



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 17, 2026 – 06:16 pm GMT

PDB ID : 9R8I / pdb\_00009r8i  
Title : sucrose hydrolase SuxB from Xanthomonas oryzae pv. oryzae  
Authors : Zoellner, N.; Applegate, V.; Smits, S.H.J.; Hoepfner, A.  
Deposited on : 2025-05-16  
Resolution : 2.40 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](mailto: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>.

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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 : 1.8.4, CSD as541be (2020)  
Xtriage (Phenix) : 2.0  
EDS : 3.0  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
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) : 2.48.1

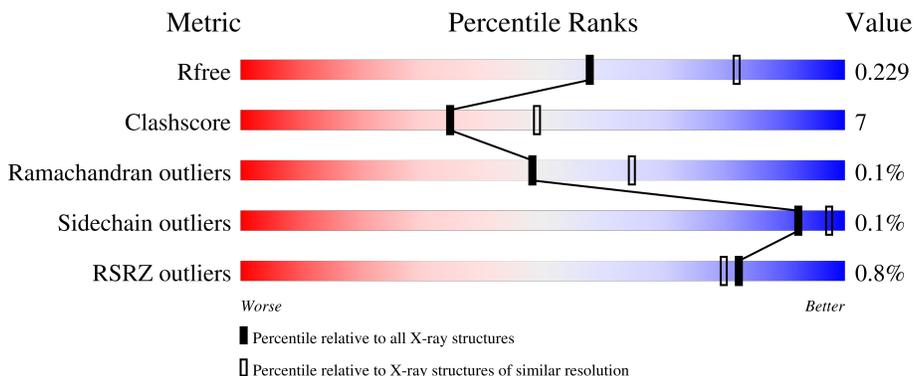
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.40 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))
$R_{free}$	164625	4642 (2.40-2.40)
Clashscore	180529	5218 (2.40-2.40)
Ramachandran outliers	177936	5158 (2.40-2.40)
Sidechain outliers	177891	5159 (2.40-2.40)
RSRZ outliers	164620	4642 (2.40-2.40)

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  $\geq 3$ , 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	638	
1	B	638	
1	C	638	

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
3	PEG	A	704	-	-	X	-
3	PEG	A	711	-	-	X	-
3	PEG	A	712	-	-	X	-
3	PEG	C	706	-	-	X	-

## 2 Entry composition [i](#)

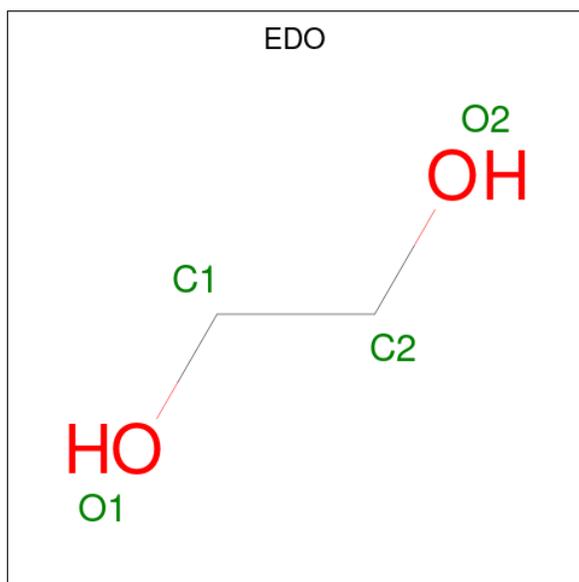
There are 6 unique types of molecules in this entry. The entry contains 29477 atoms, of which 14101 are hydrogens and 0 are deuteriums.

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 Amylosucrase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	C	620	Total 9457	C 3056	H 4629	N 871	O 881	S 20	0	1	0
1	B	622	Total 9472	C 3064	H 4633	N 871	O 884	S 20	0	1	0
1	A	619	Total 9436	C 3049	H 4621	N 867	O 879	S 20	0	1	0

- Molecule 2 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>).



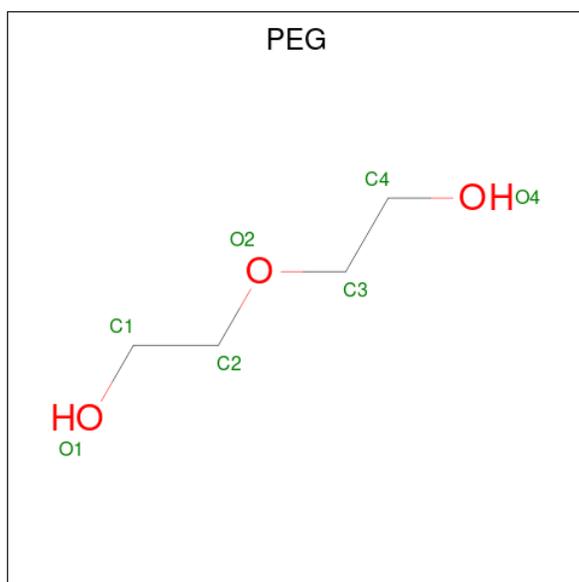
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
2	C	1	Total 10	C 2	H 6	O 2	0	0
2	C	1	Total 10	C 2	H 6	O 2	0	0
2	C	1	Total 10	C 2	H 6	O 2	0	0

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

- Molecule 3 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: C<sub>4</sub>H<sub>10</sub>O<sub>3</sub>).

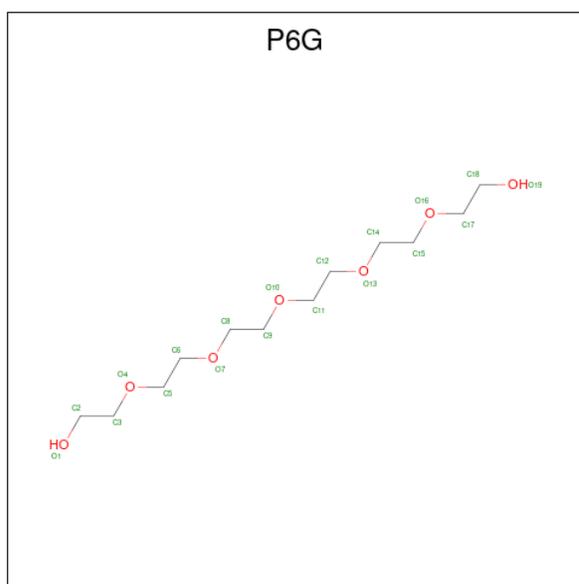


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	C	1	Total	C	H	O	0	0
			17	4	10	3		
3	C	1	Total	C	H	O	0	0
			17	4	10	3		
3	B	1	Total	C	H	O	0	0
			17	4	10	3		
3	A	1	Total	C	H	O	0	0
			17	4	10	3		
3	A	1	Total	C	H	O	0	0
			17	4	10	3		
3	A	1	Total	C	H	O	0	0
			17	4	10	3		
3	A	1	Total	C	H	O	0	0
			17	4	10	3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

