



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 20, 2026 – 06:34 AM UTC

PDB ID : 6QWV / pdb_00006qvv
Title : SARM1 SAM1-2 domains
Authors : Sporny, M.; Isupov, N.M.; Opatowsky, Y.
Deposited on : 2019-03-06
Resolution : 2.47 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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

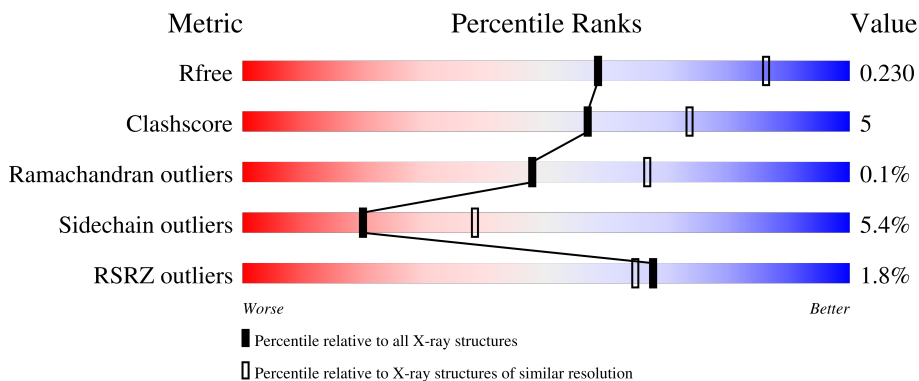
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.47 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}	180053	7589 (2.50-2.46)
Clashscore	190562	8295 (2.50-2.46)
Ramachandran outliers	187476	8164 (2.50-2.46)
Sidechain outliers	187428	8166 (2.50-2.46)
RSRZ outliers	180081	7593 (2.50-2.46)

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	164	 2% 77% 10% • 13%
1	B	164	 4% 77% 17% • •
1	C	164	 % 79% 9% • 10%
1	D	164	 74% 14% • 11%
1	E	164	 2% 79% 10% • 11%

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Mol	Chain	Length	Quality of chain
1	F	164	2% 79% 8% • 12%
1	G	164	% 77% 10% •• 12%
1	H	164	78% 9% • 11%
1	I	164	2% 78% 9% • 12%
1	J	164	% 75% 14% • 10%
1	K	164	% 77% 12% • 10%
1	L	164	2% 79% 7% • 12%
1	M	164	2% 78% 10% • 12%
1	N	164	2% 76% 10% • 13%
1	O	164	% 78% 9% • 12%
1	P	164	2% 82% 5% 12%

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	EDO	D	608	-	-	X	-
2	EDO	E	601	-	-	X	-
2	EDO	O	601	-	-	X	-
4	PEG	D	602	-	-	X	-
5	PGE	B	605	-	-	X	-

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 20654 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 Sterile alpha and TIR motif-containing protein 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	143	Total 1211	C 763	N 220	O 221	S 7	0	7	0
1	B	157	Total 1324	C 832	N 241	O 244	S 7	0	8	0
1	C	148	Total 1232	C 775	N 221	O 229	S 7	0	5	0
1	D	146	Total 1204	C 756	N 215	O 226	S 7	0	3	0
1	E	146	Total 1209	C 761	N 219	O 222	S 7	0	3	0
1	F	144	Total 1211	C 762	N 219	O 223	S 7	0	7	0
1	G	145	Total 1206	C 758	N 217	O 224	S 7	0	5	0
1	H	146	Total 1210	C 761	N 217	O 225	S 7	0	4	0
1	I	145	Total 1220	C 768	N 218	O 227	S 7	0	9	0
1	J	147	Total 1216	C 764	N 219	O 226	S 7	0	4	0
1	K	148	Total 1234	C 776	N 224	O 227	S 7	0	5	0
1	L	145	Total 1205	C 758	N 216	O 224	S 7	0	5	0
1	M	145	Total 1211	C 763	N 218	O 223	S 7	0	6	0
1	N	143	Total 1181	C 744	N 210	O 220	S 7	0	4	0
1	O	145	Total 1211	C 763	N 218	O 223	S 7	0	6	0
1	P	144	Total 1207	C 759	N 220	O 221	S 7	0	6	0

There are 32 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	385	GLY	-	expression tag	UNP Q6SZW1
A	386	SER	-	expression tag	UNP Q6SZW1
B	385	GLY	-	expression tag	UNP Q6SZW1
B	386	SER	-	expression tag	UNP Q6SZW1
C	385	GLY	-	expression tag	UNP Q6SZW1
C	386	SER	-	expression tag	UNP Q6SZW1
D	385	GLY	-	expression tag	UNP Q6SZW1
D	386	SER	-	expression tag	UNP Q6SZW1
E	385	GLY	-	expression tag	UNP Q6SZW1
E	386	SER	-	expression tag	UNP Q6SZW1
F	385	GLY	-	expression tag	UNP Q6SZW1
F	386	SER	-	expression tag	UNP Q6SZW1
G	385	GLY	-	expression tag	UNP Q6SZW1
G	386	SER	-	expression tag	UNP Q6SZW1
H	385	GLY	-	expression tag	UNP Q6SZW1
H	386	SER	-	expression tag	UNP Q6SZW1
I	385	GLY	-	expression tag	UNP Q6SZW1
I	386	SER	-	expression tag	UNP Q6SZW1
J	385	GLY	-	expression tag	UNP Q6SZW1
J	386	SER	-	expression tag	UNP Q6SZW1
K	385	GLY	-	expression tag	UNP Q6SZW1
K	386	SER	-	expression tag	UNP Q6SZW1
L	385	GLY	-	expression tag	UNP Q6SZW1
L	386	SER	-	expression tag	UNP Q6SZW1
M	385	GLY	-	expression tag	UNP Q6SZW1
M	386	SER	-	expression tag	UNP Q6SZW1
N	385	GLY	-	expression tag	UNP Q6SZW1
N	386	SER	-	expression tag	UNP Q6SZW1
O	385	GLY	-	expression tag	UNP Q6SZW1
O	386	SER	-	expression tag	UNP Q6SZW1
P	385	GLY	-	expression tag	UNP Q6SZW1
P	386	SER	-	expression tag	UNP Q6SZW1

