



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2018 – 02:37 pm GMT

PDB ID : 5EV8  
Title : Crystal structure of the metallo-beta-lactamase IMP-1 in complex with the bithiazolidine inhibitor D-CS319  
Authors : Hinchliffe, P.; Spencer, J.  
Deposited on : 2015-11-19  
Resolution : 2.30 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.

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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 : 1.7.3 (157068), CSD as539be (2018)  
Xtrriage (Phenix) : 1.13  
EDS : trunk30967  
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)  
Refmac : 5.8.0158  
CCP4 : 7.0 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : trunk30967

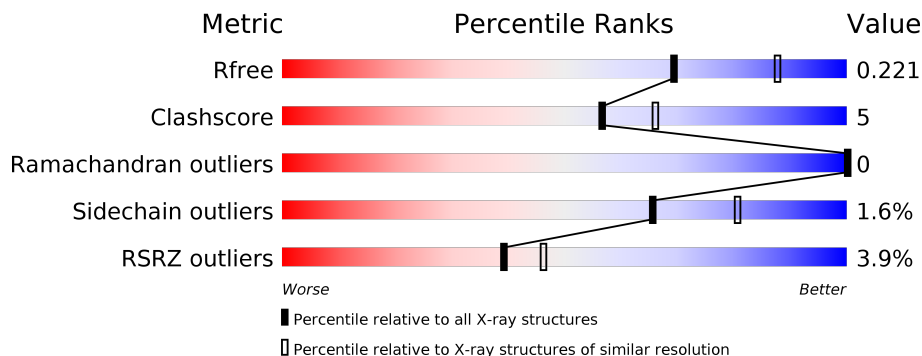
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.30 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))
$R_{free}$	111664	4477 (2.30-2.30)
Clashscore	122126	5072 (2.30-2.30)
Ramachandran outliers	120053	5022 (2.30-2.30)
Sidechain outliers	120020	5021 (2.30-2.30)
RSRZ outliers	108989	4374 (2.30-2.30)

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	230	87% 8% 5%
1	B	230	80% 14% 5%
1	C	230	88% 9% 5% 13%
1	D	230	77% 18% 5% 13%

## 2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 7320 atoms, of which 42 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Beta-lactamase IMP-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	219	1717	1113	282	321	1	0	1	0
1	B	219	1717	1113	282	321	1	0	1	0
1	C	223	1743	1130	288	324	1	0	0	0
1	D	218	1711	1110	281	319	1	0	1	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLY	-	expression tag	UNP P52699
A	0	PRO	-	expression tag	UNP P52699
B	-1	GLY	-	expression tag	UNP P52699
B	0	PRO	-	expression tag	UNP P52699
C	-1	GLY	-	expression tag	UNP P52699
C	0	PRO	-	expression tag	UNP P52699
D	-1	GLY	-	expression tag	UNP P52699
D	0	PRO	-	expression tag	UNP P52699

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

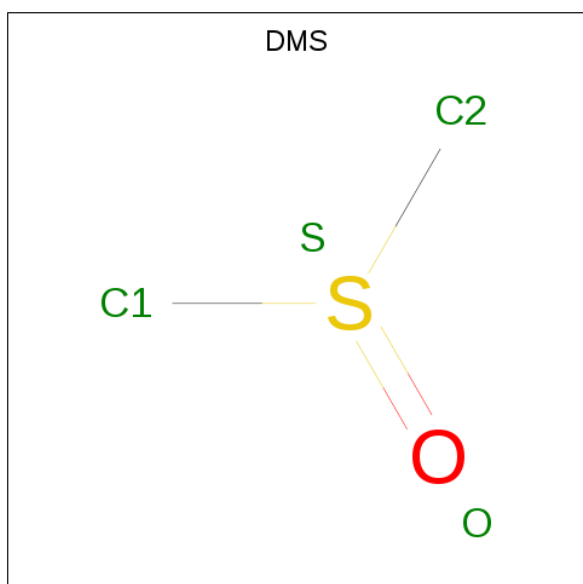
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	2	Total 2	Zn 2	0	0
2	A	2	Total 2	Zn 2	0	0
2	D	2	Total 2	Zn 2	0	0
2	C	2	Total 2	Zn 2	0	0





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

- Molecule 5 is DIMETHYL SULFOXIDE (three-letter code: DMS) (formula: C<sub>2</sub>H<sub>6</sub>OS).