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

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

- Molecule 5 is HEXAETHYLENE GLYCOL (CCD ID: P6G) (formula:  $C_{12}H_{26}O_7$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	
			Total	C	H			O
5	B	1	45	12	26	7	0	0

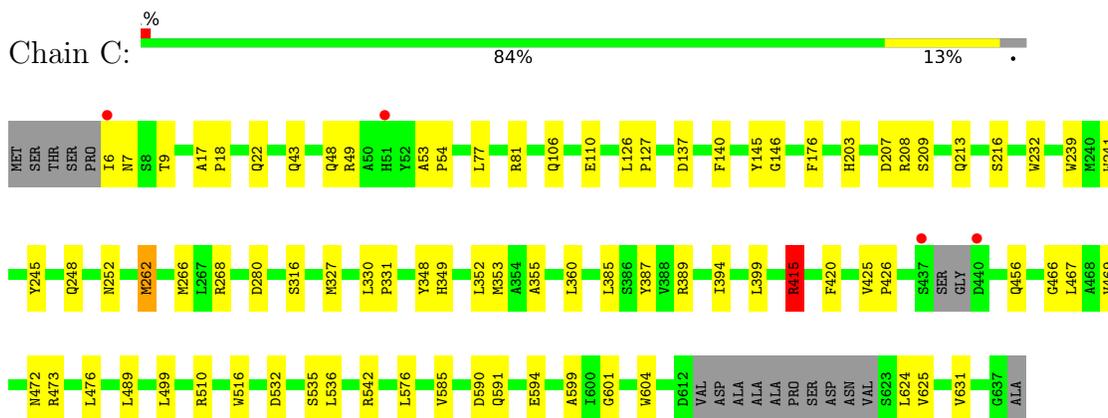
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	C	254	Total	O	0	0
			254	254		
6	B	233	Total	O	0	0
			233	233		
6	A	253	Total	O	0	0
			253	253		

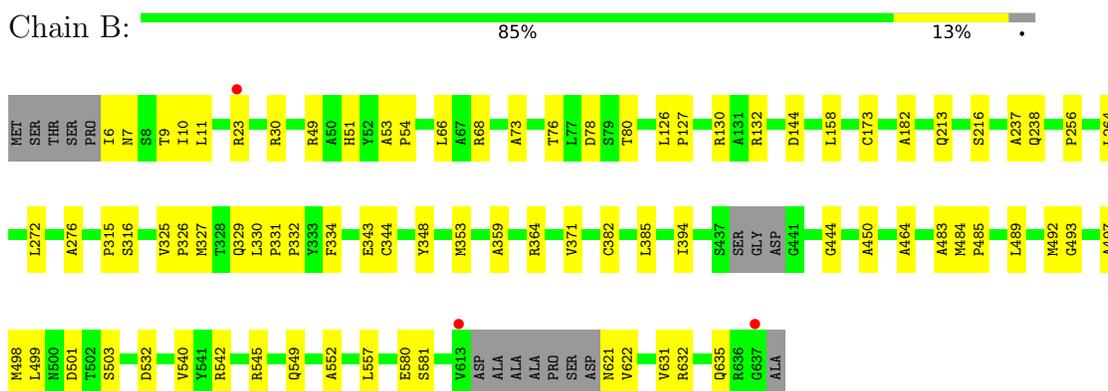
### 3 Residue-property plots [i](#)

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

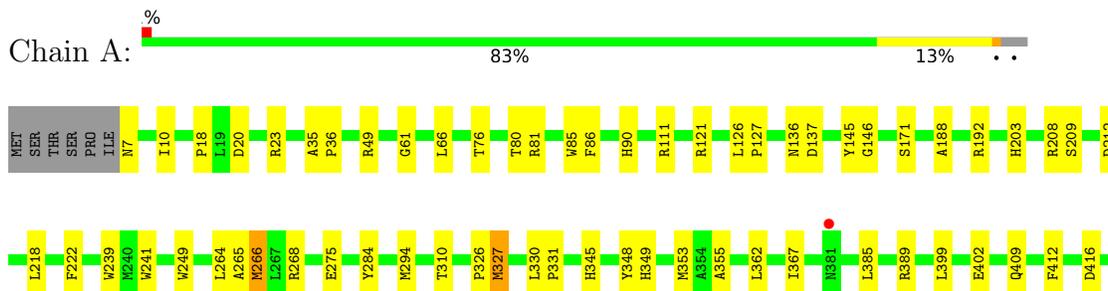
- Molecule 1: Amylosucrase

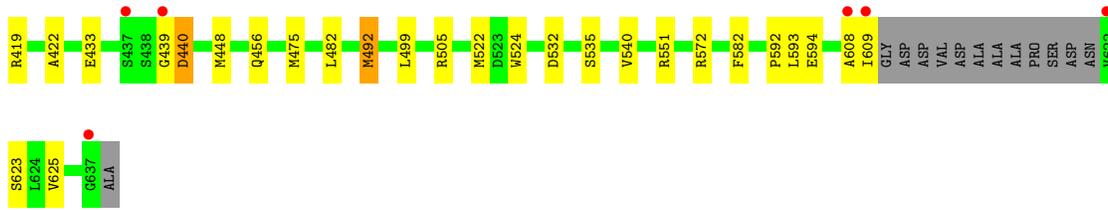


- Molecule 1: Amylosucrase



- Molecule 1: Amylosucrase





## 4 Data and refinement statistics

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	98.75Å 175.96Å 258.33Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	46.98 – 2.40 46.98 – 2.40	Depositor EDS
% Data completeness (in resolution range)	100.0 (46.98-2.40) 99.9 (46.98-2.40)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.89 (at 2.39Å)	Xtrriage
Refinement program	PHENIX (1.15.2_3472: ???)	Depositor
R, $R_{free}$	0.166 , 0.228 0.168 , 0.229	Depositor DCC
$R_{free}$ test set	4975 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	33.8	Xtrriage
Anisotropy	0.728	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.38 , 38.6	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	29477	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	44.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.49% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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, PEG, P6G, 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	0.59	3/4950 (0.1%)	0.71	3/6755 (0.0%)
1	B	0.53	0/4973	0.68	0/6786
1	C	0.60	4/4962 (0.1%)	0.72	4/6769 (0.1%)
All	All	0.57	7/14885 (0.0%)	0.70	7/20310 (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	C	0	1