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



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

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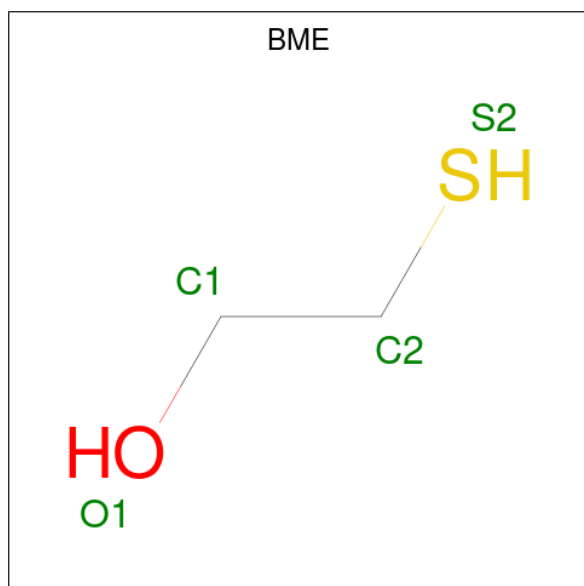
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	D	1	Total 4	C 2	O 2	0	0
2	E	1	Total 4	C 2	O 2	0	0
2	F	1	Total 4	C 2	O 2	0	0
2	I	1	Total 4	C 2	O 2	0	0
2	I	1	Total 4	C 2	O 2	0	0
2	J	1	Total 4	C 2	O 2	0	0
2	J	1	Total 4	C 2	O 2	0	0
2	J	1	Total 4	C 2	O 2	0	0
2	J	1	Total 4	C 2	O 2	0	0
2	J	1	Total 4	C 2	O 2	0	0
2	J	1	Total 4	C 2	O 2	0	0
2	J	1	Total 4	C 2	O 2	0	0
2	K	1	Total 4	C 2	O 2	0	0
2	K	1	Total 4	C 2	O 2	0	0
2	K	1	Total 4	C 2	O 2	0	0
2	K	1	Total 4	C 2	O 2	0	0
2	L	1	Total 4	C 2	O 2	0	0
2	L	1	Total 4	C 2	O 2	0	0
2	L	1	Total 4	C 2	O 2	0	0
2	M	1	Total 4	C 2	O 2	0	0
2	M	1	Total 4	C 2	O 2	0	0
2	M	1	Total 4	C 2	O 2	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	M	1	Total C O 4 2 2	0	0
2	N	1	Total C O 4 2 2	0	0
2	O	1	Total C O 4 2 2	0	0
2	O	1	Total C O 4 2 2	0	0
2	O	1	Total C O 4 2 2	0	0
2	P	1	Total C O 4 2 2	0	0
2	P	1	Total C O 4 2 2	0	0
2	P	1	Total C O 4 2 2	0	0

- Molecule 3 is BETA-MERCAPTOETHANOL (CCD ID: BME) (formula: C₂H₆OS).



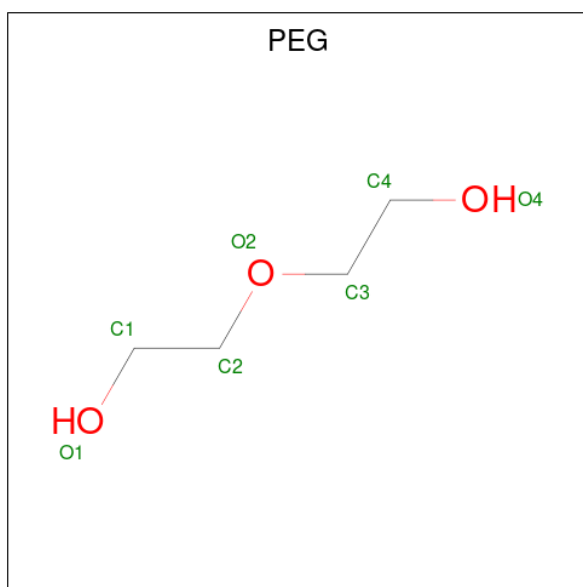
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O S 4 2 1 1	0	0
3	B	1	Total C O S 4 2 1 1	0	0
3	C	1	Total C O S 4 2 1 1	0	0

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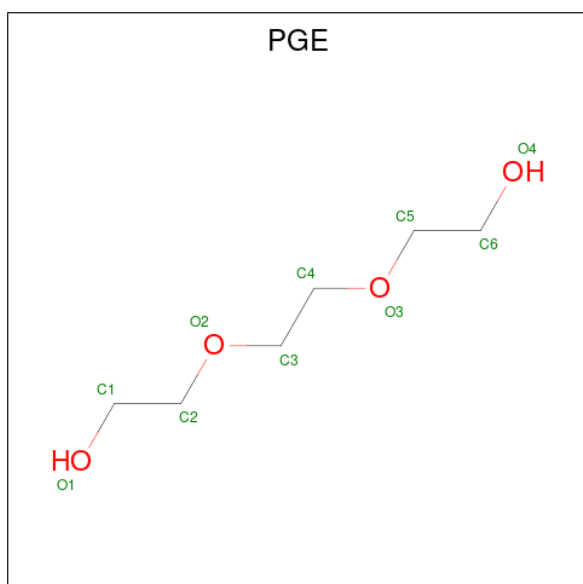
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	D	1	Total 4	C 2	O 1	S 1	0	0
3	E	1	Total 4	C 2	O 1	S 1	0	0
3	F	1	Total 4	C 2	O 1	S 1	0	0
3	G	1	Total 4	C 2	O 1	S 1	0	0
3	H	1	Total 4	C 2	O 1	S 1	0	0
3	I	1	Total 4	C 2	O 1	S 1	0	0
3	J	1	Total 4	C 2	O 1	S 1	0	0
3	K	1	Total 4	C 2	O 1	S 1	0	0
3	L	1	Total 4	C 2	O 1	S 1	0	0
3	M	1	Total 4	C 2	O 1	S 1	0	0
3	N	1	Total 4	C 2	O 1	S 1	0	0
3	O	1	Total 4	C 2	O 1	S 1	0	0
3	P	1	Total 4	C 2	O 1	S 1	0	0

