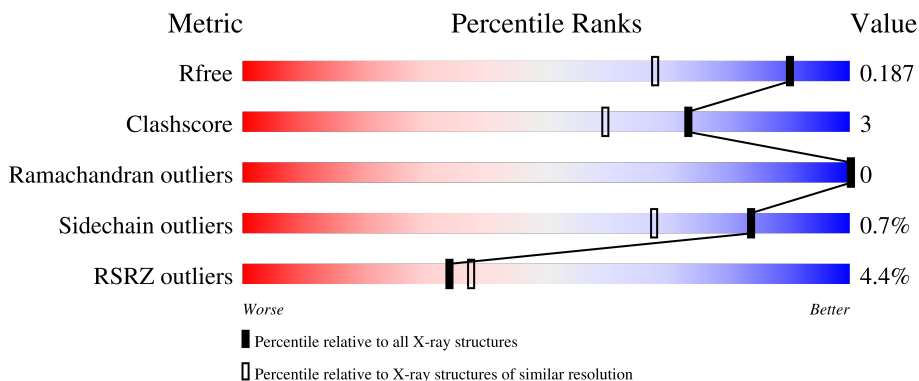
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.47 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4690 (1.50-1.46)
Clashscore	141614	4955 (1.50-1.46)
Ramachandran outliers	138981	4846 (1.50-1.46)
Sidechain outliers	138945	4844 (1.50-1.46)
RSRZ outliers	127900	4614 (1.50-1.46)

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	542	
1	B	542	

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
4	ACT	B	618	-	-	X	-

2 Entry composition [i](#)

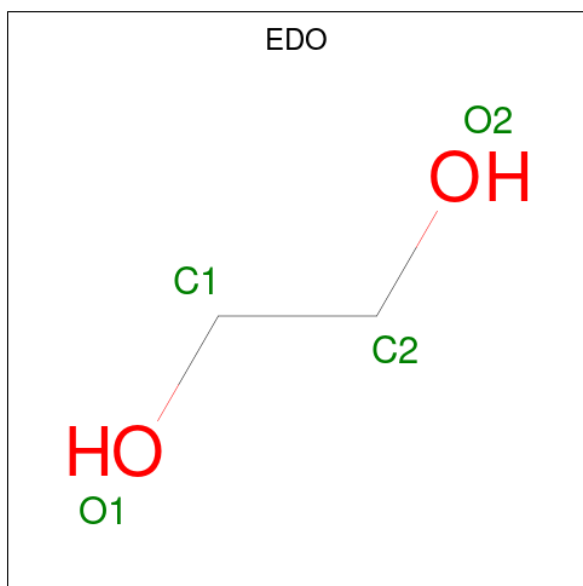
There are 5 unique types of molecules in this entry. The entry contains 10391 atoms, of which 4895 are hydrogens and 0 are deuteriums.

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 Capsid protein VP1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	H	N	O				S
1	A	309	Total 4714	C 1529	H 2312	N 408	O 456	S 9	0	0	0
1	B	307	Total 4705	C 1525	H 2311	N 405	O 455	S 9	0	0	0

- Molecule 2 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
2	A	1	Total 10	C 2	H 6	O 2	0	0
2	A	1	Total 10	C 2	H 6	O 2	0	0
2	A	1	Total 10	C 2	H 6	O 2	0	0
2	A	1	Total 10	C 2	H 6	O 2	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	H	O	0	0
			10	2	6	2		
2	A	1	Total	C	H	O	0	0
			10	2	6	2		
2	A	1	Total	C	H	O	0	0
			10	2	6	2		
2	A	1	Total	C	H	O	0	0
			10	2	6	2		
2	A	1	Total	C	H	O	0	0
			10	2	6	2		
2	A	1	Total	C	H	O	0	0
			10	2	6	2		
2	A	1	Total	C	H	O	0	0
			10	2	6	2		
2	A	1	Total	C	H	O	0	0
			10	2	6	2		
2	A	1	Total	C	H	O	0	0
			10	2	6	2		
2	A	1	Total	C	H	O	0	0
			10	2	6	2		
2	A	1	Total	C	H	O	0	0
			10	2	6	2		
2	A	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		