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	415	ARG	CB-CG	8.47	1.77	1.52
1	A	492	MET	CG-SD	8.36	2.01	1.80
1	C	262	MET	SD-CE	7.83	1.99	1.79
1	C	415	ARG	CZ-NH1	6.38	1.41	1.32
1	A	327	MET	SD-CE	-6.34	1.63	1.79
1	C	266	MET	SD-CE	6.19	1.95	1.79
1	A	448	MET	SD-CE	5.45	1.93	1.79

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	415	ARG	CG-CD-NE	-7.04	96.52	112.00
1	C	415	ARG	NE-CZ-NH2	-6.50	113.35	119.20
1	C	208	ARG	NE-CZ-NH2	-5.90	113.89	119.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	492	MET	CB-CG-SD	5.46	129.06	112.70
1	A	492	MET	CG-SD-CE	-5.41	88.99	100.90
1	A	266	MET	CB-CG-SD	-5.38	96.55	112.70
1	C	542	ARG	CG-CD-NE	-5.08	100.83	112.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	415	ARG	Sidechain

## 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	A	4815	4621	4622	81	0
1	B	4839	4633	4644	68	3
1	C	4828	4629	4633	63	3
2	A	36	54	54	6	0
2	B	8	12	12	1	0
2	C	24	36	36	5	0
3	A	42	60	60	24	0
3	B	7	10	10	1	0
3	C	14	20	20	8	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	2	0	0	0	0
5	B	19	26	26	0	0
6	A	253	0	0	4	0
6	B	233	0	0	4	1
6	C	254	0	0	3	0
All	All	15376	14101	14117	214	4

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 7.