- Molecule 4 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: C₄H₁₀O₃).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total C O 7 4 3	0	0
4	D	1	Total C O 7 4 3	0	0
4	J	1	Total C O 7 4 3	0	0
4	J	1	Total C O 7 4 3	0	0
4	K	1	Total C O 7 4 3	0	0

- Molecule 5 is TRIETHYLENE GLYCOL (CCD ID: PGE) (formula: C₆H₁₄O₄).



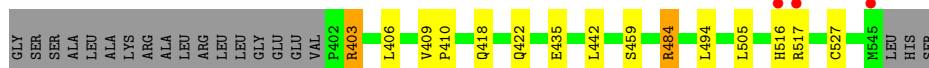
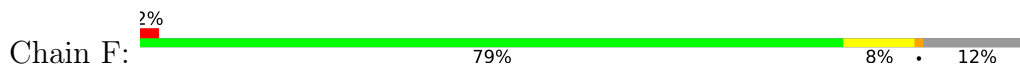
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	B	1	Total	C	O	0	0
			10	6	4		
5	P	1	Total	C	O	0	0
			10	6	4		

- Molecule 6 is water.

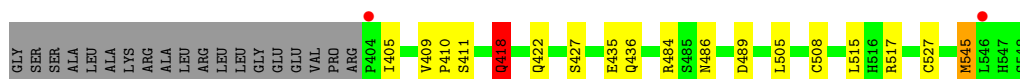
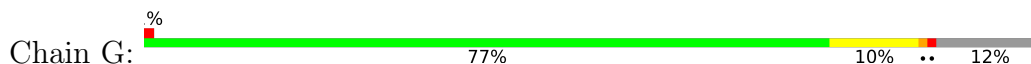
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	42	Total	O	0	0
			42	42		
6	B	62	Total	O	0	0
			62	62		
6	C	86	Total	O	0	0
			86	86		
6	D	77	Total	O	0	0
			77	77		
6	E	45	Total	O	0	0
			45	45		
6	F	37	Total	O	0	0
			37	37		
6	G	37	Total	O	0	0
			37	37		
6	H	43	Total	O	0	0
			43	43		
6	I	62	Total	O	0	0
			62	62		
6	J	84	Total	O	0	0
			84	84		
6	K	62	Total	O	0	0
			62	62		
6	L	50	Total	O	0	0
			50	50		
6	M	62	Total	O	0	0
			62	62		
6	N	25	Total	O	0	0
			25	25		
6	O	52	Total	O	0	0
			52	52		
6	P	45	Total	O	0	0
			45	45		



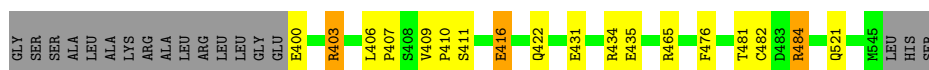
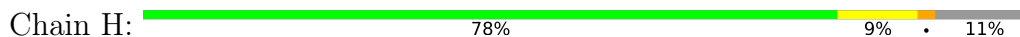
- Molecule 1: Sterile alpha and TIR motif-containing protein 1



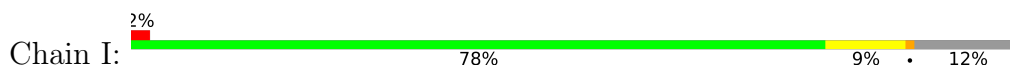
- Molecule 1: Sterile alpha and TIR motif-containing protein 1



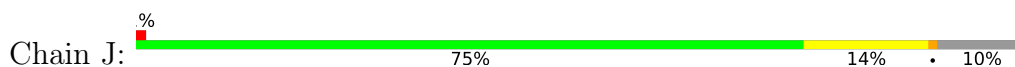
- Molecule 1: Sterile alpha and TIR motif-containing protein 1



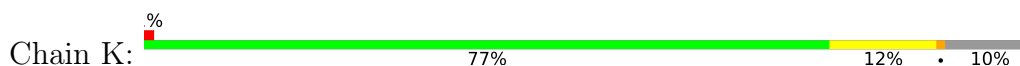
- Molecule 1: Sterile alpha and TIR motif-containing protein 1



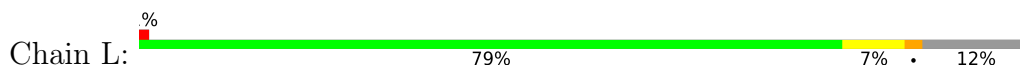
- Molecule 1: Sterile alpha and TIR motif-containing protein 1



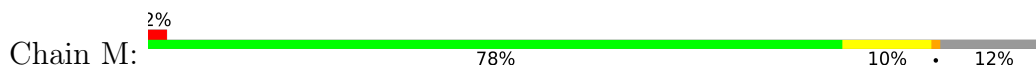
- Molecule 1: Sterile alpha and TIR motif-containing protein 1



