



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 08:32 AM GMT

PDB ID : 3F29  
Title : Structure of the Thioalkalivibrio nitratreducens cytochrome c nitrite reductase in complex with sulfite  
Authors : Trofimov, A.A.; Polyakov, K.M.; Boyko, K.M.; Slutsky, A.; Tikhonova, T.V.; Antipov, A.N.; Zvyagilskaya, R.A.; Popov, A.N.; Lamzin, V.S.; Bourenkov, G.P.; Popov, V.O.  
Deposited on : 2008-10-29  
Resolution : 2.00 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  
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>  
with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467  
Mogul : 1.7 (RC4), CSD as536be (2015)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026688  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : trunk26865

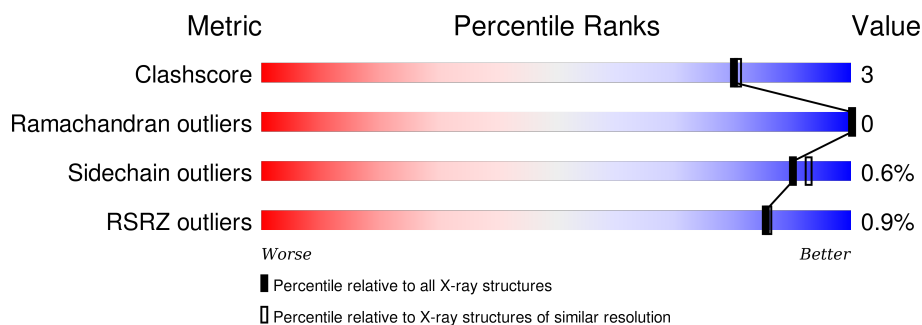
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.00 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))
Clashscore	102246	7340 (2.00-2.00)
Ramachandran outliers	100387	7248 (2.00-2.00)
Sidechain outliers	100360	7247 (2.00-2.00)
RSRZ outliers	91569	6262 (2.00-2.00)

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

Mol	Chain	Length	Quality of chain
1	A	525	<div> <div style="width: 100%; height: 10px; background-color: red;"></div> <div style="width: 95%; height: 10px; background-color: green;"></div> <div style="width: 5%; height: 10px; background-color: yellow;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> <div style="position: absolute; left: 50%; top: -10px;">95%</div> <div style="position: absolute; left: 95%; top: -10px;">5%</div> </div>
1	B	525	<div> <div style="width: 100%; height: 10px; background-color: red;"></div> <div style="width: 93%; height: 10px; background-color: green;"></div> <div style="width: 5%; height: 10px; background-color: yellow;"></div> <div style="width: 2%; height: 10px; background-color: grey;"></div> <div style="position: absolute; left: 50%; top: -10px;">93%</div> <div style="position: absolute; left: 95%; top: -10px;">5%</div> </div>

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	HEC	A	1007[B]	-	-	-	X
2	HEC	A	1008	-	-	-	X

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	HEC	B	1008	-	-	-	X
3	SO3	A	526	-	-	-	X
3	SO3	B	526	-	-	-	X
5	PG6	A	529	-	-	-	X
5	PG6	B	530	-	-	-	X
5	PG6	B	531	-	-	-	X
6	PG4	A	530	-	-	-	X
6	PG4	A	531	-	-	-	X
6	PG4	A	535	-	-	-	X
6	PG4	B	532	-	-	-	X
6	PG4	B	536	-	-	-	X

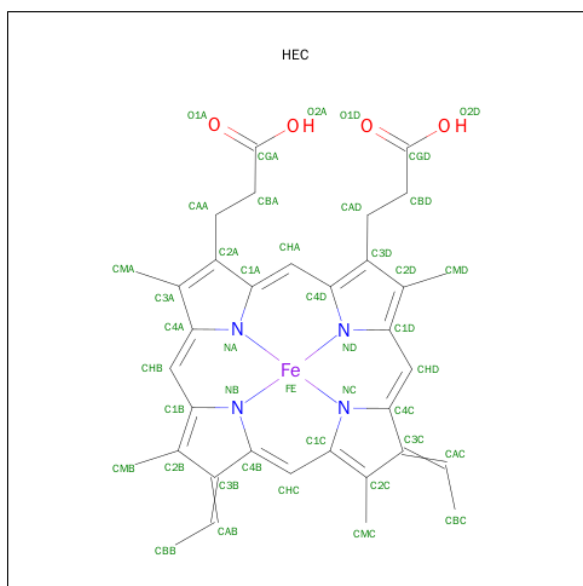


In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Eight-heme nitrite reductase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	519	Total 4165	C 2584	N 753	O 789	S 39	0	24	1
1	B	520	Total 4162	C 2583	N 750	O 791	S 38	0	18	0

- Molecule 2 is HEME C (three-letter code: HEC) (formula:  $\text{C}_{34}\text{H}_{34}\text{FeN}_4\text{O}_4$ ).



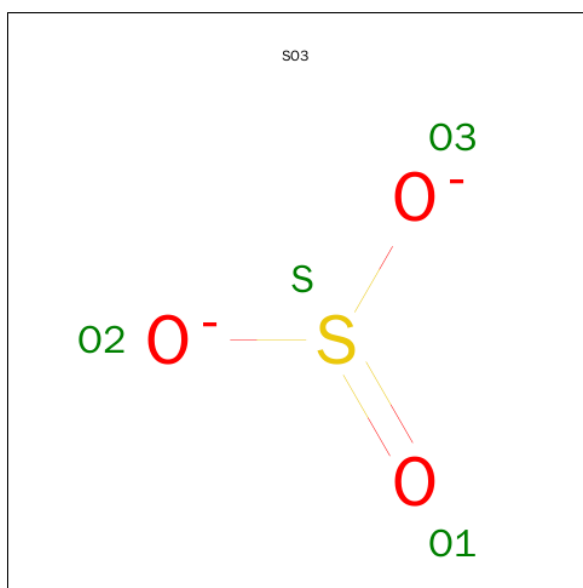
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	A	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	A	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	A	1	Total 47	C 36	Fe 1	N 4	O 6	0	1

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	B	1	Total	C	Fe	N	O	0	1
			46	35	1	4	6		
2	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		

- Molecule 3 is SULFITE ION (three-letter code: SO<sub>3</sub>) (formula: O<sub>3</sub>S).