All (214) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:415:ARG:CB	1:C:415:ARG:CG	1.77	1.61
1:A:492:MET:CG	1:A:492:MET:SD	2.01	1.48
1:B:7:ASN:ND2	1:B:10:ILE:HD12	1.23	1.46
1:B:7:ASN:ND2	1:B:10:ILE:CD1	2.09	1.15
1:B:7:ASN:HD21	1:B:10:ILE:CD1	1.77	0.95
1:B:7:ASN:HD22	1:B:10:ILE:HD12	1.22	0.93
1:B:7:ASN:HD21	1:B:10:ILE:HD12	1.26	0.91
1:A:592:PRO:O	1:A:593:LEU:HD12	1.79	0.82
1:A:268:ARG:HD2	3:A:704:PEG:H22	1.67	0.77
1:A:266:MET:HE3	1:A:310:THR:CG2	2.17	0.75
1:B:7:ASN:HD21	1:B:10:ILE:CG1	2.00	0.75
1:C:268:ARG:HE	3:C:706:PEG:H32	1.54	0.72
1:B:73:ALA:O	6:B:802:HOH:O	2.09	0.71
1:C:327:MET:HE3	1:C:349:HIS:CE1	2.25	0.71
1:A:492:MET:CG	1:A:492:MET:CE	2.68	0.70
1:B:385:LEU:HD11	1:B:489:LEU:HD22	1.73	0.69
1:A:266:MET:HE3	1:A:310:THR:HG23	1.74	0.69
1:C:599:ALA:O	6:C:802:HOH:O	2.11	0.68
1:A:18:PRO:HG3	3:A:712:PEG:H22	1.76	0.67
1:C:146:GLY:CA	3:C:706:PEG:H41	2.25	0.67
1:A:137:ASP:OD2	2:A:702:EDO:H21	1.94	0.67
1:B:76:THR:O	1:B:80:THR:HG23	1.94	0.66
1:A:265:ALA:HA	3:A:704:PEG:H21	1.77	0.66
1:C:48:GLN:NE2	6:C:801:HOH:O	1.84	0.66
1:C:353:MET:HA	2:C:704:EDO:H12	1.76	0.66
1:A:23:ARG:NH1	6:A:806:HOH:O	2.30	0.65
1:C:327:MET:CE	1:C:349:HIS:CE1	2.80	0.64
1:A:367:ILE:HA	1:A:409:GLN:OE1	1.97	0.64
1:B:23:ARG:NH2	1:B:68:ARG:HA	2.12	0.64
1:A:284:TYR:CZ	1:A:294:MET:HE3	2.32	0.64
1:A:492:MET:SD	1:A:522:MET:HB2	2.37	0.64
1:A:327:MET:HE2	1:A:349:HIS:NE2	2.13	0.64
1:B:492:MET:HE3	1:B:498:MET:HE1	1.79	0.63
1:A:268:ARG:HH11	3:A:704:PEG:H22	1.64	0.63
1:B:348:TYR:CE2	1:B:385:LEU:HD22	2.34	0.62
1:A:326:PRO:HB3	2:A:706:EDO:H12	1.81	0.62
1:C:207:ASP:OD2	1:C:209:SER:OG	2.15	0.61
1:C:146:GLY:HA3	3:C:706:PEG:H41	1.81	0.61
1:C:6:ILE:HD11	1:C:43:GLN:OE1	2.01	0.61
3:B:703:PEG:H42	6:B:900:HOH:O	1.99	0.60
1:B:66:LEU:HD12	1:B:264:LEU:CD2	2.32	0.60
1:B:7:ASN:OD1	1:B:9:THR:N	2.36	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:493:GLY:HA3	1:B:498:MET:HE2	1.85	0.58
1:C:213:GLN:O	1:C:216:SER:OG	2.22	0.58
1:A:362:LEU:HD22	3:A:711:PEG:H22	1.85	0.58
1:C:327:MET:HE3	1:C:349:HIS:HE1	1.67	0.58
1:B:7:ASN:OD1	1:B:10:ILE:N	2.32	0.58
1:B:66:LEU:HD12	1:B:264:LEU:HD22	1.87	0.56
1:B:213:GLN:O	1:B:216:SER:OG	2.20	0.56
1:B:327:MET:HE1	1:B:371:VAL:HG13	1.87	0.56
1:B:6:ILE:HD13	1:B:53:ALA:HA	1.87	0.56
1:A:362:LEU:CD2	3:A:711:PEG:H22	2.36	0.56
1:A:572:ARG:CZ	1:A:593:LEU:HD21	2.36	0.55
1:B:158:LEU:HD23	1:B:272:LEU:HD13	1.88	0.55
1:B:237:ALA:O	1:B:238:GLN:HG2	2.07	0.54
1:B:334:PHE:CD1	1:B:382:CYS:HB3	2.43	0.54
1:B:348:TYR:CD2	1:B:385:LEU:HD22	2.41	0.54
1:A:121:ARG:HD3	6:A:912:HOH:O	2.07	0.54
1:C:348:TYR:CE2	1:C:385:LEU:HD22	2.42	0.54
1:A:188:ALA:O	1:A:192:ARG:HG3	2.08	0.54
1:A:330:LEU:N	1:A:331:PRO:CD	2.71	0.54
1:B:493:GLY:HA3	1:B:498:MET:CE	2.38	0.54
1:A:327:MET:CE	1:A:349:HIS:NE2	2.71	0.53
1:A:203:HIS:HB2	1:A:241:TRP:HB2	1.90	0.53
1:A:268:ARG:HH11	3:A:704:PEG:C2	2.21	0.53
1:A:218:LEU:HD22	2:A:714:EDO:H22	1.89	0.53
1:C:268:ARG:HE	3:C:706:PEG:C3	2.21	0.52
1:B:7:ASN:OD1	1:B:7:ASN:C	2.53	0.52
1:A:416:ASP:CB	3:A:711:PEG:H32	2.39	0.52
1:C:146:GLY:HA2	3:C:706:PEG:H41	1.91	0.52
1:C:353:MET:HA	2:C:704:EDO:C1	2.39	0.52
1:B:542:ARG:HH11	1:B:542:ARG:HG2	1.75	0.52
1:A:81:ARG:HD3	1:A:85:TRP:CE2	2.44	0.52
1:C:137:ASP:C	2:C:707:EDO:H21	2.34	0.52
1:C:594:GLU:HG3	1:C:625:VAL:HG22	1.92	0.51
1:A:49:ARG:HA	1:A:49:ARG:HE	1.74	0.51
1:B:492:MET:HE3	1:B:498:MET:CE	2.40	0.51
1:C:476:LEU:HD12	1:C:631:VAL:HB	1.92	0.51
1:A:266:MET:CE	1:A:310:THR:HG23	2.40	0.51
1:A:594:GLU:HG3	1:A:625:VAL:HG22	1.93	0.51
1:A:49:ARG:HA	1:A:49:ARG:NE	2.25	0.51
1:B:53:ALA:HB3	1:B:54:PRO:HD3	1.93	0.51
1:C:203:HIS:HB2	1:C:241:TRP:HB2	1.91	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:245:TYR:H	1:C:248:GLN:HE21	1.58	0.51
1:A:439:GLY:O	1:A:440:ASP:CB	2.59	0.50
1:B:581:SER:O	1:B:635:GLN:HA	2.11	0.50
1:B:497:ALA:HB2	1:B:540:VAL:HG21	1.93	0.50
1:C:140:PHE:HB3	3:C:703:PEG:H22	1.93	0.49
1:C:389:ARG:HD3	1:C:394:ILE:HD11	1.93	0.49
1:C:532:ASP:O	1:C:535:SER:OG	2.29	0.49
1:A:86:PHE:CZ	1:A:345:HIS:HB3	2.47	0.49
1:A:61:GLY:HA3	3:A:712:PEG:H11	1.96	0.48
1:A:355:ALA:HA	1:A:399:LEU:HD11	1.94	0.48
1:B:394:ILE:O	1:B:444:GLY:HA2	2.13	0.48
1:A:222:PHE:HA	2:A:703:EDO:H11	1.95	0.48
1:B:173:CYS:HA	1:B:276:ALA:O	2.12	0.48
1:B:51:HIS:O	1:B:54:PRO:HD2	2.13	0.48
1:A:402:GLU:OE2	2:A:706:EDO:O1	2.31	0.48
1:A:422:ALA:HB1	3:A:708:PEG:C4	2.43	0.48
1:C:330:LEU:N	1:C:331:PRO:CD	2.77	0.47
1:C:420:PHE:HA	1:C:425:VAL:HG22	1.96	0.47
1:C:415:ARG:CG	1:C:415:ARG:CA	2.81	0.47
1:B:493:GLY:CA	1:B:498:MET:HE2	2.44	0.47
1:A:532:ASP:O	1:A:535:SER:OG	2.30	0.47
1:C:415:ARG:CB	1:C:415:ARG:CD	2.81	0.47
1:A:265:ALA:HA	3:A:704:PEG:C2	2.43	0.47
1:C:232:TRP:HB2	1:C:239:TRP:CZ3	2.50	0.47