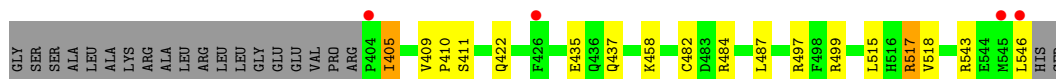
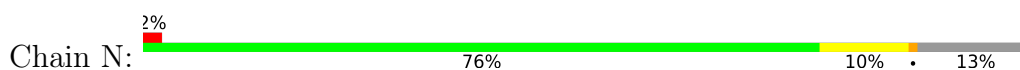
- Molecule 1: Sterile alpha and TIR motif-containing protein 1



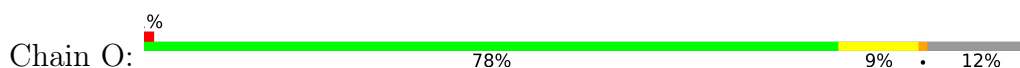
- Molecule 1: Sterile alpha and TIR motif-containing protein 1



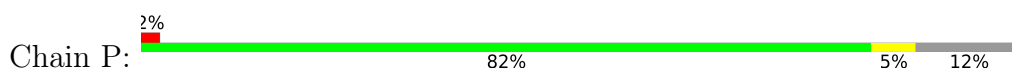
- Molecule 1: Sterile alpha and TIR motif-containing protein 1



- Molecule 1: Sterile alpha and TIR motif-containing protein 1



- Molecule 1: Sterile alpha and TIR motif-containing protein 1



4 Data and refinement statistics

Property	Value	Source
Space group	P 43	Depositor
Cell constants a, b, c, α , β , γ	252.25Å 252.25Å 49.77Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	56.40 – 2.47 56.40 – 2.47	Depositor EDS
% Data completeness (in resolution range)	99.1 (56.40-2.47) 99.1 (56.40-2.47)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.31 (at 2.48Å)	Xtrriage
Refinement program	REFMAC 5.8.0238	Depositor
R, R_{free}	0.189 , 0.230 0.189 , 0.230	Depositor DCC
R_{free} test set	1333 reflections (1.07%)	wwPDB-VP
Wilson B-factor (Å ²)	51.7	Xtrriage
Anisotropy	0.101	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 54.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtrriage
Estimated twinning fraction	0.011 for h,-k,-l	Xtrriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	20654	wwPDB-VP
Average B, all atoms (Å ²)	58.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.65% 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: PGE, BME, EDO, PEG

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	0.57	0/1254	1.08	1/1687 (0.1%)
1	B	0.63	0/1372	1.11	1/1846 (0.1%)
1	C	0.66	0/1271	1.10	1/1713 (0.1%)
1	D	0.67	0/1236	1.11	1/1665 (0.1%)
1	E	0.63	0/1242	1.08	1/1674 (0.1%)
1	F	0.58	0/1256	1.06	2/1692 (0.1%)
1	G	0.58	0/1244	1.06	2/1674 (0.1%)
1	H	0.62	0/1245	1.10	2/1679 (0.1%)
1	I	0.63	0/1270	1.12	3/1711 (0.2%)
1	J	0.69	0/1252	1.09	2/1686 (0.1%)
1	K	0.65	0/1273	1.07	1/1715 (0.1%)
1	L	0.60	0/1244	1.12	2/1675 (0.1%)
1	M	0.62	0/1252	1.10	2/1687 (0.1%)
1	N	0.57	0/1215	1.08	1/1637 (0.1%)
1	O	0.60	0/1252	1.08	2/1687 (0.1%)
1	P	0.62	0/1248	1.11	0/1680
All	All	0.62	0/20126	1.09	24/27108 (0.1%)

There are no bond length outliers.

The worst 5 of 24 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	414	GLU	CB-CG-CD	10.73	130.85	112.60
1	B	508	CYS	CB-CA-C	-7.62	96.29	110.01
1	C	431	GLU	CB-CG-CD	7.57	125.47	112.60
1	M	402	PRO	CA-N-CD	-7.22	101.89	112.00
1	A	545	MET	N-CA-C	-6.62	105.35	113.50

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	1211	0	1225	12	0
1	B	1324	0	1339	23	0
1	C	1232	0	1231	13	0
1	D	1204	0	1194	23	0
1	E	1209	0	1207	14	0
1	F	1211	0	1215	11	0
1	G	1206	0	1207	6	0
1	H	1210	0	1208	15	0
1	I	1220	0	1229	11	0
1	J	1216	0	1214	14	0
1	K	1234	0	1238	20	0
1	L	1205	0	1201	6	0
1	M	1211	0	1222	7	0
1	N	1181	0	1182	8	0
1	O	1211	0	1222	15	0
1	P	1207	0	1217	7	0
2	A	8	0	12	3	0
2	B	16	0	24	1	0
2	C	12	0	18	2	0
2	D	24	0	36	9	0
2	E	4	0	6	5	0
2	F	4	0	6	0	0
2	I	8	0	12	1	0
2	J	24	0	36	3	0
2	K	16	0	24	0	0
2	L	12	0	18	1	0
2	M	16	0	24	2	0
2	N	4	0	6	0	0
2	O	12	0	18	4	0
2	P	12	0	18	0	0
3	A	4	0	5	0	0
3	B	4	0	5	0	0
3	C	4	0	5	0	0
3	D	4	0	5	1	0
3	E	4	0	5	0	0
3	F	4	0	5	0	0
3	G	4	0	5	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	H	4	0	5	1	0
3	I	4	0	5	0	0
3	J	4	0	5	1	0
3	K	4	0	5	0	0
3	L	4	0	5	0	0
3	M	4	0	5	0	0
3	N	4	0	5	1	0
3	O	4	0	5	0	0
3	P	4	0	5	0	0
4	B	7	0	10	1	0
4	D	7	0	10	8	0
4	J	14	0	20	2	0
4	K	7	0	10	2	0
5	B	10	0	14	8	0
5	P	10	0	14	1	0
6	A	42	0	0	1	0
6	B	62	0	0	3	0
6	C	86	0	0	2	0
6	D	77	0	0	0	0
6	E	45	0	0	1	0
6	F	37	0	0	0	0
6	G	37	0	0	1	0
6	H	43	0	0	0	0
6	I	62	0	0	1	0
6	J	84	0	0	1	0
6	K	62	0	0	2	0
6	L	50	0	0	2	0
6	M	62	0	0	1	0
6	N	25	0	0	1	0
6	O	52	0	0	0	0
6	P	45	0	0	0	0
All	All	20654	0	19967	181	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 5.