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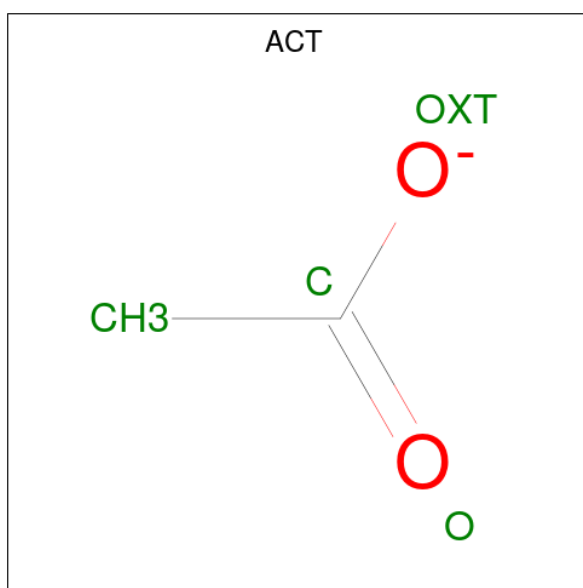
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		

- Molecule 3 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: C₄H₁₀O₃).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
3	A	1	17	4	10	3	0	0
3	B	1	17	4	10	3	0	0

- Molecule 4 is ACETATE ION (three-letter code: ACT) (formula: $C_2H_3O_2$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
4	B	1	7	2	3	2	0	0
4	B	1	7	2	3	2	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	260	Total 260	O 260	0	0
5	B	254	Total 254	O 254	0	0

4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	129.44Å 71.17Å 78.59Å 90.00° 109.92° 90.00°	Depositor
Resolution (Å)	40.66 – 1.47 40.66 – 1.47	Depositor EDS
% Data completeness (in resolution range)	98.6 (40.66-1.47) 98.6 (40.66-1.47)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.03 (at 1.47Å)	Xtrriage
Refinement program	PHENIX (1.19.2_4158: ???)	Depositor
R, R_{free}	0.148 , 0.187 0.148 , 0.187	Depositor DCC
R_{free} test set	5579 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	13.1	Xtrriage
Anisotropy	0.376	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.41 , 50.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	10391	wwPDB-VP
Average B, all atoms (Å ²)	19.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 9.00% 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: ACT, PEG, EDO

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	0.90	9/2472 (0.4%)	0.86	3/3383 (0.1%)
1	B	0.42	0/2463	0.65	0/3369
All	All	0.70	9/4935 (0.2%)	0.76	3/6752 (0.0%)

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	422	PRO	C-O	-8.40	1.06	1.23
1	A	452	ASP	C-O	-7.83	1.08	1.23
1	A	458	GLU	CD-OE2	-6.35	1.18	1.25
1	A	357	GLU	CD-OE2	-6.14	1.18	1.25
1	A	458	GLU	CD-OE1	-5.85	1.19	1.25
1	A	506	ASP	CG-OD2	-5.85	1.11	1.25
1	A	447	GLY	C-O	-5.69	1.14	1.23
1	A	351	PRO	C-O	-5.61	1.12	1.23
1	A	433	LEU	C-O	-5.44	1.13	1.23

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	506	ASP	CB-CG-OD2	-7.16	111.86	118.30
1	A	506	ASP	CB-CG-OD1	6.34	124.01	118.30
1	A	350	ALA	N-CA-CB	5.02	117.13	110.10

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	2402	2312	2321	15	0
1	B	2394	2311	2315	17	0
2	A	84	126	125	6	0
2	B	80	120	120	3	0
3	A	7	10	10	2	0
3	B	7	10	10	0	0
4	B	8	6	6	3	0
5	A	260	0	0	3	0
5	B	254	0	0	3	0
All	All	5496	4895	4907	33	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 3.