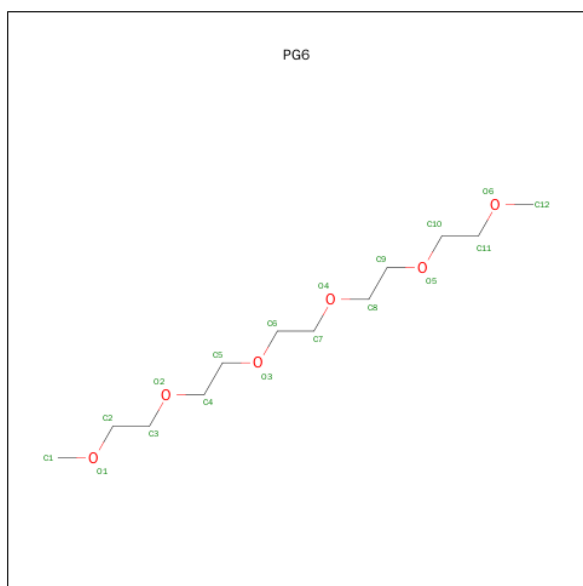


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total O S 4 3 1	0	0
3	B	1	Total O S 4 3 1	0	0
3	B	1	Total O S 4 3 1	0	0

- Molecule 4 is CALCIUM ION (three-letter code: CA) (formula: Ca).

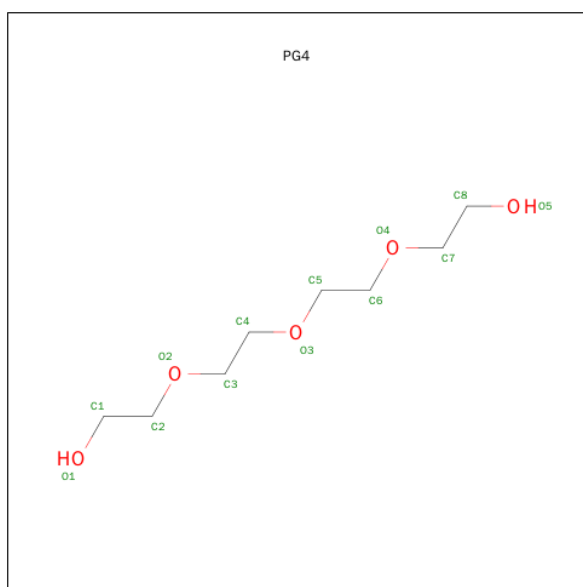
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	2	Total Ca 2 2	0	0
4	A	2	Total Ca 2 2	0	0

- Molecule 5 is 1-(2-METHOXY-ETHOXY)-2-{2-[2-(2-METHOXY-ETHOXY)-ETHOXY]-ETHOXY}-ETHANE (three-letter code: PG6) (formula: C<sub>12</sub>H<sub>26</sub>O<sub>6</sub>).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 8 5 3	0	0
5	B	1	Total C O 8 5 3	0	0
5	B	1	Total C O 7 5 2	0	0

- Molecule 6 is TETRAETHYLENE GLYCOL (three-letter code: PG4) (formula: C<sub>8</sub>H<sub>18</sub>O<sub>5</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	C	O	0	0
			11	7	4		
6	A	1	Total	C	O	0	0
			6	4	2		
6	A	1	Total	C	O	0	0
			6	4	2		
6	A	1	Total	C	O	0	0
			5	3	2		
6	A	1	Total	C	O	0	0
			7	5	2		
6	A	1	Total	C	O	0	0
			5	3	2		
6	B	1	Total	C	O	0	0
			5	3	2		
6	B	1	Total	C	O	0	0
			5	3	2		
6	B	1	Total	C	O	0	0
			6	4	2		
6	B	1	Total	C	O	0	0
			7	4	3		

- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	540	Total	O	0	0
			540	540		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	B	546	Total	O	0	0
			546	546		



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

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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 ( $\text{RSRZ} > 2$ ). 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.

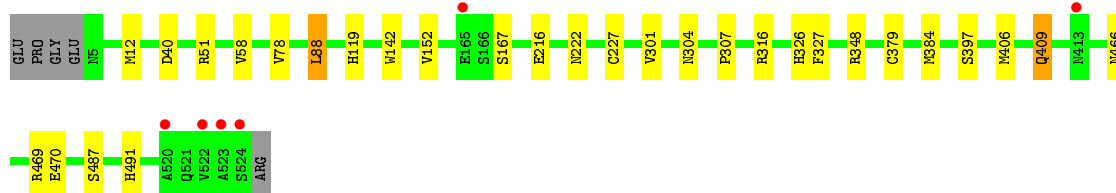
- Molecule 1: Eight-heme nitrite reductase

Chain A: 



- Molecule 1: Eight-heme nitrite reductase

Chain B: 



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 3	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	193.57Å 193.57Å 193.57Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.97 – 2.00 19.97 – 2.00	Depositor EDS
% Data completeness (in resolution range)	97.5 (19.97-2.00) 97.6 (19.97-2.00)	Depositor EDS
$R_{merge}$	0.06	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	11.00 (at 2.01Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, $R_{free}$	0.154 , 0.174 0.157 , (Not available)	Depositor DCC
$R_{free}$ test set	No test flags present.	DCC
Wilson B-factor (Å <sup>2</sup> )	20.1	Xtriage
Anisotropy	0.000	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.40 , 60.8	EDS
Estimated twinning fraction	0.047 for l,-k,h	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.35$	Xtriage
Outliers	1 of 157823 reflections (0.001%)	Xtriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	10215	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	21.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.09% 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, 0.375 respectively for untwinned datasets, and 0.333, 0.2 for perfectly twinned datasets.