The worst 5 of 181 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:K:516:HIS:CE1	1:K:547:HIS:HB2	1.93	1.04
1:K:516:HIS:CE1	1:K:547:HIS:CB	2.45	0.99

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:512:ARG:HH22	2:O:601:EDO:H22	1.28	0.98
1:B:402:PRO:HB2	5:B:605:PGE:H32	1.52	0.89
1:A:465[A]:ARG:HH12	2:A:603:EDO:H21	1.38	0.89

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	148/164 (90%)	146 (99%)	2 (1%)	0	100	100
1	B	163/164 (99%)	159 (98%)	4 (2%)	0	100	100
1	C	151/164 (92%)	147 (97%)	3 (2%)	1 (1%)	18	32
1	D	147/164 (90%)	145 (99%)	2 (1%)	0	100	100
1	E	147/164 (90%)	144 (98%)	3 (2%)	0	100	100
1	F	149/164 (91%)	147 (99%)	2 (1%)	0	100	100
1	G	148/164 (90%)	145 (98%)	3 (2%)	0	100	100
1	H	148/164 (90%)	144 (97%)	4 (3%)	0	100	100
1	I	152/164 (93%)	150 (99%)	2 (1%)	0	100	100
1	J	149/164 (91%)	147 (99%)	2 (1%)	0	100	100
1	K	151/164 (92%)	147 (97%)	4 (3%)	0	100	100
1	L	148/164 (90%)	146 (99%)	2 (1%)	0	100	100
1	M	149/164 (91%)	146 (98%)	3 (2%)	0	100	100
1	N	145/164 (88%)	142 (98%)	2 (1%)	1 (1%)	18	32
1	O	149/164 (91%)	147 (99%)	2 (1%)	0	100	100
1	P	148/164 (90%)	144 (97%)	4 (3%)	0	100	100
All	All	2392/2624 (91%)	2346 (98%)	44 (2%)	2 (0%)	48	66

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	402	PRO
1	N	405	ILE

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	135/144 (94%)	128 (95%)	7 (5%)	21	39
1	B	148/144 (103%)	138 (93%)	10 (7%)	14	28
1	C	138/144 (96%)	130 (94%)	8 (6%)	18	35
1	D	134/144 (93%)	125 (93%)	9 (7%)	15	29
1	E	134/144 (93%)	126 (94%)	8 (6%)	17	33
1	F	136/144 (94%)	130 (96%)	6 (4%)	25	47
1	G	135/144 (94%)	125 (93%)	10 (7%)	13	24
1	H	135/144 (94%)	127 (94%)	8 (6%)	18	34
1	I	139/144 (96%)	132 (95%)	7 (5%)	22	41
1	J	136/144 (94%)	129 (95%)	7 (5%)	21	40
1	K	138/144 (96%)	128 (93%)	10 (7%)	13	26
1	L	135/144 (94%)	127 (94%)	8 (6%)	18	34
1	M	136/144 (94%)	128 (94%)	8 (6%)	18	34
1	N	132/144 (92%)	123 (93%)	9 (7%)	14	28
1	O	136/144 (94%)	133 (98%)	3 (2%)	45	70
1	P	135/144 (94%)	129 (96%)	6 (4%)	25	47
All	All	2182/2304 (95%)	2058 (94%)	124 (6%)	20	36

5 of 124 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	G	545	MET
1	N	458	LYS

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Mol	Chain	Res	Type
1	I	544	GLU
1	N	435	GLU
1	P	403	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 40 such sidechains are listed below:

Mol	Chain	Res	Type
1	L	486	ASN
1	O	423	GLN
1	L	530	HIS
1	N	437	GLN
1	O	437	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](#)