All (33) 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:224:THR:HG22	1:B:469:PRO:HG2	1.63	0.80
1:A:278:LEU:H	2:A:619:EDO:H12	1.55	0.72
1:A:224:THR:N	5:A:701:HOH:O	2.24	0.70
1:B:287:ARG:HD2	1:B:309:PRO:HA	1.76	0.68
1:B:450:ILE:HG21	4:B:618:ACT:H1	1.75	0.67
1:A:407:LEU:HB2	3:A:608:PEG:H11	1.81	0.62
2:A:620:EDO:H22	5:A:747:HOH:O	2.03	0.58
1:B:439:TYR:CE1	4:B:618:ACT:H3	2.38	0.58
1:B:495:ARG:NH1	5:B:702:HOH:O	2.32	0.55
1:A:510:ASN:ND2	5:A:702:HOH:O	2.34	0.53
1:A:357:GLU:HG3	1:B:357:GLU:HG3	1.92	0.52
1:B:385:GLU:OE2	2:B:617:EDO:H21	2.10	0.52
1:B:434:LEU:C	1:B:434:LEU:HD23	2.32	0.49
1:A:350:ALA:N	2:A:621:EDO:O1	2.46	0.48
1:A:416:LEU:HA	3:A:608:PEG:H42	1.97	0.47
1:B:248:MET:CE	4:B:618:ACT:H2	2.45	0.47
1:B:290:ILE:HD13	1:B:384:VAL:HG11	1.97	0.46
1:A:279:VAL:HG23	2:A:619:EDO:H21	1.97	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:238:THR:HG21	1:B:280:THR:CG2	2.46	0.45
1:A:434:LEU:HD23	1:A:434:LEU:C	2.37	0.44
2:B:617:EDO:H21	5:B:715:HOH:O	2.17	0.44
1:B:416:LEU:HD23	5:B:726:HOH:O	2.17	0.43
1:A:488:LEU:HD22	1:A:488:LEU:N	2.32	0.43
1:B:224:THR:HG21	1:B:471:GLN:HE22	1.84	0.43
1:B:306:VAL:HG11	1:B:323:PRO:HG2	2.00	0.42
1:A:480:VAL:HG22	1:A:487:VAL:HG22	2.01	0.42
1:A:278:LEU:N	2:A:619:EDO:H12	2.29	0.42
1:B:354:ARG:HH21	2:B:617:EDO:C2	2.32	0.42
1:B:249:LEU:HB2	1:B:509:ILE:HB	2.02	0.41
1:A:348:GLN:OE1	2:A:621:EDO:C1	2.69	0.41
1:A:224:THR:HB	1:A:469:PRO:HG2	2.03	0.40
1:A:238:THR:HG21	1:A:280:THR:CG2	2.51	0.40
1:B:297:ASP:OD1	1:B:297:ASP:N	2.55	0.40

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	A	307/542 (57%)	301 (98%)	6 (2%)	0	100	100
1	B	303/542 (56%)	297 (98%)	6 (2%)	0	100	100
All	All	610/1084 (56%)	598 (98%)	12 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	A	267/464 (58%)	265 (99%)	2 (1%)	84	68
1	B	267/464 (58%)	265 (99%)	2 (1%)	84	68
All	All	534/928 (58%)	530 (99%)	4 (1%)	84	68

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	287	ARG
1	A	337	LEU
1	B	224	THR
1	B	297	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	293	HIS
1	B	409	ASN
1	B	471	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

