W O R L D W I D E

wwPDB

P R O T E I N   D A T A   B A N K

wwPDB X-ray Structure Validation Summary Report ⓘ

May 13, 2020 – 02:52 pm BST

PDB ID	:	2Z2S
Title	:	Crystal Structure of Rhodobacter sphaeroides SigE in complex with the anti-sigma ChrR
Authors	:	Darst, S.A.; Campbell, E.A.
Deposited on	:	2007-05-26
Resolution	:	2.70 Å(reported)

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

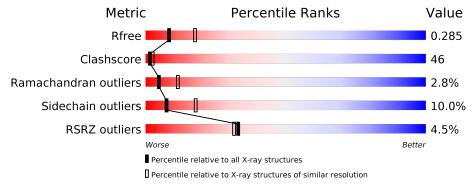|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

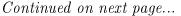The reported resolution of this entry is 2.70 Å.

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	Percentile Ranks	Value
Rfree		0.285
Clashscore		46
Ramachandran outliers		2.8%
Sidechain outliers		10.0%
RSRZ outliers		4.5%

Worse   *Better*

▌ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

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 >=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 <=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	184	% 50% 35% 5% • 10%
1	C	184	3% 45% 44% 5% 7%
1	E	184	2% 43% 34% 7% • 16%
1	G	184	2% 41% 38% 8% 13%
2	B	203	5% 43% 39% 6% • 10%
2	D	203	10% 38% 34% 8% • 17%

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Mol	Chain	Length	Quality of chain
2	F	203	5% 40% 35% 6% · 17%
2	H	203	% 42% 38% 6% 14%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	ZN	D	204	-	-	X	-

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 10379 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 RpoE, ECF SigE.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	166	Total	C	N	O	S	Se	0	0	0
			1317	827	248	236	1	5			
1	C	172	Total	C	N	O	S	Se	0	0	0
			1333	839	253	235	1	5			
1	E	155	Total	C	N	O	S	Se	0	0	0
			1238	777	235	221	1	4			
1	G	160	Total	C	N	O	S	Se	0	0	0
			1269	799	239	226	1	4			

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	EXPRESSION TAG	UNP Q3IYV6
A	-1	PRO	-	EXPRESSION TAG	UNP Q3IYV6
A	0	HIS	-	EXPRESSION TAG	UNP Q3IYV6
C	-2	GLY	-	EXPRESSION TAG	UNP Q3IYV6
C	-1	PRO	-	EXPRESSION TAG	UNP Q3IYV6
C	0	HIS	-	EXPRESSION TAG	UNP Q3IYV6
E	-2	GLY	-	EXPRESSION TAG	UNP Q3IYV6
E	-1	PRO	-	EXPRESSION TAG	UNP Q3IYV6
E	0	HIS	-	EXPRESSION TAG	UNP Q3IYV6
G	-2	GLY	-	EXPRESSION TAG	UNP Q3IYV6
G	-1	PRO	-	EXPRESSION TAG	UNP Q3IYV6
G	0	HIS	-	EXPRESSION TAG	UNP Q3IYV6

- Molecule 2 is a protein called Anti-Sigma factor ChrR, transcriptional activator ChrR.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
2	B	182	Total	C	N	O	S	Se	0	0	0
			1258	788	225	239	4	2			
2	D	169	Total	C	N	O	S	Se	0	0	0
			1186	746	210	224	4	2			

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Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
2	F	169	Total	C	N	O	S	Se	0	0	0
			1161	732	202	221	4	2			
2	H	175	Total	C	N	O	S	Se	0	0	0
			1222	767	210	239	4	2			

- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	H	1	Total	Zn	0	0
			1	1		
3	B	1	Total	Zn	0	0
			1	1		
3	D	1	Total	Zn	0	0
			1	1		
3	F	1	Total	Zn	0	0
			1	1		

- Molecule 4 is SULFATE ION (three-letter code: SO4) (formula: O_4S).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	E	1	Total	O	S	0	0
			5	4	1		
4	G	1	Total	O	S	0	0
			5	4	1		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	52	Total 52	O 52	0	0
5	B	47	Total 47	O 47	0	0
5	C	59	Total 59	O 59	0	0
5	D	38	Total 38	O 38	0	0
5	E	56	Total 56	O 56	0	0
5	F	39	Total 39	O 39	0	0
5	G	56	Total 56	O 56	0	0
5	H	34	Total 34	O 34	0	0