66 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	O	601	-	3,3,3	0.11	0	2,2,2	0.38	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	EDO	P	605	-	3,3,3	0.08	0	2,2,2	0.31	0
4	PEG	D	602	-	6,6,6	0.34	0	5,5,5	0.37	0
2	EDO	O	604	-	3,3,3	0.14	0	2,2,2	0.27	0
3	BME	K	602	1	3,3,3	0.26	0	2,2,2	0.34	0
3	BME	M	601	1	3,3,3	0.34	0	2,2,2	1.40	0
2	EDO	P	601	-	3,3,3	0.10	0	2,2,2	0.29	0
2	EDO	C	604	-	3,3,3	0.16	0	2,2,2	0.05	0
2	EDO	L	604	-	3,3,3	0.17	0	2,2,2	0.19	0
2	EDO	I	602	-	3,3,3	0.18	0	2,2,2	0.20	0
2	EDO	D	606	-	3,3,3	0.28	0	2,2,2	0.35	0
2	EDO	B	607	-	3,3,3	0.08	0	2,2,2	0.19	0
2	EDO	L	603	-	3,3,3	0.09	0	2,2,2	0.29	0
2	EDO	K	604	-	3,3,3	0.30	0	2,2,2	0.19	0
2	EDO	B	601	-	3,3,3	0.51	0	2,2,2	0.64	0
2	EDO	O	603	-	3,3,3	0.18	0	2,2,2	0.42	0
3	BME	F	602	1	3,3,3	0.16	0	2,2,2	0.45	0
3	BME	I	603	1	3,3,3	0.19	0	2,2,2	0.42	0
2	EDO	A	601	-	3,3,3	0.06	0	2,2,2	0.31	0
2	EDO	C	603	-	3,3,3	0.17	0	2,2,2	0.15	0
2	EDO	D	601	-	3,3,3	0.30	0	2,2,2	0.68	0
2	EDO	D	607	-	3,3,3	0.10	0	2,2,2	0.25	0
2	EDO	J	603	-	3,3,3	0.20	0	2,2,2	0.44	0
2	EDO	A	603	-	3,3,3	0.18	0	2,2,2	0.23	0
2	EDO	B	602	-	3,3,3	0.23	0	2,2,2	0.24	0
3	BME	P	603	1	3,3,3	0.18	0	2,2,2	0.19	0
2	EDO	J	608	-	3,3,3	0.27	0	2,2,2	0.36	0
3	BME	B	604	1	3,3,3	0.42	0	2,2,2	0.59	0
3	BME	J	606	1	3,3,3	0.27	0	2,2,2	0.36	0
2	EDO	D	605	-	3,3,3	0.20	0	2,2,2	0.11	0
3	BME	L	602	1	3,3,3	0.14	0	2,2,2	1.05	0
2	EDO	K	605	-	3,3,3	0.50	0	2,2,2	0.58	0
2	EDO	J	607	-	3,3,3	0.09	0	2,2,2	0.20	0
3	BME	D	603	1	3,3,3	0.29	0	2,2,2	1.17	0
4	PEG	J	601	-	6,6,6	0.53	0	5,5,5	0.32	0
5	PGE	B	605	-	9,9,9	0.31	0	8,8,8	0.35	0
2	EDO	F	601	-	3,3,3	0.06	0	2,2,2	0.02	0
2	EDO	M	603	-	3,3,3	0.18	0	2,2,2	0.39	0
3	BME	E	602	1	3,3,3	0.36	0	2,2,2	0.89	0
4	PEG	B	603	-	6,6,6	0.17	0	5,5,5	0.11	0
2	EDO	E	601	-	3,3,3	0.18	0	2,2,2	0.67	0
2	EDO	J	604	-	3,3,3	0.17	0	2,2,2	1.00	0
2	EDO	J	605	-	3,3,3	0.17	0	2,2,2	0.99	0
2	EDO	J	609	-	3,3,3	0.18	0	2,2,2	0.18	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	EDO	K	601	-	3,3,3	0.07	0	2,2,2	0.40	0
2	EDO	K	606	-	3,3,3	0.08	0	2,2,2	0.08	0
3	BME	N	601	1	3,3,3	0.31	0	2,2,2	0.37	0
2	EDO	M	602	-	3,3,3	0.23	0	2,2,2	0.27	0
2	EDO	M	604	-	3,3,3	0.28	0	2,2,2	0.61	0
2	EDO	N	602	-	3,3,3	0.08	0	2,2,2	0.34	0
4	PEG	J	602	-	6,6,6	0.56	0	5,5,5	0.27	0
3	BME	A	602	1	3,3,3	0.29	0	2,2,2	0.65	0
2	EDO	P	602	-	3,3,3	0.24	0	2,2,2	0.33	0
3	BME	O	602	1	3,3,3	0.16	0	2,2,2	0.37	0
2	EDO	M	605	-	3,3,3	0.25	0	2,2,2	0.08	0
3	BME	G	601	1	3,3,3	0.27	0	2,2,2	0.46	0
3	BME	C	601	1	3,3,3	0.32	0	2,2,2	0.55	0
5	PGE	P	604	-	9,9,9	0.22	0	8,8,8	0.19	0
2	EDO	C	602	-	3,3,3	0.34	0	2,2,2	0.78	0
2	EDO	B	606	-	3,3,3	0.19	0	2,2,2	0.25	0
3	BME	H	601	1	3,3,3	0.24	0	2,2,2	0.07	0
2	EDO	D	608	-	3,3,3	0.34	0	2,2,2	0.58	0
4	PEG	K	603	-	6,6,6	0.25	0	5,5,5	0.16	0
2	EDO	D	604	-	3,3,3	0.18	0	2,2,2	0.08	0
2	EDO	I	601	-	3,3,3	0.32	0	2,2,2	0.61	0
2	EDO	L	601	-	3,3,3	0.08	0	2,2,2	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
2	EDO	O	601	-	-	1/1/1/1	-
2	EDO	P	605	-	-	0/1/1/1	-
4	PEG	D	602	-	-	3/4/4/4	-
2	EDO	O	604	-	-	0/1/1/1	-
3	BME	K	602	1	-	1/1/1/1	-
3	BME	M	601	1	-	0/1/1/1	-
2	EDO	P	601	-	-	1/1/1/1	-
2	EDO	C	604	-	-	1/1/1/1	-
2	EDO	L	604	-	-	1/1/1/1	-
2	EDO	I	602	-	-	1/1/1/1	-
2	EDO	D	606	-	-	0/1/1/1	-
2	EDO	B	607	-	-	0/1/1/1	-
2	EDO	L	603	-	-	1/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	EDO	K	604	-	-	1/1/1/1	-
2	EDO	B	601	-	-	1/1/1/1	-
2	EDO	O	603	-	-	1/1/1/1	-
3	BME	F	602	1	-	1/1/1/1	-
3	BME	I	603	1	-	0/1/1/1	-
2	EDO	A	601	-	-	0/1/1/1	-
2	EDO	C	603	-	-	0/1/1/1	-
2	EDO	D	601	-	-	1/1/1/1	-
2	EDO	D	607	-	-	1/1/1/1	-
2	EDO	J	603	-	-	1/1/1/1	-
2	EDO	A	603	-	-	1/1/1/1	-
2	EDO	B	602	-	-	1/1/1/1	-
3	BME	P	603	1	-	1/1/1/1	-
2	EDO	J	608	-	-	1/1/1/1	-
3	BME	B	604	1	-	0/1/1/1	-
3	BME	J	606	1	-	0/1/1/1	-
2	EDO	D	605	-	-	1/1/1/1	-
3	BME	L	602	1	-	0/1/1/1	-
2	EDO	K	605	-	-	1/1/1/1	-
2	EDO	J	607	-	-	1/1/1/1	-
3	BME	D	603	1	-	1/1/1/1	-
4	PEG	J	601	-	-	3/4/4/4	-
5	PGE	B	605	-	-	6/7/7/7	-
2	EDO	F	601	-	-	1/1/1/1	-
2	EDO	M	603	-	-	0/1/1/1	-
3	BME	E	602	1	-	0/1/1/1	-
4	PEG	B	603	-	-	0/4/4/4	-
2	EDO	E	601	-	-	1/1/1/1	-
2	EDO	J	604	-	-	1/1/1/1	-
2	EDO	J	605	-	-	1/1/1/1	-
2	EDO	J	609	-	-	1/1/1/1	-
2	EDO	K	601	-	-	0/1/1/1	-
2	EDO	K	606	-	-	1/1/1/1	-
3	BME	N	601	1	-	1/1/1/1	-
2	EDO	M	602	-	-	1/1/1/1	-
2	EDO	M	604	-	-	0/1/1/1	-
2	EDO	N	602	-	-	1/1/1/1	-
4	PEG	J	602	-	-	2/4/4/4	-
3	BME	A	602	1	-	0/1/1/1	-
2	EDO	P	602	-	-	1/1/1/1	-
3	BME	O	602	1	-	0/1/1/1	-
2	EDO	M	605	-	-	0/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	BME	G	601	1	-	0/1/1/1	-
3	BME	C	601	1	-	1/1/1/1	-
5	PGE	P	604	-	-	4/7/7/7	-
2	EDO	C	602	-	-	0/1/1/1	-
2	EDO	B	606	-	-	1/1/1/1	-
3	BME	H	601	1	-	1/1/1/1	-
2	EDO	D	608	-	-	1/1/1/1	-
4	PEG	K	603	-	-	3/4/4/4	-
2	EDO	D	604	-	-	0/1/1/1	-
2	EDO	I	601	-	-	1/1/1/1	-
2	EDO	L	601	-	-	0/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 58 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	C	601	BME	O1-C1-C2-S2
3	N	601	BME	O1-C1-C2-S2
5	B	605	PGE	O2-C3-C4-O3
4	J	601	PEG	O1-C1-C2-O2
4	K	603	PEG	O1-C1-C2-O2