1:B:78:ASP:HA	1:B:316:SER:HB3	1.96	0.47
1:C:176:PHE:CZ	1:C:262:MET:HE3	2.49	0.47
1:A:66:LEU:HD12	1:A:264:LEU:HD22	1.96	0.47
1:A:284:TYR:CE2	1:A:294:MET:HE3	2.49	0.47
1:A:362:LEU:HB3	3:A:710:PEG:H31	1.97	0.47
1:C:203:HIS:NE2	1:C:252:ASN:HA	2.30	0.47
1:C:352:LEU:HG	2:C:704:EDO:H11	1.96	0.47
1:C:585:VAL:HG21	1:C:624:LEU:HD21	1.97	0.47
1:A:35:ALA:N	1:A:36:PRO:CD	2.78	0.47
1:A:188:ALA:HB1	1:A:249:TRP:CZ3	2.51	0.46
1:C:385:LEU:HD21	1:C:489:LEU:HD22	1.97	0.46
3:C:706:PEG:H22	6:C:925:HOH:O	2.15	0.46
1:B:631:VAL:O	1:B:632:ARG:HD2	2.16	0.46
1:A:416:ASP:HB3	3:A:711:PEG:H32	1.98	0.46
1:C:280:ASP:HB3	3:C:703:PEG:O1	2.15	0.46
1:B:501:ASP:OD1	1:B:503:SER:HB2	2.16	0.46
1:B:30:ARG:NH1	6:B:804:HOH:O	2.27	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:348:TYR:CE2	1:A:385:LEU:HD22	2.51	0.46
1:A:208:ARG:HD3	1:A:239:TRP:CZ2	2.51	0.45
1:B:483:ALA:HA	1:B:557:LEU:HD13	1.97	0.45
1:A:439:GLY:O	1:A:440:ASP:HB3	2.15	0.45
1:B:237:ALA:O	1:B:238:GLN:CG	2.63	0.45
1:C:126:LEU:HB3	1:C:127:PRO:HD2	1.98	0.45
1:C:355:ALA:HA	1:C:399:LEU:HD11	1.98	0.45
1:C:53:ALA:HB3	1:C:54:PRO:HD3	1.98	0.45
1:C:327:MET:CE	1:C:349:HIS:HE1	2.24	0.45
1:C:466:GLY:HA2	1:C:469:VAL:HG12	1.98	0.45
1:A:136:ASN:ND2	6:A:816:HOH:O	2.38	0.45
1:C:145:TYR:CZ	1:C:262:MET:HE1	2.53	0.44
1:A:111:ARG:HD2	1:A:524:TRP:CH2	2.53	0.44
1:A:146:GLY:CA	3:A:704:PEG:H11	2.48	0.44
1:A:475:MET:HE3	1:A:540:VAL:HG13	1.99	0.44
1:B:331:PRO:N	1:B:332:PRO:CD	2.81	0.44
1:A:90:HIS:HB2	6:A:814:HOH:O	2.18	0.44
1:A:265:ALA:CA	3:A:704:PEG:H21	2.47	0.44
1:A:362:LEU:CD2	3:A:711:PEG:H41	2.48	0.44
1:A:412:PHE:HB2	3:A:711:PEG:H12	2.00	0.44
1:B:68:ARG:NH1	6:B:815:HOH:O	2.47	0.43
1:C:466:GLY:O	1:C:469:VAL:HG12	2.18	0.43
1:A:412:PHE:HA	3:A:711:PEG:H12	2.00	0.43
1:B:359:ALA:HB1	1:B:364:ARG:O	2.18	0.43
1:B:484:MET:HE3	1:B:485:PRO:HD2	2.00	0.43
1:B:353:MET:HE3	1:B:353:MET:HB3	1.94	0.43
1:B:464:ALA:HB2	2:A:701:EDO:H11	2.01	0.43
1:A:422:ALA:HB1	3:A:708:PEG:H41	2.00	0.43
1:A:433:GLU:OE1	1:A:505:ARG:NH2	2.51	0.43
1:C:469:VAL:O	1:C:472:ASN:HB2	2.18	0.43
1:B:66:LEU:HD12	1:B:264:LEU:HD23	2.00	0.43
1:C:49:ARG:HE	1:C:49:ARG:HB3	1.63	0.43
1:C:245:TYR:H	1:C:248:GLN:NE2	2.16	0.43
1:C:510:ARG:HG2	1:C:516:TRP:CE2	2.54	0.43
1:A:572:ARG:NE	1:A:593:LEU:HD21	2.33	0.43
1:B:552:ALA:HB3	2:B:704:EDO:H11	2.00	0.43
1:C:6:ILE:CD1	1:C:43:GLN:OE1	2.65	0.42
1:B:7:ASN:O	1:B:11:LEU:HG	2.18	0.42
1:B:78:ASP:HB3	1:B:315:PRO:HG2	2.00	0.42
1:B:330:LEU:HB2	1:B:331:PRO:HD3	2.01	0.42
1:C:17:ALA:HB3	1:C:18:PRO:HD3	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:106:GLN:O	1:C:110:GLU:HG2	2.19	0.42
1:C:126:LEU:HB3	1:C:127:PRO:CD	2.49	0.42
1:C:77:LEU:HD12	1:C:77:LEU:HA	1.90	0.42
1:B:130:ARG:HB2	1:B:144:ASP:HB3	2.02	0.42
1:B:51:HIS:C	1:B:54:PRO:HD2	2.44	0.42
1:C:387:TYR:OH	2:C:705:EDO:H21	2.20	0.42
1:C:576:LEU:C	1:C:576:LEU:HD23	2.44	0.42
1:B:621:ASN:CG	1:B:622:VAL:N	2.77	0.42
1:C:467:LEU:HD11	1:C:536:LEU:HD13	2.01	0.42
1:B:7:ASN:HD21	1:B:10:ILE:HG13	1.79	0.42
1:B:621:ASN:CG	1:B:622:VAL:H	2.27	0.42
1:A:353:MET:HE3	1:A:353:MET:HB3	1.75	0.42
1:C:360:LEU:HD21	1:C:473:ARG:HB3	2.02	0.42
1:C:456:GLN:HG3	1:C:499:LEU:HD13	2.02	0.42
1:C:425:VAL:HB	1:C:426:PRO:HD2	2.01	0.41
1:B:343:GLU:HB3	1:B:344:CYS:H	1.75	0.41
1:B:450:ALA:HB3	1:B:499:LEU:HD23	2.01	0.41
1:A:126:LEU:HB3	1:A:127:PRO:HD2	2.02	0.41
1:A:171:SER:HB3	1:A:275:GLU:HB2	2.01	0.41
1:B:132:ARG:HB2	1:B:182:ALA:HB1	2.02	0.41
1:A:456:GLN:HG3	1:A:499:LEU:HD13	2.03	0.41
1:C:7:ASN:OD1	1:C:9:THR:HB	2.20	0.41
1:C:81:ARG:HG3	1:C:316:SER:HB2	2.03	0.41
1:A:416:ASP:HA	1:A:419:ARG:HG2	2.02	0.41
1:A:18:PRO:CG	3:A:712:PEG:H22	2.48	0.41
1:A:76:THR:O	1:A:80:THR:HG23	2.20	0.41
1:C:176:PHE:CE1	1:C:262:MET:HE3	2.55	0.41
1:B:49:ARG:NH2	1:B:256:PRO:HD2	2.36	0.41
1:A:594:GLU:HG2	1:A:623:SER:HB3	2.01	0.41
1:A:608:ALA:C	1:A:609:ILE:HG13	2.44	0.41
1:C:590:ASP:OD1	1:C:591:GLN:HG2	2.20	0.41
1:B:325:VAL:HB	1:B:326:PRO:HD2	2.03	0.41
1:B:532:ASP:OD1	1:B:532:ASP:C	2.63	0.41
1:A:208:ARG:HB3	1:A:212:ASP:OD2	2.21	0.41
1:A:482:LEU:O	1:A:551:ARG:HD2	2.20	0.41
1:C:601:GLY:H	1:C:604:TRP:HE1	1.69	0.41
1:A:389:ARG:HD2	1:A:389:ARG:HA	1.94	0.41
1:B:330:LEU:C	1:B:332:PRO:HD2	2.45	0.40
1:B:545:ARG:O	1:B:549:GLN:HG3	2.21	0.40
1:A:7:ASN:HB3	1:A:10:ILE:HD12	2.03	0.40
1:A:20:ASP:OD1	1:A:20:ASP:C	2.65	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:23:ARG:HH22	1:B:68:ARG:HA	1.83	0.40
1:A:61:GLY:CA	3:A:712:PEG:H11	2.52	0.40
1:A:145:TYR:C	3:A:704:PEG:H12	2.47	0.40
1:A:146:GLY:CA	3:A:704:PEG:C1	3.00	0.40
1:B:49:ARG:HB3	1:B:49:ARG:NH1	2.36	0.40
1:B:126:LEU:HB3	1:B:127:PRO:CD	2.51	0.40
1:A:265:ALA:CB	3:A:704:PEG:H21	2.51	0.40
1:A:582:PHE:CD1	1:A:582:PHE:C	3.00	0.40