45 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	EDO	B	602	-	3,3,3	0.46	0	2,2,2	0.45	0
2	EDO	B	601	-	3,3,3	0.36	0	2,2,2	0.38	0
2	EDO	B	619	-	3,3,3	0.45	0	2,2,2	0.52	0
2	EDO	A	615	-	3,3,3	0.38	0	2,2,2	0.38	0
2	EDO	A	603	-	3,3,3	0.92	0	2,2,2	0.29	0
4	ACT	B	618	-	3,3,3	1.10	0	3,3,3	1.33	0
2	EDO	A	614	-	3,3,3	0.29	0	2,2,2	0.70	0
2	EDO	A	622	-	3,3,3	0.50	0	2,2,2	0.55	0
2	EDO	B	604	-	3,3,3	0.45	0	2,2,2	0.42	0
2	EDO	A	613	-	3,3,3	0.51	0	2,2,2	0.24	0
2	EDO	B	622	-	3,3,3	0.46	0	2,2,2	0.38	0
2	EDO	A	610	-	3,3,3	0.41	0	2,2,2	0.24	0
2	EDO	B	606	-	3,3,3	0.47	0	2,2,2	0.49	0
2	EDO	B	616	-	3,3,3	0.43	0	2,2,2	0.73	0
2	EDO	A	606	-	3,3,3	0.44	0	2,2,2	0.25	0
2	EDO	B	609	-	3,3,3	0.46	0	2,2,2	0.49	0
2	EDO	A	609	-	3,3,3	0.42	0	2,2,2	0.42	0
2	EDO	A	605	-	3,3,3	0.45	0	2,2,2	0.27	0
2	EDO	B	620	-	3,3,3	0.45	0	2,2,2	0.44	0
2	EDO	A	620	-	3,3,3	0.18	0	2,2,2	0.45	0
2	EDO	A	621	-	3,3,3	0.40	0	2,2,2	0.69	0
2	EDO	B	623	-	3,3,3	0.47	0	2,2,2	0.28	0
3	PEG	A	608	-	6,6,6	0.48	0	5,5,5	0.52	0
3	PEG	B	615	-	6,6,6	0.15	0	5,5,5	0.24	0
2	EDO	A	612	-	3,3,3	0.38	0	2,2,2	0.60	0
2	EDO	B	617	-	3,3,3	0.53	0	2,2,2	0.30	0
2	EDO	B	611	-	3,3,3	0.48	0	2,2,2	0.30	0
2	EDO	A	611	-	3,3,3	0.45	0	2,2,2	0.08	0
2	EDO	A	604	-	3,3,3	0.53	0	2,2,2	0.18	0
2	EDO	A	619	-	3,3,3	0.35	0	2,2,2	0.67	0
2	EDO	A	601	-	3,3,3	0.35	0	2,2,2	0.48	0
2	EDO	B	614	-	3,3,3	0.45	0	2,2,2	0.72	0
2	EDO	B	603	-	3,3,3	0.50	0	2,2,2	0.16	0
2	EDO	B	608	-	3,3,3	0.49	0	2,2,2	0.34	0
2	EDO	B	605	-	3,3,3	0.42	0	2,2,2	0.51	0
2	EDO	B	613	-	3,3,3	0.48	0	2,2,2	0.35	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	EDO	B	621	-	3,3,3	0.41	0	2,2,2	0.62	0
2	EDO	A	607	-	3,3,3	0.43	0	2,2,2	0.09	0
4	ACT	B	612	-	3,3,3	1.16	0	3,3,3	1.54	0
2	EDO	A	602	-	3,3,3	0.43	0	2,2,2	0.13	0
2	EDO	B	610	-	3,3,3	0.43	0	2,2,2	0.67	0
2	EDO	B	607	-	3,3,3	0.38	0	2,2,2	0.61	0
2	EDO	A	616	-	3,3,3	0.49	0	2,2,2	0.42	0
2	EDO	A	618	-	3,3,3	0.47	0	2,2,2	0.20	0
2	EDO	A	617	-	3,3,3	0.54	0	2,2,2	0.25	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	EDO	B	602	-	-	0/1/1/1	-
2	EDO	B	601	-	-	0/1/1/1	-
2	EDO	B	619	-	-	1/1/1/1	-
2	EDO	A	615	-	-	1/1/1/1	-
2	EDO	A	603	-	-	0/1/1/1	-
2	EDO	A	614	-	-	1/1/1/1	-
2	EDO	A	622	-	-	1/1/1/1	-
2	EDO	B	604	-	-	0/1/1/1	-
2	EDO	A	613	-	-	0/1/1/1	-
2	EDO	B	622	-	-	1/1/1/1	-
2	EDO	A	610	-	-	0/1/1/1	-
2	EDO	B	606	-	-	0/1/1/1	-
2	EDO	B	616	-	-	1/1/1/1	-
2	EDO	A	606	-	-	1/1/1/1	-
2	EDO	B	609	-	-	1/1/1/1	-
2	EDO	A	609	-	-	0/1/1/1	-
2	EDO	A	605	-	-	1/1/1/1	-
2	EDO	B	620	-	-	1/1/1/1	-
2	EDO	A	620	-	-	0/1/1/1	-
2	EDO	A	621	-	-	1/1/1/1	-
2	EDO	B	623	-	-	1/1/1/1	-
3	PEG	A	608	-	-	2/4/4/4	-
3	PEG	B	615	-	-	4/4/4/4	-
2	EDO	A	612	-	-	0/1/1/1	-
2	EDO	B	617	-	-	0/1/1/1	-
2	EDO	B	611	-	-	0/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	EDO	A	611	-	-	0/1/1/1	-
2	EDO	A	604	-	-	0/1/1/1	-
2	EDO	A	619	-	-	1/1/1/1	-
2	EDO	A	601	-	-	0/1/1/1	-
2	EDO	B	614	-	-	1/1/1/1	-
2	EDO	B	603	-	-	0/1/1/1	-
2	EDO	B	608	-	-	0/1/1/1	-
2	EDO	B	605	-	-	0/1/1/1	-
2	EDO	B	613	-	-	0/1/1/1	-
2	EDO	B	621	-	-	1/1/1/1	-
2	EDO	A	607	-	-	0/1/1/1	-
2	EDO	A	602	-	-	0/1/1/1	-
2	EDO	B	610	-	-	0/1/1/1	-
2	EDO	B	607	-	-	0/1/1/1	-
2	EDO	A	616	-	-	0/1/1/1	-
2	EDO	A	618	-	-	0/1/1/1	-
2	EDO	A	617	-	-	0/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (21) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	615	PEG	O1-C1-C2-O2
2	A	615	EDO	O1-C1-C2-O2
2	A	606	EDO	O1-C1-C2-O2
2	A	621	EDO	O1-C1-C2-O2
2	B	619	EDO	O1-C1-C2-O2
2	B	622	EDO	O1-C1-C2-O2
3	B	615	PEG	O2-C3-C4-O4
3	A	608	PEG	O1-C1-C2-O2
3	A	608	PEG	C1-C2-O2-C3
3	B	615	PEG	C1-C2-O2-C3
2	A	605	EDO	O1-C1-C2-O2
2	B	609	EDO	O1-C1-C2-O2
2	B	621	EDO	O1-C1-C2-O2
2	B	623	EDO	O1-C1-C2-O2
3	B	615	PEG	C4-C3-O2-C2
2	B	614	EDO	O1-C1-C2-O2
2	B	620	EDO	O1-C1-C2-O2