There are no ring outliers.

27 monomers are involved in 57 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	O	601	EDO	4	0
4	D	602	PEG	8	0
2	C	604	EDO	1	0
2	L	604	EDO	1	0
2	D	601	EDO	1	0
2	D	607	EDO	1	0
2	A	603	EDO	3	0
2	B	602	EDO	1	0
3	J	606	BME	1	0
3	D	603	BME	1	0
4	J	601	PEG	1	0
5	B	605	PGE	8	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	M	603	EDO	1	0
4	B	603	PEG	1	0
2	E	601	EDO	5	0
2	J	604	EDO	2	0
2	J	605	EDO	1	0
3	N	601	BME	1	0
2	M	602	EDO	1	0
4	J	602	PEG	1	0
5	P	604	PGE	1	0
2	C	602	EDO	1	0
3	H	601	BME	1	0
2	D	608	EDO	6	0
4	K	603	PEG	2	0
2	D	604	EDO	1	0
2	I	601	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	143/164 (87%)	0.09	4 (2%) 55 51	26, 60, 98, 153	7 (4%)
1	B	157/164 (95%)	-0.32	6 (3%) 44 40	26, 46, 130, 161	8 (5%)
1	C	148/164 (90%)	-0.50	2 (1%) 73 71	21, 45, 84, 173	5 (3%)
1	D	146/164 (89%)	-0.61	0 100 100	24, 43, 77, 127	3 (2%)
1	E	146/164 (89%)	-0.26	3 (2%) 63 60	31, 52, 99, 144	3 (2%)
1	F	144/164 (87%)	-0.19	3 (2%) 63 60	28, 56, 92, 151	7 (4%)
1	G	145/164 (88%)	-0.10	2 (1%) 73 71	32, 61, 111, 176	5 (3%)
1	H	146/164 (89%)	-0.31	0 100 100	29, 54, 105, 146	4 (2%)
1	I	145/164 (88%)	-0.33	3 (2%) 63 60	23, 48, 93, 154	9 (6%)
1	J	147/164 (89%)	-0.62	1 (0%) 84 82	20, 41, 76, 142	4 (2%)
1	K	148/164 (90%)	-0.37	2 (1%) 73 71	21, 47, 103, 179	5 (3%)
1	L	145/164 (88%)	-0.30	2 (1%) 73 71	27, 52, 88, 151	5 (3%)
1	M	145/164 (88%)	-0.28	4 (2%) 55 51	33, 49, 89, 141	6 (4%)
1	N	143/164 (87%)	0.10	4 (2%) 55 51	26, 62, 107, 156	4 (2%)
1	O	145/164 (88%)	-0.36	2 (1%) 73 71	24, 51, 85, 145	6 (4%)
1	P	144/164 (87%)	0.03	3 (2%) 63 60	23, 57, 99, 129	6 (4%)
All	All	2337/2624 (89%)	-0.27	41 (1%) 67 65	20, 51, 100, 179	87 (3%)