3 Residue-property plots ⓘ

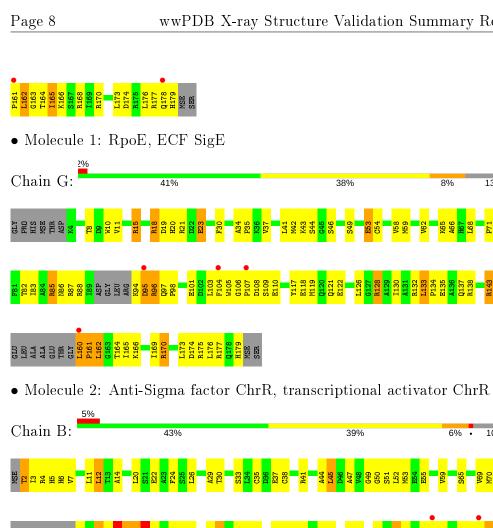These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are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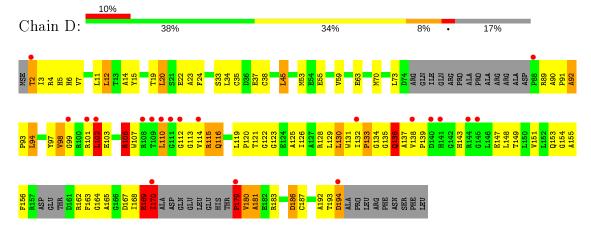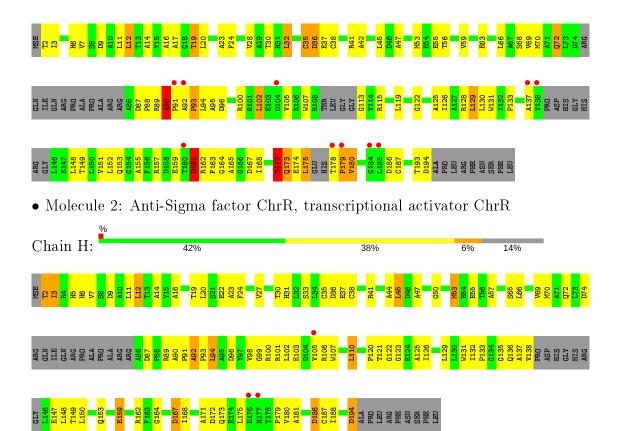
- Molecule 1: RpoE, ECF SigE

- Molecule 1: RpoE, ECF SigE

- Molecule 1: RpoE, ECF SigE

P161 L162 G163 T164 I165 K166 S167 R168 I169 R170 L173 D174 R175 L176 R177 Q178 H179 MSE SER

● Molecule 1: RpoE, ECF SigE

Chain G:

GLY PRO HIS MSE THR ASP K4 T8 D9 W10 V11 R15 R18 D19 H20 R21 I22 E23 F30 A34 P35 K36 V37 L41 M42 K43 S44 G45 S46 S49 E53 C54 V58 M59 V62 K65 A66 H67 L68 P71 S72 R73 A74 S75 T78 W79 I80

F81 T82 I83 A84 R85 N86 R87 R88 I89 ASP GLY LEU ARG K94 D95 R96 Q97 P98 E101 D102 L103 F104 W105 G106 P107 D108 S109 E110 Y117 E118 M119 Q120 Q121 E122 L126 G127 R128 A129 I130 A131 R132 L133 P134 E135 A136 Q137 R138 R143 F146 G147 ASP LEU THR HIS ARG

GLU LEU ALA ALA GLU THR GLY L160 P161 L162 G163 T164 I165 K166 I169 R170 L173 D174 R175 L176 R177 Q178 H179 MSE SER

● Molecule 2: Anti-Sigma factor ChrR, transcriptional activator ChrR

Chain B:

MSE T2 I3 R4 H5 H6 V7 L11 L12 T13 A14 L20 S21 E22 A23 F24 S25 L26 A29 T30 S33 L34 C35 D36 E37 C38 R41 A44 L45 D46 A47 V48 G49 G50 S51 L52 M53 E54 E55 V59 S65 V69 M70 L73 D74 GLN ILE GLN ARG

PRO ALA PRO ARG ARG ALA D87 P88 R89 A90 P91 A92 P93 I94 A95 D96 Y97 V98 G99 L102 E103 D104 V105 R106 W107 L110 G111 G112 G113 V114 R115 Q116 G122 G123 I126 A127 R128 L129 L130 W131 I132 P133 G134 G135 Q136 A137 V138 P139 G142 H143 R144 G145 L146 E147

L148 T149 Q153 R157 D158 D161 R162 D167 I168 E169 I170 A171 D172 Q173 E174 L175 E176 H177 T178 P179 V180 A181 L185 D186 C187 A191 A192 T193 D194 ALA PRO LEU ARG PHE ASN SER PHE LEU

● Molecule 2: Anti-Sigma factor ChrR, transcriptional activator ChrR

Chain D:

MSE T2 I3 R4 H5 H6 V7 L11 L12 T13 A14 Y15 T19 L20 S21 E22 A23 F24 S33 L34 C35 D36 E37 C38 L45 M53 E54 E55 V59 E63 M70 L73 D74 ARG GLN ILE GLN ARG PRO ALA PRO ALA ARG ARG ALA ASP P88 R89 A90 P91 A92

P93 L94 Y97 V98 G99 R100 R101 L102 E103 R106 W107 T108 T109 L110 G111 G112 G113 V114 R115 Q116 L119 P120 T121 G122 G123 E124 A125 I126 A127 R128 L129 L130 W131 I132 P133 G134 G135 Q136 A137 V138 P139 D140 H141 G142 H143 R144 G145 L146 E147 L148 T149 L150 V151 L152 Q153 G154 A155

F156 R157 ASP GLU THR D161 R162 F163 G164 A165 G166 D167 I168 E69 I170 ALA ASP GLN GLU LEU GLU HIS THR P79 V180 A181 E182 R183 D186 C187 A192 T193 D194 ALA PRO LEU ARG PHE ASN SER PHE LEU

● Molecule 2: Anti-Sigma factor ChrR, transcriptional activator ChrR

Chain F:

• Molecule 2: Anti-Sigma factor ChrR, transcriptional activator ChrR

Chain H:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	119.14Å 46.45Å 141.70Å 90.00° 91.63° 90.00°	Depositor
Resolution (Å)	25.00 – 2.70 24.87 – 2.60	Depositor EDS
% Data completeness (in resolution range)	75.2 (25.00-2.70) 67.2 (24.87-2.60)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	0.08	Depositor
$< I/\sigma(I) >$ [1]	2.43 (at 2.60Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.250 , 0.286 0.247 , 0.285	Depositor DCC
R_{free} test set	1747 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å^2)	40.0	Xtriage
Anisotropy	0.772	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 24.5	EDS
L-test for twinning[2]	$< |L| > = 0.45, < L^2 > = 0.28$	Xtriage
Estimated twinning fraction	0.155 for h,-k,-l	Xtriage
F_o,F_c correlation	0.89	EDS
Total number of atoms	10379	wwPDB-VP
Average B, all atoms (Å^2)	43.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.36% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ 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, SO4

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	0.45	0/1340	0.66	0/1800
1	C	0.44	0/1356	0.68	1/1824 (0.1%)
1	E	0.89	3/1259 (0.2%)	0.92	5/1689 (0.3%)
1	G	0.55	0/1292	0.76	1/1738 (0.1%)
2	B	0.52	1/1276 (0.1%)	0.85	5/1741 (0.3%)
2	D	2.27	20/1202 (1.7%)	1.51	26/1635 (1.6%)
2	F	0.65	3/1173 (0.3%)	1.02	11/1598 (0.7%)
2	H	0.47	0/1237	0.75	1/1687 (0.1%)
All	All	0.95	27/10135 (0.3%)	0.92	50/13712 (0.4%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	E	0	2
2	F	0	1
All	All	0	3

The worst 5 of 27 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	170	ILE	CA-CB	38.69	2.43	1.54
2	D	179	PRO	CA-C	32.82	2.18	1.52
2	D	170	ILE	CA-C	27.23	2.23	1.52
2	D	180	VAL	N-CA	20.70	1.87	1.46
1	E	105	TRP	C-N	-19.66	0.97	1.33

The worst 5 of 50 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	D	179	PRO	CA-CB-CG	-18.86	68.17	104.00
1	E	105	TRP	O-C-N	-16.71	94.80	123.20
2	D	180	VAL	CB-CA-C	-16.03	80.94	111.40
2	D	170	ILE	CG1-CB-CG2	-15.55	77.19	111.40
2	D	170	ILE	N-CA-CB	-14.38	77.72	110.80

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	E	105	TRP	Mainchain
1	E	109	SER	Mainchain
2	F	90	ALA	Mainchain

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	1317	0	1275	89	0
1	C	1333	0	1279	118	0
1	E	1238	0	1194	131	0
1	G	1269	0	1225	119	0
2	B	1258	0	1189	130	0
2	D	1186	0	1156	180	0
2	F	1161	0	1102	116	0
2	H	1222	0	1167	107	0
3	B	1	0	0	0	0
3	D	1	0	0	2	0
3	F	1	0	0	0	0
3	H	1	0	0	0	0
4	E	5	0	0	1	0
4	G	5	0	0	1	0
5	A	52	0	0	19	0
5	B	47	0	0	33	0
5	C	59	0	0	32	0
5	D	38	0	0	16	0
5	E	56	0	0	26	0
5	F	39	0	0	22	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	G	56	0	0	32	0
5	H	34	0	0	18	0
All	All	10379	0	9587	899	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 46.