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Mol	Chain	Res	Type	Atoms
2	B	616	EDO	O1-C1-C2-O2
2	A	614	EDO	O1-C1-C2-O2
2	A	619	EDO	O1-C1-C2-O2
2	A	622	EDO	O1-C1-C2-O2

There are no ring outliers.

6 monomers are involved in 14 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	618	ACT	3	0
2	A	620	EDO	1	0
2	A	621	EDO	2	0
3	A	608	PEG	2	0
2	B	617	EDO	3	0
2	A	619	EDO	3	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	309/542 (57%)	0.24	14 (4%) 33 36	9, 14, 32, 56	0
1	B	307/542 (56%)	0.26	13 (4%) 36 39	9, 14, 33, 74	0
All	All	616/1084 (56%)	0.25	27 (4%) 34 37	9, 14, 33, 74	0

All (27) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	317	THR	6.3
1	A	346	SER	5.3
1	B	346	SER	4.3
1	A	224	THR	3.8
1	A	382	ASN	3.6
1	A	317	THR	3.5
1	A	295	GLY	3.4
1	B	314	PHE	3.3
1	B	347	GLY	3.1
1	A	347	GLY	3.1
1	B	315	ASP	3.0
1	A	349	THR	3.0
1	B	319	ASP	2.9
1	A	510	ASN	2.8
1	B	310	ASN	2.8
1	A	297	ASP	2.7
1	A	296	ASN	2.7
1	A	512	PRO	2.5
1	B	224	THR	2.5
1	A	348	GLN	2.2
1	A	319	ASP	2.2
1	B	349	THR	2.1
1	B	316	PRO	2.1
1	B	510	ASN	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	345	GLU	2.1
1	B	471	GLN	2.0
1	B	483	GLU	2.0