All (4) 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)
1:C:415:ARG:HH21	1:B:580:GLU:OE1[2_555]	1.41	0.19
1:C:415:ARG:NH2	1:B:580:GLU:OE2[2_555]	2.18	0.02
1:C:415:ARG:NH2	1:B:580:GLU:OE1[2_555]	2.18	0.02
6:B:996:HOH:O	6:B:996:HOH:O[2_555]	2.18	0.02

## 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	616/638 (97%)	598 (97%)	16 (3%)	2 (0%)	37	51
1	B	617/638 (97%)	603 (98%)	14 (2%)	0	100	100
1	C	615/638 (96%)	599 (97%)	16 (3%)	0	100	100
All	All	1848/1914 (97%)	1800 (97%)	46 (2%)	2 (0%)	48	65

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	209	SER

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Mol	Chain	Res	Type
1	A	440	ASP

### 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	477/490 (97%)	477 (100%)	0	100	100
1	B	480/490 (98%)	479 (100%)	1 (0%)	92	97
1	C	478/490 (98%)	477 (100%)	1 (0%)	92	97
All	All	1435/1470 (98%)	1433 (100%)	2 (0%)	92	97

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

Mol	Chain	Res	Type
1	C	22	GLN
1	B	329	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	550	GLN
1	B	400	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 31 ligands modelled in this entry, 4 are monoatomic - leaving 27 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	PEG	C	706	-	6,6,6	0.68	0	5,5,5	1.14	1 (20%)
2	EDO	A	713	-	3,3,3	0.50	0	2,2,2	0.42	0
3	PEG	A	712	-	6,6,6	0.49	0	5,5,5	0.69	0
2	EDO	B	704	-	3,3,3	0.68	0	2,2,2	0.58	0
2	EDO	A	701	-	3,3,3	0.75	0	2,2,2	0.27	0
3	PEG	C	703	-	6,6,6	0.36	0	5,5,5	0.68	0
3	PEG	A	709	-	6,6,6	0.52	0	5,5,5	0.59	0
3	PEG	A	711	-	6,6,6	0.80	0	5,5,5	1.02	0
3	PEG	A	704	-	6,6,6	0.70	0	5,5,5	1.28	0
2	EDO	C	702	-	3,3,3	0.39	0	2,2,2	0.34	0
2	EDO	A	706	-	3,3,3	0.72	0	2,2,2	0.42	0
3	PEG	B	703	-	6,6,6	0.59	0	5,5,5	0.94	0
2	EDO	A	707	-	3,3,3	0.57	0	2,2,2	0.01	0
3	PEG	A	710	-	6,6,6	0.61	0	5,5,5	1.15	0
2	EDO	C	705	-	3,3,3	0.73	0	2,2,2	0.36	0
2	EDO	C	701	-	3,3,3	0.64	0	2,2,2	0.20	0
2	EDO	C	707	4	3,3,3	0.42	0	2,2,2	0.57	0
2	EDO	B	702	-	3,3,3	0.41	0	2,2,2	0.60	0
2	EDO	A	703	-	3,3,3	0.48	0	2,2,2	0.52	0
2	EDO	A	705	-	3,3,3	0.87	0	2,2,2	0.82	0
2	EDO	A	702	-	3,3,3	0.56	0	2,2,2	0.27	0
2	EDO	C	708	-	3,3,3	0.54	0	2,2,2	0.32	0
2	EDO	A	715	-	3,3,3	0.85	0	2,2,2	0.43	0
3	PEG	A	708	-	6,6,6	0.56	0	5,5,5	0.27	0
2	EDO	A	714	-	3,3,3	0.48	0	2,2,2	0.34	0
2	EDO	C	704	-	3,3,3	0.69	0	2,2,2	0.13	0
5	P6G	B	701	-	18,18,18	0.57	0	17,17,17	0.47	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	PEG	C	706	-	-	1/4/4/4	-
2	EDO	A	713	-	-	1/1/1/1	-
3	PEG	A	712	-	-	2/4/4/4	-
2	EDO	B	704	-	-	0/1/1/1	-
2	EDO	A	701	-	-	1/1/1/1	-
3	PEG	C	703	-	-	2/4/4/4	-
3	PEG	A	709	-	-	1/4/4/4	-
3	PEG	A	711	-	-	1/4/4/4	-
3	PEG	A	704	-	-	0/4/4/4	-
2	EDO	C	702	-	-	0/1/1/1	-
2	EDO	A	706	-	-	1/1/1/1	-
3	PEG	B	703	-	-	2/4/4/4	-
2	EDO	A	707	-	-	1/1/1/1	-
3	PEG	A	710	-	-	3/4/4/4	-
2	EDO	C	705	-	-	1/1/1/1	-
2	EDO	C	701	-	-	1/1/1/1	-
2	EDO	C	707	4	-	1/1/1/1	-
2	EDO	B	702	-	-	1/1/1/1	-
2	EDO	A	703	-	-	1/1/1/1	-
2	EDO	A	705	-	-	0/1/1/1	-
2	EDO	A	702	-	-	1/1/1/1	-
2	EDO	C	708	-	-	0/1/1/1	-
2	EDO	A	715	-	-	0/1/1/1	-
3	PEG	A	708	-	-	3/4/4/4	-
2	EDO	A	714	-	-	0/1/1/1	-
2	EDO	C	704	-	-	0/1/1/1	-
5	P6G	B	701	-	-	8/16/16/16	-

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	706	PEG	C3-O2-C2	2.05	122.17	113.29

There are no chirality outliers.