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: PG6, CA, SO3, PG4, HEC

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	0.51	0/4402	0.57	0/5967
1	B	0.52	0/4360	0.58	0/5913
All	All	0.52	0/8762	0.58	0/11880

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4165	0	3867	14	0
1	B	4162	0	3851	29	0
2	A	348	0	218	7	0
2	B	347	0	214	7	0
3	A	4	0	0	1	0
3	B	8	0	0	0	0
4	A	2	0	0	0	0
4	B	2	0	0	0	0
5	A	8	0	8	1	0
5	B	15	0	17	4	0
6	A	40	0	43	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	B	28	0	31	5	0
7	A	540	0	0	2	0
7	B	546	0	0	4	0
All	All	10215	0	8249	55	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 (55) 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:316:ARG:CG	6:B:536:PG4:H11	1.82	1.08
1:B:222[A]:ASN:ND2	7:B:971:HOH:O	1.87	1.05
1:A:348[B]:ARG:NH2	5:A:529:PG6:O5	1.91	1.03
1:B:348[A]:ARG:NH2	5:B:530:PG6:O4	2.04	0.91
2:B:1008:HEC:HMC1	2:B:1008:HEC:HBC3	1.57	0.85
3:A:526:SO3:O1	7:A:984:HOH:O	2.02	0.77
2:A:1002:HEC:HMC1	2:A:1002:HEC:HBC3	1.70	0.73
2:B:1002:HEC:HBC3	2:B:1002:HEC:HMC1	1.71	0.73
2:A:1008:HEC:HMC1	2:A:1008:HEC:HBC3	1.78	0.66
1:B:51:ARG:HG2	7:B:641:HOH:O	1.97	0.65
1:B:348[B]:ARG:HH21	5:B:530:PG6:C5	2.14	0.61
1:B:307:PRO:HB2	6:B:536:PG4:H12	1.83	0.60
1:A:384:MET:HB2	1:A:397:SER:O	2.05	0.56
1:B:304[A]:ASN:HB2	1:B:326:HIS:HB3	1.90	0.54
1:B:142:TRP:CD2	6:B:532:PG4:H21	2.44	0.53
1:A:222:ASN:ND2	7:A:862:HOH:O	2.41	0.53
2:A:1001:HEC:HMC1	2:A:1001:HEC:HBC3	1.92	0.52
1:A:167:SER:HB2	1:A:216[A]:GLU:HG2	1.92	0.52
1:B:88[A]:LEU:HD13	7:B:782:HOH:O	2.10	0.51
1:B:167:SER:HB2	1:B:216[B]:GLU:HG2	1.93	0.51
2:B:1008:HEC:HMC1	2:B:1008:HEC:CBC	2.35	0.50
1:A:139:PHE:HB2	6:A:531:PG4:H22	1.93	0.50
2:A:1006:HEC:HMA3	2:A:1007[B]:HEC:HBA2	1.94	0.49
1:B:466:ASN:ND2	1:B:469:ARG:HH11	2.10	0.49
1:B:167:SER:HB2	1:B:216[A]:GLU:HG3	1.95	0.49
2:A:1001:HEC:HMB1	2:A:1001:HEC:HBB3	1.95	0.48
1:B:384:MET:HB2	1:B:397:SER:O	2.12	0.48
2:B:1001:HEC:HBB3	2:B:1001:HEC:HMB1	1.94	0.48
1:A:304[A]:ASN:HB2	1:A:326:HIS:HB3	1.94	0.48
1:A:431:LYS:HB3	6:A:530:PG4:H22	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:348[B]:ARG:NH2	5:B:530:PG6:C5	2.79	0.46
1:B:470[B]:GLU:HG3	7:B:898:HOH:O	2.16	0.45
1:B:227:CYS:HA	2:B:1005:HEC:HHC	1.99	0.45
2:A:1006:HEC:HBB3	2:A:1006:HEC:HMB1	2.00	0.44
1:A:129:VAL:HG11	2:A:1004:HEC:HMA1	2.00	0.44
1:B:466:ASN:HD22	1:B:469:ARG:HD2	1.83	0.44
1:A:78[B]:VAL:HG23	1:A:152:VAL:HG21	2.01	0.43
1:B:78:VAL:HG12	1:B:152:VAL:HG21	2.00	0.43
1:B:119:HIS:CD2	2:B:1006:HEC:ND	2.87	0.42
1:B:40:ASP:HB3	1:B:58:VAL:HB	2.01	0.42
1:B:142:TRP:CE2	6:B:532:PG4:H21	2.54	0.42
1:A:78[A]:VAL:HG12	1:A:152:VAL:HG21	2.02	0.42
1:B:307:PRO:HB2	6:B:536:PG4:H32	2.02	0.41
1:B:348[A]:ARG:NH2	5:B:530:PG6:C6	2.83	0.41
1:A:487:SER:HB3	1:A:491:HIS:CE1	2.56	0.41
1:A:466:ASN:ND2	1:A:469:ARG:HH11	2.18	0.41
2:B:1006:HEC:HMB1	2:B:1006:HEC:HBB3	2.03	0.41
1:B:487:SER:HB3	1:B:491:HIS:CE1	2.56	0.41
1:A:224:PRO:O	1:A:225:LEU:C	2.59	0.41
1:B:301:VAL:HG21	1:B:327:PHE:CE2	2.56	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles ⓘ

### 5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	542/525 (103%)	516 (95%)	26 (5%)	0	100	100
1	B	536/525 (102%)	510 (95%)	26 (5%)	0	100	100
All	All	1078/1050 (103%)	1026 (95%)	52 (5%)	0	100	100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	456/443 (103%)	454 (100%)	2 (0%)	93	95
1	B	449/443 (101%)	442 (98%)	7 (2%)	70	73
All	All	905/886 (102%)	896 (99%)	9 (1%)	90	85