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

- Molecule 6 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	C	1	Total	Na	0	0
			1	1		

- Molecule 7 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	C	1	Total	Cl	0	0
			1	1		

- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	80	Total	O	0	0
			80	80		
8	B	87	Total	O	0	0
			87	87		
8	C	93	Total	O	0	0
			93	93		
8	D	27	Total	O	0	0
			27	27		



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	48.56Å 77.71Å 261.64Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	37.24 – 2.30 37.24 – 2.30	Depositor EDS
% Data completeness (in resolution range)	99.9 (37.24-2.30) 99.9 (37.24-2.30)	Depositor EDS
$R_{merge}$	0.19	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.60 (at 2.29Å)	Xtrriage
Refinement program	PHENIX 1.9_1692	Depositor
R, $R_{free}$	0.178 , 0.220 0.179 , 0.221	Depositor DCC
$R_{free}$ test set	2206 reflections (4.89%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	36.6	Xtrriage
Anisotropy	0.242	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 46.1	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	7320	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	43.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.78% 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: ZN, CL, NA, EDO, DMS, 3R9

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	0.47	0/1764	0.56	0/2394
1	B	0.49	0/1764	0.59	0/2394
1	C	0.46	0/1788	0.57	0/2425
1	D	0.40	0/1758	0.55	0/2386
All	All	0.45	0/7074	0.57	0/9599

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 [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	1717	0	1727	13	0
1	B	1717	0	1727	21	0
1	C	1743	0	1761	14	0
1	D	1711	0	1722	32	0
2	A	2	0	0	0	0
2	B	2	0	0	0	0
2	C	2	0	0	0	0
2	D	2	0	0	0	0
3	A	26	0	18	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	13	0	9	0	0
3	C	13	0	9	0	0
3	D	13	0	9	0	0
4	B	12	18	18	1	0
4	C	4	6	6	0	0
4	D	4	6	6	0	0
5	B	4	6	6	0	0
5	C	4	6	6	2	0
6	C	1	0	0	0	0
7	C	1	0	0	0	0
8	A	80	0	0	1	0
8	B	87	0	0	3	0
8	C	93	0	0	4	0
8	D	27	0	0	1	0
All	All	7278	42	7024	76	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.