All (33) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	B	701	P6G	O7-C8-C9-O10
5	B	701	P6G	O4-C5-C6-O7
5	B	701	P6G	O13-C14-C15-O16
5	B	701	P6G	O1-C2-C3-O4
2	A	713	EDO	O1-C1-C2-O2
5	B	701	P6G	O10-C11-C12-O13
3	A	710	PEG	C4-C3-O2-C2
3	A	708	PEG	O1-C1-C2-O2
3	A	708	PEG	O2-C3-C4-O4
3	B	703	PEG	C4-C3-O2-C2
2	C	707	EDO	O1-C1-C2-O2
2	A	706	EDO	O1-C1-C2-O2
2	A	701	EDO	O1-C1-C2-O2
2	A	702	EDO	O1-C1-C2-O2
3	A	710	PEG	C1-C2-O2-C3
3	A	709	PEG	O1-C1-C2-O2
5	B	701	P6G	O16-C17-C18-O19
5	B	701	P6G	C11-C12-O13-C14
3	C	703	PEG	O2-C3-C4-O4
3	C	706	PEG	O2-C3-C4-O4
2	A	703	EDO	O1-C1-C2-O2
3	A	712	PEG	C1-C2-O2-C3
3	C	703	PEG	C1-C2-O2-C3
5	B	701	P6G	C8-C9-O10-C11
3	A	711	PEG	O2-C3-C4-O4
2	B	702	EDO	O1-C1-C2-O2
2	A	707	EDO	O1-C1-C2-O2
3	A	712	PEG	O1-C1-C2-O2
3	A	708	PEG	C4-C3-O2-C2
3	B	703	PEG	C1-C2-O2-C3
2	C	701	EDO	O1-C1-C2-O2
2	C	705	EDO	O1-C1-C2-O2
3	A	710	PEG	O1-C1-C2-O2

There are no ring outliers.

17 monomers are involved in 45 short contacts:

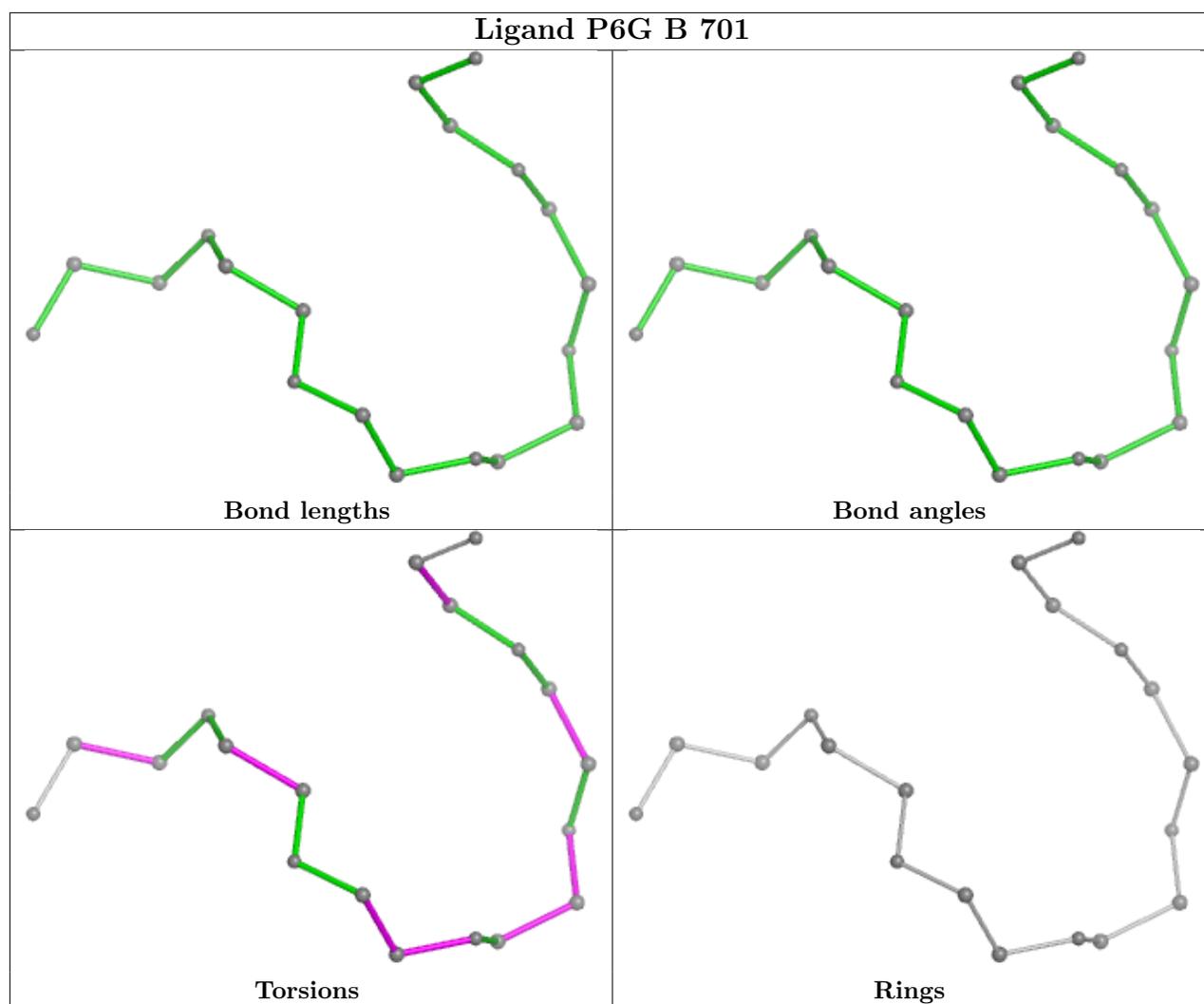
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	706	PEG	6	0
3	A	712	PEG	4	0
2	B	704	EDO	1	0
2	A	701	EDO	1	0
3	C	703	PEG	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	711	PEG	7	0
3	A	704	PEG	10	0
2	A	706	EDO	2	0
3	B	703	PEG	1	0
3	A	710	PEG	1	0
2	C	705	EDO	1	0
2	C	707	EDO	1	0
2	A	703	EDO	1	0
2	A	702	EDO	1	0
3	A	708	PEG	2	0
2	A	714	EDO	1	0
2	C	704	EDO	3	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



## 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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	619/638 (97%)	-0.56	7 (1%) 77 75	19, 41, 68, 109	1 (0%)
1	B	622/638 (97%)	-0.54	3 (0%) 87 85	25, 42, 66, 102	1 (0%)
1	C	620/638 (97%)	-0.49	4 (0%) 85 83	24, 42, 68, 101	1 (0%)
All	All	1861/1914 (97%)	-0.53	14 (0%) 82 80	19, 42, 67, 109	3 (0%)

All (14) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	622	VAL	4.1
1	A	609	ILE	3.6
1	B	637	GLY	3.6
1	B	613	VAL	3.3
1	C	6	ILE	3.0
1	A	637	GLY	2.9
1	A	439	GLY	2.8
1	C	440	ASP	2.7
1	A	437	SER	2.7
1	C	437	SER	2.7
1	C	51	HIS	2.3
1	A	608	ALA	2.1
1	B	23	ARG	2.1
1	A	381	ASN	2.1