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	406[A]	MET
1	A	406[B]	MET
1	B	12	MET
1	B	88[A]	LEU
1	B	88[B]	LEU
1	B	406[A]	MET
1	B	406[B]	MET
1	B	409[A]	GLN
1	B	409[B]	GLN

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	190	GLN
1	A	466	ASN
1	A	467	GLN
1	B	413	ASN
1	B	466	ASN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

## 5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

## 5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

## 5.6 Ligand geometry ⓘ

Of 39 ligands modelled in this entry, 4 are monoatomic - leaving 35 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
2	HEC	A	1001	1	24,50,50	2.11	4 (16%)	19,82,82	2.93	7 (36%)
2	HEC	A	1002	1	24,50,50	2.19	6 (25%)	19,82,82	2.87	8 (42%)
2	HEC	A	1003	1	24,50,50	2.29	5 (20%)	19,82,82	3.01	7 (36%)
2	HEC	A	1004	1,3,7	24,50,50	2.15	5 (20%)	19,82,82	2.47	5 (26%)
2	HEC	A	1005	1	24,50,50	2.23	4 (16%)	19,82,82	2.77	6 (31%)
2	HEC	A	1006	1,4	24,50,50	2.18	6 (25%)	19,82,82	2.91	7 (36%)
2	HEC	A	1007[A]	-	24,50,50	2.29	4 (16%)	19,82,82	3.01	7 (36%)
2	HEC	A	1007[B]	4	24,50,50	2.29	4 (16%)	19,82,82	2.92	7 (36%)
2	HEC	A	1008	1	24,50,50	2.37	3 (12%)	19,82,82	2.73	5 (26%)
3	SO3	A	526	2	1,3,3	0.34	0	0,3,3	0.00	-
5	PG6	A	529	-	7,7,17	0.46	0	6,6,16	0.23	0
6	PG4	A	530	-	10,10,12	0.54	0	9,9,11	0.20	0
6	PG4	A	531	-	5,5,12	0.51	0	4,4,11	0.23	0
6	PG4	A	532	-	5,5,12	0.48	0	4,4,11	0.26	0
6	PG4	A	533	-	4,4,12	0.46	0	3,3,11	0.23	0
6	PG4	A	534	-	6,6,12	0.52	0	5,5,11	0.17	0
6	PG4	A	535	-	4,4,12	0.47	0	3,3,11	0.13	0
2	HEC	B	1001	1	24,50,50	2.10	3 (12%)	19,82,82	2.94	7 (36%)
2	HEC	B	1002	1	24,50,50	2.10	4 (16%)	19,82,82	2.90	6 (31%)
2	HEC	B	1003	1	24,50,50	2.18	5 (20%)	19,82,82	2.70	6 (31%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	HEC	B	1004	1,3,7	24,50,50	2.23	7 (29%)	19,82,82	2.51	5 (26%)
2	HEC	B	1005	1	24,50,50	2.35	6 (25%)	19,82,82	2.78	7 (36%)
2	HEC	B	1006	1,4	24,50,50	2.21	6 (25%)	19,82,82	3.05	6 (31%)
2	HEC	B	1007[A]	-	24,50,50	2.34	6 (25%)	19,82,82	3.01	7 (36%)
2	HEC	B	1007[B]	4	24,50,50	2.34	6 (25%)	19,82,82	3.01	7 (36%)
2	HEC	B	1008	1	24,50,50	2.41	6 (25%)	19,82,82	2.84	6 (31%)
3	SO3	B	526	2	1,3,3	0.27	0	0,3,3	0.00	-
3	SO3	B	529	-	1,3,3	0.63	0	0,3,3	0.00	-
5	PG6	B	530	-	7,7,17	0.45	0	6,6,16	0.33	0
5	PG6	B	531	-	6,6,17	0.57	0	5,5,16	0.36	0
6	PG4	B	532	-	4,4,12	0.44	0	3,3,11	0.27	0
6	PG4	B	533	-	4,4,12	0.44	0	3,3,11	0.23	0
6	PG4	B	534	-	4,4,12	0.46	0	3,3,11	0.17	0
6	PG4	B	535	-	5,5,12	0.47	0	4,4,11	0.22	0
6	PG4	B	536	-	6,6,12	0.45	0	5,5,11	0.26	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	HEC	A	1001	1	-	0/6/54/54	0/0/8/8
2	HEC	A	1002	1	-	0/6/54/54	0/0/8/8
2	HEC	A	1003	1	-	0/6/54/54	0/0/8/8
2	HEC	A	1004	1,3,7	-	0/6/54/54	0/0/8/8
2	HEC	A	1005	1	-	0/6/54/54	0/0/8/8
2	HEC	A	1006	1,4	-	0/6/54/54	0/0/8/8
2	HEC	A	1007[A]	-	-	0/6/54/54	0/0/8/8
2	HEC	A	1007[B]	4	-	0/6/54/54	0/0/8/8
2	HEC	A	1008	1	-	0/6/54/54	0/0/8/8
3	SO3	A	526	2	-	0/0/0/0	0/0/0/0
5	PG6	A	529	-	-	0/5/5/15	0/0/0/0
6	PG4	A	530	-	-	0/8/8/10	0/0/0/0
6	PG4	A	531	-	-	0/3/3/10	0/0/0/0
6	PG4	A	532	-	-	0/3/3/10	0/0/0/0
6	PG4	A	533	-	-	0/2/2/10	0/0/0/0
6	PG4	A	534	-	-	0/4/4/10	0/0/0/0
6	PG4	A	535	-	-	0/2/2/10	0/0/0/0
2	HEC	B	1001	1	-	0/6/54/54	0/0/8/8
2	HEC	B	1002	1	-	0/6/54/54	0/0/8/8