All (76) 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:D:60:VAL:HG13	1:D:70:ILE:HG13	1.62	0.82
1:D:124:TRP:HZ3	1:D:127:LYS:HE3	1.46	0.81
1:D:124:TRP:CE3	1:D:127:LYS:HG3	2.17	0.79
1:C:174:GLU:OE1	8:C:401:HOH:O	2.00	0.79
1:B:124:TRP:CZ3	1:B:131:GLU:HB2	2.21	0.75
1:C:60:VAL:HG13	1:C:70:ILE:HG13	1.74	0.70
1:D:124:TRP:CZ3	1:D:127:LYS:HE3	2.29	0.67
1:A:124:TRP:CZ3	1:A:131:GLU:HB2	2.32	0.65
1:B:28:TRP:HH2	1:B:166:GLY:HA2	1.63	0.64
1:C:202:ASP:HB2	8:C:417:HOH:O	1.97	0.63
1:C:58:LYS:NZ	8:C:402:HOH:O	2.27	0.63
1:D:124:TRP:HE3	1:D:127:LYS:HG3	1.61	0.63
1:A:32:PRO:HG3	1:D:163:TYR:CZ	2.35	0.62
1:B:112:VAL:HB	4:B:304:EDO:H12	1.83	0.61
1:B:28:TRP:CH2	1:B:166:GLY:HA2	2.37	0.59
1:C:174:GLU:HG2	8:C:474:HOH:O	2.01	0.58
1:D:151:ARG:O	1:D:191:LYS:HE2	2.03	0.58
1:D:74:ILE:CD1	1:D:132:VAL:HG21	2.34	0.58
1:B:129:LYS:HE3	1:B:150:GLU:OE1	2.04	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:151:ARG:O	1:A:191:LYS:HE2	2.05	0.56
1:A:24:GLU:HG3	1:D:28:TRP:HE3	1.72	0.54
1:A:24:GLU:HG3	1:D:28:TRP:CE3	2.43	0.54
1:D:161:LYS:HB3	1:D:164:GLY:O	2.08	0.53
1:B:204:SER:O	1:B:207:LYS:HB3	2.09	0.52
1:A:47:ILE:O	1:A:48:ASP:HB2	2.10	0.52
1:C:99:SER:HB2	5:C:305:DMS:C2	2.40	0.51
1:D:55:ASP:HA	1:D:58:LYS:HD3	1.93	0.51
1:A:98:ALA:O	1:A:117:SER:HA	2.10	0.50
1:A:32:PRO:HG3	1:D:163:TYR:CE1	2.46	0.50
1:B:202:ASP:HB2	8:B:431:HOH:O	2.12	0.49
1:B:98:ALA:O	1:B:117:SER:HA	2.12	0.49
1:D:43:GLU:OE2	1:D:69:LYS:HD3	2.12	0.49
1:D:160:ILE:HG22	1:D:162:PRO:HD3	1.94	0.49
1:D:127:LYS:HG2	1:D:128:ASN:OD1	2.13	0.49
1:B:13:ASP:OD2	1:B:151:ARG:HD2	2.13	0.49
8:A:471:HOH:O	1:C:26:ASN:HB3	2.13	0.48
1:D:124:TRP:CZ3	1:D:127:LYS:HG3	2.47	0.48
1:C:156:GLY:HA3	1:C:160:ILE:CG1	2.44	0.48
1:B:14:GLU:HB2	1:B:151:ARG:HH21	1.79	0.48
1:B:47:ILE:O	1:B:48:ASP:HB2	2.13	0.48
1:A:139:HIS:CD2	1:A:140:THR:HG23	2.49	0.48
1:D:13:ASP:OD1	1:D:14:GLU:N	2.40	0.47
1:D:74:ILE:HD13	1:D:132:VAL:HG21	1.95	0.47
1:B:176:TRP:HB3	1:B:177:PRO:HD3	1.97	0.46
1:D:4:LEU:HA	1:D:5:PRO:HD3	1.81	0.46
1:B:139:HIS:CD2	1:B:140:THR:HG23	2.52	0.45
1:D:139:HIS:CD2	1:D:158:CYS:HB2	2.51	0.45
1:B:179:SER:N	8:B:403:HOH:O	2.49	0.45
1:B:60:VAL:HG13	1:B:70:ILE:HG13	1.98	0.45
1:D:47:ILE:O	1:D:48:ASP:HB2	2.16	0.45
1:D:51:PHE:O	1:D:84:GLY:HA3	2.17	0.45
1:C:51:PHE:O	1:C:84:GLY:HA3	2.18	0.44
1:C:98:ALA:O	1:C:117:SER:HA	2.17	0.44
1:B:199:GLU:H	1:B:199:GLU:CD	2.21	0.44
1:D:156:GLY:HA3	1:D:160:ILE:HG12	1.99	0.44
1:D:26:ASN:OD1	1:D:26:ASN:N	2.50	0.44
1:C:151:ARG:O	1:C:191:LYS:HE2	2.18	0.43
1:D:66:ARG:HG3	1:D:66:ARG:HH11	1.83	0.43
1:C:47:ILE:O	1:C:48:ASP:HB2	2.17	0.43
1:D:199:GLU:OE2	8:D:401:HOH:O	2.21	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:66:ARG:HH11	1:A:66:ARG:HG3	1.83	0.43
1:B:119:SER:O	8:B:401:HOH:O	2.21	0.43
1:C:156:GLY:HA3	1:C:160:ILE:HG12	2.00	0.42
1:A:66:ARG:NH1	1:A:66:ARG:HG3	2.34	0.42
1:A:161:LYS:HZ3	3:A:303:3R9:C	2.27	0.42
1:D:98:ALA:O	1:D:117:SER:HA	2.20	0.41
1:D:54:LYS:O	1:D:58:LYS:HG3	2.21	0.41
1:B:74:ILE:HG13	1:B:75:SER:N	2.35	0.41
1:B:214:VAL:HG23	1:B:215:LYS:N	2.36	0.41
1:B:14:GLU:CB	1:B:151:ARG:HH21	2.34	0.41
1:C:99:SER:HB2	5:C:305:DMS:H22	2.03	0.41
1:D:156:GLY:HA3	1:D:160:ILE:CG1	2.51	0.40
1:D:129:LYS:O	1:D:149:PRO:HD2	2.21	0.40
1:D:4:LEU:HD13	1:D:22:PHE:O	2.21	0.40
1:B:147:TRP:CH2	1:B:152:LYS:HA	2.56	0.40
1:A:5:PRO:HB2	1:A:22:PHE:CD1	2.56	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	218/230 (95%)	212 (97%)	6 (3%)	0	100	100
1	B	218/230 (95%)	214 (98%)	4 (2%)	0	100	100
1	C	221/230 (96%)	216 (98%)	5 (2%)	0	100	100
1	D	217/230 (94%)	212 (98%)	5 (2%)	0	100	100
All	All	874/920 (95%)	854 (98%)	20 (2%)	0	100	100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	189/197 (96%)	185 (98%)	4 (2%)	56	73
1	B	189/197 (96%)	185 (98%)	4 (2%)	56	73
1	C	192/197 (98%)	189 (98%)	3 (2%)	65	81
1	D	188/197 (95%)	186 (99%)	2 (1%)	76	87
All	All	758/788 (96%)	745 (98%)	13 (2%)	65	79