The worst 5 of 899 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)
2:D:179:PRO:CG	2:D:179:PRO:CD	1.79	1.54
2:D:180:VAL:CA	2:D:180:VAL:C	1.79	1.50
2:D:180:VAL:CA	2:D:180:VAL:CB	1.90	1.48
2:D:156:PHE:HE2	2:D:179:PRO:CB	1.28	1.45
2:D:179:PRO:N	2:D:179:PRO:CA	1.80	1.42

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	162/184 (88%)	149 (92%)	11 (7%)	2 (1%)	13	32
1	C	168/184 (91%)	155 (92%)	11 (6%)	2 (1%)	13	32
1	E	147/184 (80%)	134 (91%)	10 (7%)	3 (2%)	7	19
1	G	154/184 (84%)	146 (95%)	4 (3%)	4 (3%)	5	13
2	B	178/203 (88%)	159 (89%)	13 (7%)	6 (3%)	3	8
2	D	163/203 (80%)	139 (85%)	13 (8%)	11 (7%)	1	1
2	F	159/203 (78%)	143 (90%)	13 (8%)	3 (2%)	8	20
2	H	169/203 (83%)	147 (87%)	17 (10%)	5 (3%)	4	10

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	1300/1548 (84%)	1172 (90%)	92 (7%)	36 (3%)	5	11

5 of 36 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	91	PRO
2	B	93	PRO
2	B	111	GLY
2	D	92	ALA
2	D	102	LEU

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	129/145 (89%)	116 (90%)	13 (10%)	7	17
1	C	125/145 (86%)	115 (92%)	10 (8%)	12	27
1	E	122/145 (84%)	110 (90%)	12 (10%)	8	18
1	G	124/145 (86%)	114 (92%)	10 (8%)	11	27
2	B	114/150 (76%)	103 (90%)	11 (10%)	8	19
2	D	112/150 (75%)	98 (88%)	14 (12%)	4	10
2	F	105/150 (70%)	92 (88%)	13 (12%)	4	11
2	H	115/150 (77%)	103 (90%)	12 (10%)	7	16
All	All	946/1180 (80%)	851 (90%)	95 (10%)	7	18

5 of 95 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	D	130	LEU
1	E	109	SER
2	H	45	LEU
2	D	143	HIS
1	E	15	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 12 such sidechains are listed below:

Mol	Chain	Res	Type
2	B	177	HIS
1	C	32	HIS
1	E	123	ASN
2	B	153	GLN
1	E	56	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 carbohydrates in this entry.

5.6 Ligand geometry (i)

Of 6 ligands modelled in this entry, 4 are monoatomic - leaving 2 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	$\#|Z| > 2$
4	SO4	G	182	-	4,4,4	0.17	0	6,6,6	0.12	0
4	SO4	E	182	-	4,4,4	0.20	0	6,6,6	0.32	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	G	182	SO4	1	0
4	E	182	SO4	1	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	E	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	E	109:SER	C	110:GLU	N	1.08
1	E	105:TRP	C	106:GLY	N	0.97

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($\mathring{A}^2$)	Q<0.9
1	A	161/184 (87%)	-0.11	2 (1%)	79	80	5, 33, 65, 75	0
1	C	167/184 (90%)	-0.01	5 (2%)	50	51	9, 35, 70, 89	0
1	E	151/184 (82%)	-0.08	4 (2%)	56	57	11, 38, 68, 83	0
1	G	156/184 (84%)	-0.06	4 (2%)	56	57	12, 39, 68, 79	0
2	B	180/203 (88%)	0.26	11 (6%)	21	20	11, 48, 84, 91	0
2	D	167/203 (82%)	0.74	20 (11%)	4	3	21, 55, 88, 94	0
2	F	167/203 (82%)	0.20	10 (5%)	21	20	21, 44, 71, 85	0
2	H	173/203 (85%)	0.15	3 (1%)	70	72	19, 44, 72, 78	0
All	All	1322/1548 (85%)	0.14	59 (4%)	33	31	5, 43, 75, 94	0

The worst 5 of 59 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	D	179	PRO	12.5
2	B	145	GLY	9.1
2	D	170	ILE	6.3
2	F	160	THR	6.0
2	D	145	GLY	5.3

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 ⓘ

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
3	ZN	H	204	1/1	0.77	0.17	61,61,61,61	0
4	SO4	E	182	5/5	0.85	0.20	73,74,74,75	0
3	ZN	F	204	1/1	0.86	0.15	70,70,70,70	0
3	ZN	D	204	1/1	0.93	0.11	53,53,53,53	0
4	SO4	G	182	5/5	0.94	0.12	74,75,75,76	0
3	ZN	B	204	1/1	0.98	0.17	49,49,49,49	0

6.5   Other polymers ⓘ

There are no such residues in this entry.