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	HEC	B	1003	1	-	0/6/54/54	0/0/8/8
2	HEC	B	1004	1,3,7	-	0/6/54/54	0/0/8/8
2	HEC	B	1005	1	-	0/6/54/54	0/0/8/8
2	HEC	B	1006	1,4	-	0/6/54/54	0/0/8/8
2	HEC	B	1007[A]	-	-	0/6/54/54	0/0/8/8
2	HEC	B	1007[B]	4	-	0/6/54/54	0/0/8/8
2	HEC	B	1008	1	-	0/6/54/54	0/0/8/8
3	SO3	B	526	2	-	0/0/0/0	0/0/0/0
3	SO3	B	529	-	-	0/0/0/0	0/0/0/0
5	PG6	B	530	-	-	0/5/5/15	0/0/0/0
5	PG6	B	531	-	-	0/4/4/15	0/0/0/0
6	PG4	B	532	-	-	0/2/2/10	0/0/0/0
6	PG4	B	533	-	-	0/2/2/10	0/0/0/0
6	PG4	B	534	-	-	0/2/2/10	0/0/0/0
6	PG4	B	535	-	-	0/3/3/10	0/0/0/0
6	PG4	B	536	-	-	0/4/4/10	0/0/0/0

All (90) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1008	HEC	C3B-C2B	-6.43	1.34	1.40
2	A	1003	HEC	C3B-C2B	-6.25	1.34	1.40
2	A	1008	HEC	C3B-C2B	-6.25	1.34	1.40
2	A	1007[B]	HEC	C3B-C2B	-6.10	1.34	1.40
2	A	1007[A]	HEC	C3B-C2B	-6.10	1.34	1.40
2	B	1005	HEC	C3B-C2B	-6.01	1.34	1.40
2	B	1007[B]	HEC	C3C-C2C	-5.97	1.34	1.40
2	B	1007[A]	HEC	C3C-C2C	-5.97	1.34	1.40
2	B	1007[B]	HEC	C3B-C2B	-5.78	1.34	1.40
2	B	1007[A]	HEC	C3B-C2B	-5.78	1.34	1.40
2	A	1008	HEC	C3C-C2C	-5.71	1.34	1.40
2	B	1008	HEC	C3C-C2C	-5.67	1.34	1.40
2	A	1005	HEC	C3B-C2B	-5.67	1.34	1.40
2	A	1007[B]	HEC	C3C-C2C	-5.54	1.35	1.40
2	A	1007[A]	HEC	C3C-C2C	-5.54	1.35	1.40
2	B	1005	HEC	C3C-C2C	-5.51	1.35	1.40
2	B	1006	HEC	C3B-C2B	-5.50	1.35	1.40
2	A	1006	HEC	C3B-C2B	-5.48	1.35	1.40
2	A	1001	HEC	C3B-C2B	-5.45	1.35	1.40
2	A	1002	HEC	C3B-C2B	-5.36	1.35	1.40
2	B	1004	HEC	C3C-C2C	-5.21	1.35	1.40
2	A	1004	HEC	C3B-C2B	-5.20	1.35	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1005	HEC	C3C-C2C	-5.14	1.35	1.40
2	B	1003	HEC	C3B-C2B	-5.04	1.35	1.40
2	B	1002	HEC	C3B-C2B	-4.92	1.35	1.40
2	B	1001	HEC	C3B-C2B	-4.91	1.35	1.40
2	B	1003	HEC	C3C-C2C	-4.85	1.35	1.40
2	A	1003	HEC	C3C-C2C	-4.81	1.35	1.40
2	A	1004	HEC	C3C-C2C	-4.79	1.35	1.40
2	B	1006	HEC	C3C-C2C	-4.76	1.35	1.40
2	A	1002	HEC	C3C-C2C	-4.71	1.35	1.40
2	B	1004	HEC	C3B-C2B	-4.68	1.35	1.40
2	B	1002	HEC	C3C-C2C	-4.50	1.36	1.40
2	B	1001	HEC	C3C-C2C	-4.44	1.36	1.40
2	A	1006	HEC	C3C-C2C	-4.04	1.36	1.40
2	A	1001	HEC	C3C-C2C	-3.94	1.36	1.40
2	A	1005	HEC	CMB-C2B	2.04	1.56	1.51
2	A	1002	HEC	C4A-NA	2.04	1.39	1.36
2	B	1008	HEC	CMA-C3A	2.05	1.56	1.51
2	B	1005	HEC	C3C-C4C	2.05	1.47	1.42
2	B	1006	HEC	CMC-C2C	2.06	1.56	1.51
2	B	1008	HEC	CMD-C2D	2.06	1.55	1.51
2	A	1006	HEC	CMC-C2C	2.06	1.56	1.51
2	B	1004	HEC	C1A-NA	2.07	1.39	1.36
2	B	1008	HEC	C3C-C4C	2.08	1.47	1.42
2	B	1002	HEC	C3C-C4C	2.09	1.47	1.42
2	A	1002	HEC	CMA-C3A	2.09	1.56	1.51
2	B	1006	HEC	C4B-NB	2.10	1.39	1.36
2	B	1005	HEC	CMA-C3A	2.13	1.56	1.51
2	B	1005	HEC	CMB-C2B	2.15	1.56	1.51
2	B	1007[B]	HEC	C1A-NA	2.16	1.39	1.36
2	B	1007[A]	HEC	C1A-NA	2.16	1.39	1.36
2	B	1004	HEC	CMB-C2B	2.18	1.56	1.51
2	A	1006	HEC	C3C-C4C	2.19	1.47	1.42
2	B	1007[B]	HEC	CAA-C2A	2.19	1.56	1.52
2	B	1007[A]	HEC	CAA-C2A	2.19	1.56	1.52
2	A	1002	HEC	C3C-C4C	2.22	1.47	1.42
2	A	1004	HEC	CMC-C2C	2.25	1.56	1.51
2	A	1003	HEC	C4C-NC	2.26	1.39	1.36
2	A	1007[B]	HEC	C4C-NC	2.29	1.39	1.36
2	A	1007[A]	HEC	C4C-NC	2.29	1.39	1.36
2	B	1004	HEC	CAD-C3D	2.29	1.55	1.52
2	B	1003	HEC	CMB-C2B	2.29	1.56	1.51
2	A	1006	HEC	CAD-C3D	2.32	1.56	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1003	HEC	C4C-NC	2.32	1.39	1.36
2	A	1001	HEC	C3C-C4C	2.37	1.48	1.42
2	B	1006	HEC	C3C-C4C	2.39	1.48	1.42
2	B	1004	HEC	CMC-C2C	2.40	1.56	1.51
2	A	1003	HEC	CMB-C2B	2.43	1.56	1.51
2	B	1007[B]	HEC	C4C-NC	2.45	1.40	1.36
2	B	1007[A]	HEC	C4C-NC	2.45	1.40	1.36
2	A	1004	HEC	CAD-C3D	2.48	1.56	1.52
2	A	1003	HEC	C3D-C2D	4.60	1.51	1.37
2	B	1007[B]	HEC	C3D-C2D	4.65	1.51	1.37
2	B	1007[A]	HEC	C3D-C2D	4.65	1.51	1.37
2	B	1005	HEC	C3D-C2D	4.75	1.51	1.37
2	A	1005	HEC	C3D-C2D	4.76	1.51	1.37
2	A	1004	HEC	C3D-C2D	4.81	1.51	1.37
2	A	1007[B]	HEC	C3D-C2D	4.85	1.52	1.37
2	A	1007[A]	HEC	C3D-C2D	4.85	1.52	1.37
2	A	1001	HEC	C3D-C2D	4.94	1.52	1.37
2	B	1006	HEC	C3D-C2D	4.96	1.52	1.37
2	B	1003	HEC	C3D-C2D	4.98	1.52	1.37
2	B	1004	HEC	C3D-C2D	5.02	1.52	1.37
2	A	1002	HEC	C3D-C2D	5.05	1.52	1.37
2	B	1002	HEC	C3D-C2D	5.10	1.52	1.37
2	A	1006	HEC	C3D-C2D	5.12	1.52	1.37
2	B	1001	HEC	C3D-C2D	5.31	1.53	1.37
2	B	1008	HEC	C3D-C2D	5.48	1.53	1.37
2	A	1008	HEC	C3D-C2D	5.52	1.54	1.37