All (13) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	81[A]	ASP
1	A	81[B]	ASP
1	A	143	ASN
1	A	199	GLU
1	B	74	ILE
1	B	143	ASN
1	B	199	GLU
1	B	220	SER
1	C	24	GLU
1	C	143	ASN
1	C	224	SER
1	D	143	ASN
1	D	182	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

### 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 carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

Of 22 ligands modelled in this entry, 10 are monoatomic - leaving 12 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	3R9	A	303	2	8,14,14	1.05	0	10,20,20	2.71	3 (30%)
3	3R9	A	304	-	8,14,14	2.21	4 (50%)	10,20,20	3.00	3 (30%)
3	3R9	B	303	2	8,14,14	1.11	0	10,20,20	2.88	2 (20%)
4	EDO	B	304	-	3,3,3	0.48	0	2,2,2	0.35	0
4	EDO	B	305	-	3,3,3	0.52	0	2,2,2	0.36	0
4	EDO	B	306	-	3,3,3	1.24	0	2,2,2	0.49	0
5	DMS	B	307	-	3,3,3	0.60	0	3,3,3	0.90	0
3	3R9	C	303	2	8,14,14	2.46	2 (25%)	10,20,20	2.77	4 (40%)
4	EDO	C	304	-	3,3,3	0.51	0	2,2,2	0.25	0
5	DMS	C	305	-	3,3,3	0.64	0	3,3,3	0.73	0
3	3R9	D	303	2	8,14,14	1.09	0	10,20,20	2.69	5 (50%)
4	EDO	D	304	-	3,3,3	0.51	0	2,2,2	0.29	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. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	3R9	A	303	2	-	0/0/28/28	0/2/2/2
3	3R9	A	304	-	-	0/0/28/28	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	3R9	B	303	2	-	0/0/28/28	0/2/2/2
4	EDO	B	304	-	-	0/1/1/1	0/0/0/0
4	EDO	B	305	-	-	0/1/1/1	0/0/0/0
4	EDO	B	306	-	-	0/1/1/1	0/0/0/0
5	DMS	B	307	-	-	0/0/0/0	0/0/0/0
3	3R9	C	303	2	-	0/0/28/28	0/2/2/2
4	EDO	C	304	-	-	0/1/1/1	0/0/0/0
5	DMS	C	305	-	-	0/0/0/0	0/0/0/0
3	3R9	D	303	2	-	0/0/28/28	0/2/2/2
4	EDO	D	304	-	-	0/1/1/1	0/0/0/0

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	304	3R9	CA-N	-4.03	1.43	1.48
3	A	304	3R9	CAF-SAG	-3.09	1.72	1.81
3	A	304	3R9	CB-CA	-2.19	1.49	1.52
3	A	304	3R9	CAD-SAC	2.42	1.86	1.81
3	C	303	3R9	CAF-CAM	4.25	1.56	1.51
3	C	303	3R9	CAJ-SAG	5.16	1.94	1.84