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	EDO	A	620	4/4	0.67	0.18	24,48,81,81	0
2	EDO	B	622	4/4	0.72	0.25	36,51,73,76	0
4	ACT	B	612	4/4	0.74	0.27	27,33,51,76	0
2	EDO	A	616	4/4	0.76	0.24	32,44,72,87	0
2	EDO	A	610	4/4	0.76	0.23	32,52,65,78	0
2	EDO	A	611	4/4	0.77	0.27	31,45,86,103	0
2	EDO	B	619	4/4	0.77	0.24	32,44,86,102	0
2	EDO	B	611	4/4	0.78	0.17	35,46,55,62	0
2	EDO	B	623	4/4	0.82	0.16	39,48,73,88	0
3	PEG	A	608	7/7	0.85	0.23	20,73,213,213	0
2	EDO	B	607	4/4	0.85	0.20	36,45,72,86	0
2	EDO	A	614	4/4	0.86	0.17	35,65,87,87	0
2	EDO	A	615	4/4	0.87	0.19	38,51,65,78	0
2	EDO	A	622	4/4	0.87	0.16	31,39,69,76	0
2	EDO	B	614	4/4	0.87	0.15	26,54,65,68	0
2	EDO	B	602	4/4	0.87	0.20	28,44,56,56	0
2	EDO	B	609	4/4	0.89	0.27	34,41,55,55	0
2	EDO	B	610	4/4	0.90	0.15	28,37,99,118	0
2	EDO	A	606	4/4	0.90	0.18	29,38,68,81	0
3	PEG	B	615	7/7	0.90	0.18	29,41,156,156	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	EDO	B	613	4/4	0.90	0.15	24,42,77,93	0
2	EDO	A	618	4/4	0.91	0.14	31,48,65,65	0
2	EDO	A	607	4/4	0.91	0.13	26,34,60,60	0
2	EDO	B	621	4/4	0.91	0.17	35,44,71,85	0
2	EDO	A	605	4/4	0.91	0.13	20,30,37,44	0
2	EDO	A	603	4/4	0.92	0.11	13,18,32,32	0
2	EDO	A	617	4/4	0.92	0.14	21,52,68,68	0
2	EDO	B	601	4/4	0.92	0.09	21,27,34,41	0
2	EDO	A	613	4/4	0.92	0.07	25,34,48,52	0
2	EDO	A	619	4/4	0.92	0.17	10,39,67,70	0
2	EDO	B	608	4/4	0.92	0.12	26,37,45,45	0
2	EDO	B	620	4/4	0.93	0.12	23,39,65,65	0
2	EDO	A	621	4/4	0.93	0.25	18,43,62,75	0
2	EDO	A	601	4/4	0.93	0.13	22,30,36,36	0
2	EDO	B	604	4/4	0.93	0.11	14,18,22,24	0
2	EDO	B	616	4/4	0.93	0.16	25,61,74,84	0
2	EDO	B	617	4/4	0.93	0.20	24,29,161,161	0
2	EDO	B	605	4/4	0.93	0.10	17,21,27,31	0
2	EDO	B	603	4/4	0.94	0.20	15,27,48,48	0
2	EDO	A	609	4/4	0.94	0.11	20,30,55,66	0
4	ACT	B	618	4/4	0.94	0.16	26,55,116,116	0
2	EDO	A	604	4/4	0.95	0.12	15,23,34,41	0
2	EDO	A	612	4/4	0.96	0.17	26,35,111,134	0
2	EDO	A	602	4/4	0.96	0.11	16,30,36,38	0
2	EDO	B	606	4/4	0.96	0.20	22,27,35,38	0

6.5 Other polymers [\(i\)](#)

There are no such residues in this entry.