All (116) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1003	HEC	CBB-CAB-C3B	-9.55	106.14	127.35
2	B	1006	HEC	CBB-CAB-C3B	-8.78	107.83	127.35
2	B	1007[B]	HEC	CBB-CAB-C3B	-8.65	108.12	127.35
2	B	1007[A]	HEC	CBB-CAB-C3B	-8.65	108.12	127.35
2	A	1006	HEC	CBB-CAB-C3B	-8.50	108.45	127.35
2	B	1008	HEC	CBB-CAB-C3B	-8.25	109.02	127.35
2	A	1008	HEC	CBB-CAB-C3B	-8.12	109.31	127.35
2	A	1005	HEC	CBB-CAB-C3B	-7.84	109.94	127.35
2	A	1002	HEC	CBB-CAB-C3B	-7.81	109.99	127.35
2	B	1003	HEC	CBB-CAB-C3B	-7.75	110.12	127.35
2	B	1005	HEC	CBB-CAB-C3B	-7.74	110.15	127.35
2	A	1001	HEC	CBB-CAB-C3B	-7.68	110.29	127.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1001	HEC	CBB-CAB-C3B	-7.61	110.44	127.35
2	A	1007[B]	HEC	CBB-CAB-C3B	-7.59	110.48	127.35
2	A	1007[A]	HEC	CBB-CAB-C3B	-7.59	110.48	127.35
2	B	1002	HEC	CBB-CAB-C3B	-7.49	110.71	127.35
2	B	1004	HEC	CBB-CAB-C3B	-7.35	111.02	127.35
2	A	1004	HEC	CBB-CAB-C3B	-6.88	112.06	127.35
2	B	1006	HEC	CBC-CAC-C3C	-6.27	113.41	127.35
2	B	1001	HEC	CBC-CAC-C3C	-6.10	113.80	127.35
2	B	1002	HEC	CBC-CAC-C3C	-5.83	114.40	127.35
2	A	1001	HEC	CBC-CAC-C3C	-5.81	114.44	127.35
2	A	1004	HEC	CBC-CAC-C3C	-5.31	115.56	127.35
2	A	1006	HEC	CBC-CAC-C3C	-5.26	115.66	127.35
2	A	1007[B]	HEC	CBC-CAC-C3C	-5.22	115.76	127.35
2	A	1007[A]	HEC	CBC-CAC-C3C	-5.22	115.76	127.35
2	A	1002	HEC	CBC-CAC-C3C	-5.15	115.90	127.35
2	B	1005	HEC	CBC-CAC-C3C	-5.12	115.98	127.35
2	A	1005	HEC	CMC-C2C-C1C	-5.09	119.94	128.36
2	B	1008	HEC	CBC-CAC-C3C	-5.05	116.13	127.35
2	B	1002	HEC	CAA-CBA-CGA	-4.98	103.62	112.75
2	B	1007[B]	HEC	CBD-CAD-C3D	-4.97	103.62	112.53
2	B	1007[A]	HEC	CBD-CAD-C3D	-4.97	103.62	112.53
2	A	1005	HEC	CBC-CAC-C3C	-4.89	116.48	127.35
2	B	1004	HEC	CBC-CAC-C3C	-4.89	116.48	127.35
2	B	1005	HEC	CMC-C2C-C1C	-4.83	120.38	128.36
2	A	1007[B]	HEC	CBD-CAD-C3D	-4.82	103.88	112.53
2	A	1007[A]	HEC	CBD-CAD-C3D	-4.82	103.88	112.53
2	B	1003	HEC	CMC-C2C-C1C	-4.77	120.48	128.36
2	B	1002	HEC	CMC-C2C-C1C	-4.75	120.51	128.36
2	A	1003	HEC	CMC-C2C-C1C	-4.73	120.54	128.36
2	B	1007[B]	HEC	CBC-CAC-C3C	-4.72	116.86	127.35
2	B	1007[A]	HEC	CBC-CAC-C3C	-4.72	116.86	127.35
2	A	1008	HEC	CBC-CAC-C3C	-4.70	116.90	127.35
2	A	1001	HEC	CMC-C2C-C1C	-4.57	120.81	128.36
2	B	1007[B]	HEC	CMB-C2B-C1B	-4.52	120.88	128.36
2	B	1007[A]	HEC	CMB-C2B-C1B	-4.52	120.88	128.36
2	A	1007[B]	HEC	CMC-C2C-C1C	-4.51	120.91	128.36
2	A	1007[A]	HEC	CMC-C2C-C1C	-4.51	120.91	128.36
2	B	1001	HEC	CBA-CAA-C2A	-4.48	104.50	112.53
2	A	1002	HEC	CMC-C2C-C1C	-4.44	121.02	128.36
2	B	1006	HEC	CMC-C2C-C1C	-4.42	121.05	128.36
2	A	1001	HEC	CAD-CBD-CGD	-4.41	104.66	112.75
2	A	1006	HEC	CMC-C2C-C1C	-4.34	121.19	128.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1007[B]	HEC	CMB-C2B-C1B	-4.13	121.53	128.36
2	A	1007[A]	HEC	CMB-C2B-C1B	-4.13	121.53	128.36
2	B	1001	HEC	CMC-C2C-C1C	-4.12	121.55	128.36
2	A	1008	HEC	CMC-C2C-C1C	-4.05	121.66	128.36
2	B	1003	HEC	CBA-CAA-C2A	-4.05	105.27	112.53
2	A	1003	HEC	CBA-CAA-C2A	-3.94	105.47	112.53
2	A	1007[A]	HEC	CBA-CAA-C2A	-3.92	105.50	112.53
2	B	1007[B]	HEC	CMC-C2C-C1C	-3.90	121.92	128.36
2	B	1007[A]	HEC	CMC-C2C-C1C	-3.90	121.92	128.36
2	B	1008	HEC	CBA-CAA-C2A	-3.88	105.57	112.53
2	B	1008	HEC	CMC-C2C-C1C	-3.79	122.09	128.36
2	B	1004	HEC	CMC-C2C-C1C	-3.66	122.31	128.36
2	B	1003	HEC	CBC-CAC-C3C	-3.60	119.35	127.35
2	A	1004	HEC	CMB-C2B-C1B	-3.46	122.64	128.36
2	B	1005	HEC	CMB-C2B-C1B	-3.42	122.71	128.36
2	A	1003	HEC	CMB-C2B-C1B	-3.37	122.79	128.36
2	B	1004	HEC	CMB-C2B-C1B	-3.34	122.84	128.36
2	B	1006	HEC	CMB-C2B-C1B	-3.31	122.89	128.36
2	A	1002	HEC	CAA-C2A-C1A	-3.30	123.43	127.01
2	B	1001	HEC	CAA-C2A-C1A	-3.28	123.45	127.01
2	A	1008	HEC	CBA-CAA-C2A	-3.24	106.72	112.53
2	B	1003	HEC	CMB-C2B-C1B	-3.21	123.06	128.36
2	A	1004	HEC	CMC-C2C-C1C	-3.16	123.14	128.36
2	A	1002	HEC	CBA-CAA-C2A	-3.15	106.88	112.53
2	A	1008	HEC	CMB-C2B-C1B	-3.14	123.17	128.36
2	A	1002	HEC	CAA-CBA-CGA	-3.11	107.05	112.75
2	B	1008	HEC	CMB-C2B-C1B	-3.11	123.22	128.36
2	A	1005	HEC	CMB-C2B-C1B	-3.08	123.27	128.36
2	B	1002	HEC	CAA-C2A-C1A	-3.08	123.67	127.01
2	A	1005	HEC	CBD-CAD-C3D	-3.05	107.06	112.53
2	A	1003	HEC	CBC-CAC-C3C	-3.01	120.67	127.35
2	B	1006	HEC	CBA-CAA-C2A	-2.94	107.25	112.53
2	A	1003	HEC	CAD-CBD-CGD	-2.92	107.39	112.75
2	A	1006	HEC	CMB-C2B-C1B	-2.81	123.72	128.36
2	A	1005	HEC	CAD-CBD-CGD	-2.80	107.61	112.75
2	A	1006	HEC	CBA-CAA-C2A	-2.78	107.55	112.53
2	B	1005	HEC	CBD-CAD-C3D	-2.78	107.55	112.53
2	A	1006	HEC	CBD-CAD-C3D	-2.73	107.64	112.53
2	B	1005	HEC	CAD-CBD-CGD	-2.68	107.83	112.75
2	A	1002	HEC	CMB-C2B-C1B	-2.67	123.94	128.36
2	B	1006	HEC	CBD-CAD-C3D	-2.67	107.75	112.53
2	A	1001	HEC	CAA-C2A-C1A	-2.66	124.12	127.01