The worst 5 of 41 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	O	546	LEU	4.9
1	M	546	LEU	4.9
1	N	546	LEU	4.8
1	A	543[A]	ARG	4.1
1	P	545	MET	3.8

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(Å ²)	Q<0.9
2	EDO	I	602	4/4	0.67	0.29	52,60,98,107	4
2	EDO	D	606	4/4	0.73	0.25	60,73,83,95	4
2	EDO	K	605	4/4	0.74	0.22	44,45,81,101	4
2	EDO	J	608	4/4	0.77	0.31	82,88,93,118	0
3	BME	M	601	4/4	0.77	0.28	50,56,65,81	4
2	EDO	L	604	4/4	0.78	0.15	80,85,86,92	0
2	EDO	A	601	4/4	0.79	0.18	75,92,101,102	0
2	EDO	K	601	4/4	0.79	0.20	78,79,79,100	0
3	BME	D	603	4/4	0.79	0.22	45,55,60,91	4
3	BME	K	602	4/4	0.79	0.26	52,56,74,81	4
2	EDO	K	604	4/4	0.79	0.18	74,76,98,109	0
2	EDO	J	605	4/4	0.80	0.21	40,47,55,59	4
3	BME	P	603	4/4	0.80	0.29	63,66,74,93	4
3	BME	F	602	4/4	0.81	0.20	48,53,78,81	4
3	BME	G	601	4/4	0.81	0.24	52,82,91,110	4
3	BME	I	603	4/4	0.81	0.24	55,57,59,85	4
2	EDO	C	603	4/4	0.81	0.15	86,92,94,120	0
3	BME	B	604	4/4	0.81	0.31	35,60,68,74	4
2	EDO	B	606	4/4	0.81	0.19	66,88,104,111	0
3	BME	E	602	4/4	0.82	0.23	43,63,70,78	4
2	EDO	J	603	4/4	0.83	0.19	69,74,84,111	0
2	EDO	M	602	4/4	0.83	0.14	72,74,75,79	0
2	EDO	N	602	4/4	0.83	0.28	49,67,68,69	4
2	EDO	C	602	4/4	0.83	0.17	77,86,96,106	0
4	PEG	J	601	7/7	0.83	0.15	37,56,63,67	7
3	BME	H	601	4/4	0.84	0.23	52,62,75,85	4
2	EDO	B	601	4/4	0.84	0.23	69,70,75,108	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	EDO	D	605	4/4	0.84	0.17	62,70,93,103	0
2	EDO	P	602	4/4	0.85	0.15	67,92,97,117	0
2	EDO	L	601	4/4	0.85	0.17	64,65,70,76	4
4	PEG	J	602	7/7	0.85	0.18	38,47,59,61	7
2	EDO	D	607	4/4	0.86	0.15	78,87,95,113	0
3	BME	N	601	4/4	0.86	0.25	49,49,55,76	4
3	BME	J	606	4/4	0.86	0.25	53,53,56,80	4
2	EDO	P	605	4/4	0.86	0.16	77,82,88,95	0
3	BME	L	602	4/4	0.86	0.24	44,45,63,78	4
2	EDO	E	601	4/4	0.87	0.12	72,84,88,108	0
2	EDO	O	603	4/4	0.87	0.16	67,73,103,112	0
2	EDO	O	604	4/4	0.87	0.24	56,57,71,76	4
2	EDO	L	603	4/4	0.87	0.23	53,77,84,86	4
4	PEG	K	603	7/7	0.87	0.16	48,76,85,91	7
2	EDO	D	608	4/4	0.88	0.12	54,66,86,90	0
3	BME	A	602	4/4	0.88	0.20	54,54,72,78	4
2	EDO	M	605	4/4	0.88	0.19	49,52,62,72	4
5	PGE	B	605	10/10	0.88	0.14	37,48,54,54	10
2	EDO	I	601	4/4	0.89	0.14	45,51,52,70	4
2	EDO	F	601	4/4	0.89	0.13	82,88,104,105	0
2	EDO	M	604	4/4	0.89	0.17	62,72,75,84	0
5	PGE	P	604	10/10	0.89	0.18	43,58,75,85	10
2	EDO	D	604	4/4	0.90	0.13	66,84,88,107	0
3	BME	C	601	4/4	0.90	0.19	47,47,59,79	4
4	PEG	B	603	7/7	0.90	0.16	60,70,80,82	7
2	EDO	K	606	4/4	0.90	0.19	54,59,71,72	4
4	PEG	D	602	7/7	0.91	0.27	46,49,67,77	7
2	EDO	M	603	4/4	0.91	0.16	58,61,66,68	0
2	EDO	O	601	4/4	0.92	0.12	75,79,80,87	0
2	EDO	A	603	4/4	0.92	0.16	69,85,87,105	0
2	EDO	J	604	4/4	0.92	0.14	41,44,46,49	4
2	EDO	B	607	4/4	0.93	0.13	64,72,84,91	0
2	EDO	J	609	4/4	0.93	0.14	41,52,57,61	4
2	EDO	J	607	4/4	0.93	0.13	66,71,72,98	0
3	BME	O	602	4/4	0.93	0.18	47,50,53,76	4
2	EDO	B	602	4/4	0.94	0.14	37,40,42,45	4
2	EDO	P	601	4/4	0.95	0.11	67,82,85,92	0
2	EDO	C	604	4/4	0.95	0.18	54,60,61,118	0
2	EDO	D	601	4/4	0.96	0.08	51,54,56,56	0

6.5 Other polymers [i](#)

There are no such residues in this entry.