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	303	3R9	CAJ-CAD-SAC	-5.71	107.48	114.19
3	A	303	3R9	CAJ-CAD-SAC	-5.08	108.23	114.19
3	D	303	3R9	CAJ-CAD-SAC	-3.67	109.88	114.19
3	C	303	3R9	CAJ-CAD-SAC	-3.59	109.97	114.19
3	A	304	3R9	SAH-CAM-N	-2.27	100.23	104.84
3	D	303	3R9	SAG-CAJ-N	-2.21	100.36	104.84
3	C	303	3R9	CB-CA-N	2.17	109.10	106.32
3	A	304	3R9	CAF-SAG-CAJ	2.23	94.47	90.61
3	D	303	3R9	CB-SAH-CAM	2.34	94.67	90.61
3	D	303	3R9	CB-CA-N	2.34	109.32	106.32
3	C	303	3R9	CA-CB-SAH	2.52	108.73	105.05
3	A	303	3R9	CB-CA-N	3.04	110.22	106.32
3	A	303	3R9	CAM-CAF-SAG	5.15	105.96	103.59
3	B	303	3R9	CAM-CAF-SAG	5.99	106.34	103.59
3	D	303	3R9	CAM-CAF-SAG	6.24	106.46	103.59
3	C	303	3R9	CAM-CAF-SAG	6.69	106.67	103.59
3	A	304	3R9	CAM-CAF-SAG	8.02	107.28	103.59

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

3 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	303	3R9	1	0
4	B	304	EDO	1	0
5	C	305	DMS	2	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.



## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	219/230 (95%)	0.00	1 (0%) 90 94	22, 37, 56, 81	0
1	B	219/230 (95%)	0.03	1 (0%) 90 94	18, 35, 63, 85	0
1	C	223/230 (96%)	-0.17	3 (1%) 77 81	20, 36, 55, 79	0
1	D	218/230 (94%)	0.68	29 (13%) 3 4	38, 57, 82, 94	0
All	All	879/920 (95%)	0.13	34 (3%) 39 46	18, 41, 72, 94	0

All (34) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	217	LEU	5.0
1	D	221	LYS	4.5
1	D	218	ASN	4.4
1	D	4	LEU	3.6
1	C	3	SER	3.5
1	D	200	VAL	3.4
1	D	220	SER	3.3
1	D	41	ASN	3.3
1	D	64	VAL	3.2
1	D	26	ASN	3.2
1	D	189	LYS	3.1
1	D	124	TRP	3.0
1	C	225	LYS	3.0
1	A	220	SER	2.7
1	D	68	TYR	2.7
1	D	65	GLU	2.7
1	D	219	GLU	2.7
1	D	173	ILE	2.6
1	D	62	TRP	2.6
1	D	168	LEU	2.6
1	D	92	ARG	2.5

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Mol	Chain	Res	Type	RSRZ
1	D	174	GLU	2.5
1	D	215	LYS	2.5
1	D	43	GLU	2.4
1	D	67	GLY	2.4
1	C	223	PRO	2.4
1	D	88	TRP	2.3
1	D	42	ALA	2.3
1	D	69	LYS	2.3
1	D	40	VAL	2.2
1	D	93	SER	2.2
1	B	124	TRP	2.1
1	D	28	TRP	2.1
1	D	60	VAL	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 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. 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
4	EDO	D	304	4/4	0.85	0.22	57,69,72,80	0
4	EDO	C	304	4/4	0.85	0.18	46,55,62,73	0
4	EDO	B	306	4/4	0.87	0.19	40,50,65,69	0
4	EDO	B	305	4/4	0.88	0.18	38,46,56,58	0
5	DMS	B	307	4/4	0.92	0.30	48,58,74,74	0
3	3R9	D	303	13/13	0.93	0.12	45,54,61,64	13
4	EDO	B	304	4/4	0.94	0.17	26,36,48,48	0
3	3R9	A	304	13/13	0.94	0.14	36,44,49,55	12
3	3R9	B	303	13/13	0.95	0.15	37,45,58,59	0
5	DMS	C	305	4/4	0.95	0.19	45,54,59,61	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
7	CL	C	307	1/1	0.96	0.18	53,53,53,53	0
3	3R9	A	303	13/13	0.97	0.19	29,42,50,54	13
3	3R9	C	303	13/13	0.98	0.09	24,29,34,37	0
2	ZN	D	302	1/1	0.98	0.11	49,49,49,49	0
2	ZN	D	301	1/1	0.99	0.10	42,42,42,42	0
2	ZN	A	302	1/1	0.99	0.14	46,46,46,46	0
6	NA	C	306	1/1	0.99	0.37	53,53,53,53	0
2	ZN	B	302	1/1	0.99	0.11	30,30,30,30	0
2	ZN	B	301	1/1	0.99	0.14	48,48,48,48	0
2	ZN	C	302	1/1	1.00	0.10	26,26,26,26	0
2	ZN	A	301	1/1	1.00	0.11	28,28,28,28	0
2	ZN	C	301	1/1	1.00	0.11	23,23,23,23	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.