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1007[B]	HEC	CBA-CAA-C2A	-2.64	107.79	112.53
2	B	1007[A]	HEC	CBA-CAA-C2A	-2.64	107.79	112.53
2	B	1001	HEC	CBD-CAD-C3D	-2.64	107.79	112.53
2	A	1006	HEC	CAA-C2A-C1A	-2.64	124.14	127.01
2	A	1007[B]	HEC	CAA-C2A-C1A	-2.53	124.26	127.01
2	A	1007[A]	HEC	CAA-C2A-C1A	-2.53	124.26	127.01
2	B	1008	HEC	CAD-CBD-CGD	-2.51	108.15	112.75
2	A	1003	HEC	CBD-CAD-C3D	-2.44	108.15	112.53
2	B	1001	HEC	CMB-C2B-C1B	-2.42	124.36	128.36
2	A	1007[B]	HEC	CBA-CAA-C2A	-2.42	108.19	112.53
2	B	1005	HEC	CAA-C2A-C1A	-2.38	124.43	127.01
2	B	1003	HEC	CBD-CAD-C3D	-2.37	108.28	112.53
2	A	1001	HEC	CMB-C2B-C1B	-2.35	124.48	128.36
2	A	1001	HEC	CAA-CBA-CGA	-2.21	108.70	112.75
2	B	1002	HEC	CMB-C2B-C1B	-2.12	124.86	128.36
2	B	1007[B]	HEC	CAA-C2A-C1A	-2.04	124.79	127.01
2	B	1007[A]	HEC	CAA-C2A-C1A	-2.04	124.79	127.01
2	A	1002	HEC	CBD-CAD-C3D	-2.00	108.94	112.53
2	B	1004	HEC	CAD-C3D-C4D	2.00	129.18	127.01
2	A	1004	HEC	CAD-C3D-C4D	3.17	130.45	127.01