### 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](#)

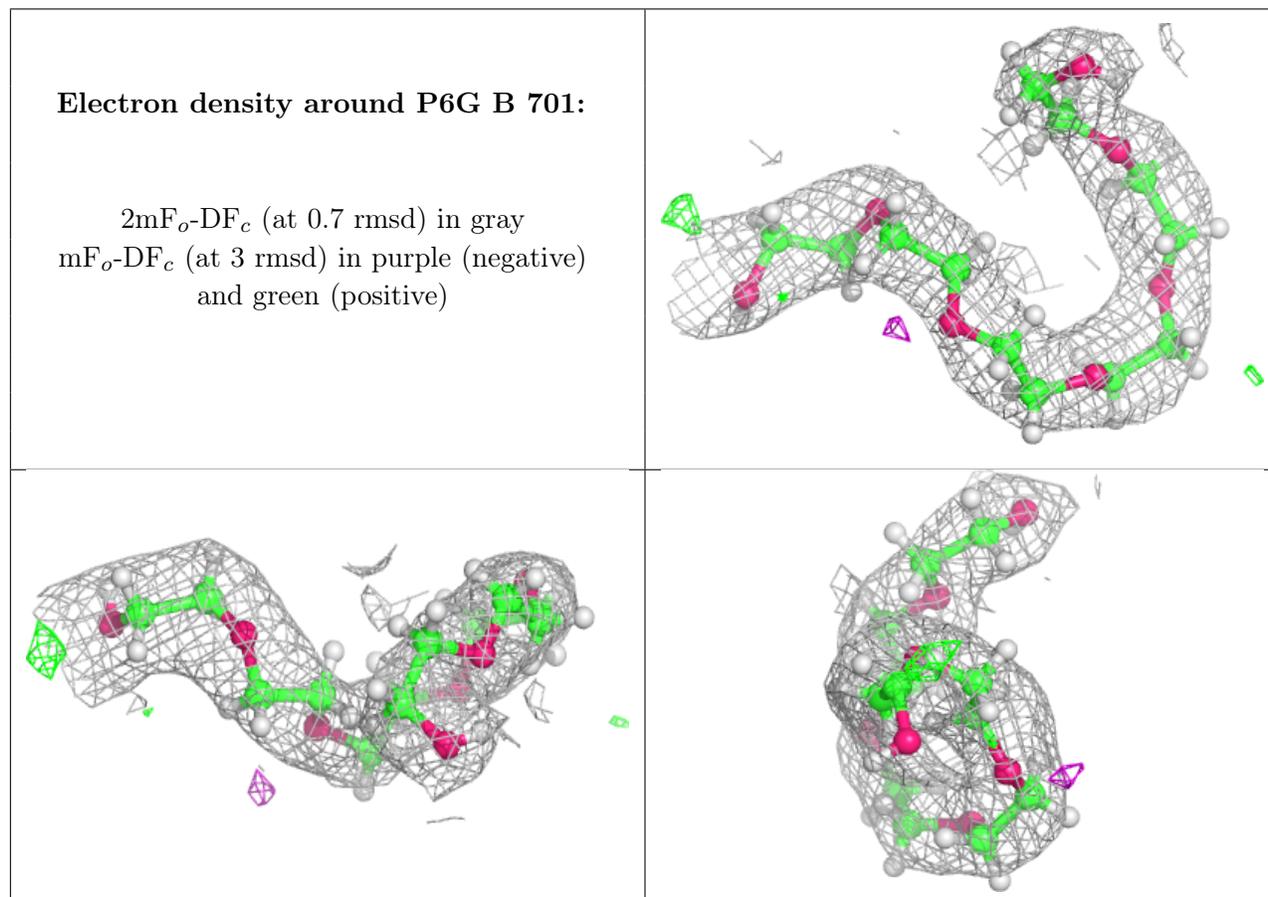
There are no oligosaccharides in this entry.

### 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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
2	EDO	A	703	4/4	0.76	0.13	55,66,78,85	0
3	PEG	A	708	7/7	0.77	0.16	48,65,81,81	0
2	EDO	A	715	4/4	0.78	0.15	47,57,62,64	0
2	EDO	A	713	4/4	0.83	0.18	57,76,92,92	0
2	EDO	C	701	4/4	0.83	0.14	42,51,68,68	0
3	PEG	C	703	7/7	0.83	0.23	37,61,67,73	0
3	PEG	A	704	7/7	0.83	0.17	25,46,58,58	17
2	EDO	A	707	4/4	0.83	0.25	48,58,71,71	0
3	PEG	A	710	7/7	0.83	0.19	41,50,60,60	0
3	PEG	C	706	7/7	0.84	0.20	29,39,54,54	17
3	PEG	A	711	7/7	0.84	0.17	22,44,55,55	17
3	PEG	A	712	7/7	0.84	0.20	39,51,61,61	17
2	EDO	A	705	4/4	0.85	0.19	37,55,66,66	0
2	EDO	A	701	4/4	0.85	0.15	55,66,70,78	0
3	PEG	A	709	7/7	0.85	0.24	57,112,157,157	0
2	EDO	A	714	4/4	0.86	0.17	40,48,55,60	10
2	EDO	B	704	4/4	0.87	0.27	44,57,65,69	0
2	EDO	A	706	4/4	0.88	0.14	45,54,62,62	0
3	PEG	B	703	7/7	0.88	0.12	35,45,50,52	0
4	K	C	710	1/1	0.88	0.15	83,83,83,83	0
2	EDO	A	702	4/4	0.90	0.10	44,52,57,60	0
2	EDO	C	705	4/4	0.90	0.14	41,49,53,53	0
2	EDO	C	707	4/4	0.91	0.16	47,57,61,65	0
2	EDO	C	708	4/4	0.91	0.15	40,57,68,72	0
5	P6G	B	701	19/19	0.93	0.10	36,57,69,73	0
2	EDO	B	702	4/4	0.95	0.10	40,48,55,66	0
2	EDO	C	704	4/4	0.95	0.14	34,43,51,51	0
2	EDO	C	702	4/4	0.97	0.05	32,39,47,54	0
4	K	A	716	1/1	0.99	0.03	40,40,40,40	0
4	K	C	709	1/1	0.99	0.02	38,38,38,38	0
4	K	B	705	1/1	1.00	0.02	38,38,38,38	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.



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

There are no such residues in this entry.