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

18 monomers are involved in 27 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1001	HEC	2	0
2	A	1002	HEC	1	0
2	A	1004	HEC	1	0
2	A	1006	HEC	2	0
2	A	1007[B]	HEC	1	0
2	A	1008	HEC	1	0
3	A	526	SO3	1	0
5	A	529	PG6	1	0
6	A	530	PG4	1	0
6	A	531	PG4	1	0
2	B	1001	HEC	1	0
2	B	1002	HEC	1	0
2	B	1005	HEC	1	0
2	B	1006	HEC	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	1008	HEC	2	0
5	B	530	PG6	4	0
6	B	532	PG4	2	0
6	B	536	PG4	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 [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	519/525 (98%)	-0.49	3 (0%)	90 90	13, 20, 31, 46	1 (0%)
1	B	520/525 (99%)	-0.51	6 (1%)	81 81	13, 19, 30, 52	1 (0%)
All	All	1039/1050 (98%)	-0.50	9 (0%)	85 86	13, 19, 31, 52	2 (0%)

All (9) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	523	ALA	5.0
1	B	524	SER	4.6
1	B	522	VAL	4.4
1	A	522	VAL	4.2
1	A	523	ALA	3.8
1	B	413	ASN	2.5
1	A	413	ASN	2.4
1	B	165	GLU	2.4
1	B	520	ALA	2.3

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

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

### 6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

### 6.4 Ligands [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. LLDF column lists the quality of electron



density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
3	SO3	B	526	4/4	0.93	0.21	19.29	20,21,22,25	4
6	PG4	A	530	11/13	0.82	0.25	18.58	42,49,55,55	0
5	PG6	B	531	7/18	0.84	0.17	12.76	51,54,55,56	0
6	PG4	B	536	7/13	0.78	0.31	9.09	38,39,39,41	7
3	SO3	A	526	4/4	0.95	0.16	6.53	22,22,23,25	4
6	PG4	A	535	5/13	0.68	0.27	4.55	54,55,55,56	0
5	PG6	A	529	8/18	0.80	0.28	4.47	30,30,31,31	8
6	PG4	B	532	5/13	0.90	0.26	4.06	26,26,26,27	5
5	PG6	B	530	8/18	0.83	0.24	3.06	28,28,30,31	8
2	HEC	A	1008	43/43	0.92	0.17	2.92	24,28,41,47	0
2	HEC	B	1008	43/43	0.92	0.17	2.56	23,26,40,47	0
6	PG4	A	531	6/13	0.91	0.16	2.32	34,40,43,44	0
2	HEC	B	1007[B]	43/43	0.98	0.11	1.69	12,14,16,21	3
2	HEC	B	1007[A]	43/43	0.98	0.11	1.69	12,14,15,16	3
2	HEC	A	1007[B]	43/43	0.98	0.11	1.58	12,15,18,22	4
2	HEC	A	1007[A]	43/43	0.98	0.11	1.58	12,15,17,18	4
2	HEC	B	1002	43/43	0.98	0.11	1.03	15,18,19,21	0
2	HEC	B	1003	43/43	0.97	0.10	1.00	14,16,26,33	0
2	HEC	A	1004	43/43	0.98	0.08	0.72	12,16,18,20	0
2	HEC	B	1004	43/43	0.98	0.09	0.68	12,15,16,19	0
2	HEC	B	1005	43/43	0.98	0.09	0.66	13,14,22,28	0
2	HEC	A	1002	43/43	0.99	0.11	0.57	15,16,19,21	0
2	HEC	A	1003	43/43	0.98	0.10	0.54	13,15,24,32	0
2	HEC	A	1005	43/43	0.98	0.08	0.25	13,14,22,29	0
2	HEC	B	1001	43/43	0.97	0.11	0.24	20,23,26,29	0
3	SO3	B	529	4/4	0.96	0.14	0.24	47,47,47,47	4
2	HEC	B	1006	43/43	0.99	0.07	-0.10	10,13,14,15	0
2	HEC	A	1006	43/43	0.98	0.08	-0.12	12,13,15,17	0
2	HEC	A	1001	43/43	0.98	0.09	-0.35	17,20,25,29	0
4	CA	A	527	1/1	1.00	0.03	-3.45	20,20,20,20	0
4	CA	B	527	1/1	1.00	0.02	-3.47	17,17,17,17	0
6	PG4	A	533	5/13	0.77	0.17	-	58,58,59,59	0
6	PG4	B	533	5/13	0.86	0.15	-	50,51,51,51	0
4	CA	B	528	1/1	0.98	0.07	-	19,19,19,19	1
4	CA	A	528	1/1	0.94	0.09	-	19,19,19,19	1
6	PG4	A	534	7/13	0.74	0.24	-	60,61,62,62	0
6	PG4	A	532	6/13	0.85	0.23	-	55,56,57,57	0
6	PG4	B	535	6/13	0.86	0.18	-	52,52,53,53	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
6	PG4	B	534	5/13	0.73	0.20	-	58,59,60,60	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.