



# wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 1, 2016 – 06:04 PM GMT

PDB ID : 4KF1  
Title : Crystal structure of SsoPox W263I in complex with C10HTL  
Authors : Gotthard, G.; Hiblot, J.; Chabriere, E.; Elias, M.  
Deposited on : 2013-04-26  
Resolution : 2.00 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](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.

---

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

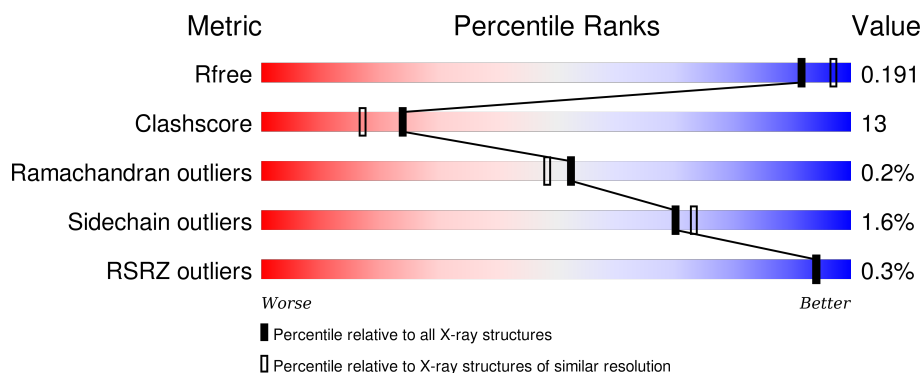
# 1 Overall quality at a glance

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))
$R_{free}$	91344	6249 (2.00-2.00)
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	314	<div> <div>84%</div> <div>16%</div> </div>
1	B	314	<div> <div>82%</div> <div>17%</div> <div>.</div> </div>
1	C	314	<div> <div>81%</div> <div>18%</div> <div>.</div> </div>
1	D	314	<div> <div>83%</div> <div>16%</div> <div>.</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
4	HT5	A	403	-	-	X	X
4	HT5	B	403	-	-	X	X
4	HT5	C	403	-	-	-	X
4	HT5	D	403	-	-	X	X
5	PG4	A	404	-	-	-	X
5	PG4	B	404	-	-	-	X
5	PG4	C	404	-	-	-	X
5	PG4	D	404	-	-	-	X
6	GOL	A	405	-	-	-	X
6	GOL	A	406	-	-	-	X
6	GOL	A	408	-	-	-	X
6	GOL	A	412	-	-	-	X
6	GOL	A	415	-	-	-	X
6	GOL	A	416	-	-	-	X
6	GOL	B	405	-	-	-	X
6	GOL	B	408	-	-	-	X
6	GOL	C	408	-	-	-	X
6	GOL	C	410	-	-	-	X
6	GOL	D	407	-	-	X	X
6	GOL	D	409	-	-	-	X
6	GOL	D	411	-	-	-	X
7	EDO	A	407	-	-	-	X
7	EDO	A	413	-	-	-	X
7	EDO	B	407	-	-	X	X
7	EDO	C	406	-	-	-	X
7	EDO	C	407	-	-	X	X
7	EDO	D	408	-	-	-	X
7	EDO	D	410	-	-	X	-

## 2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 11388 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 Aryldialkylphosphatase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	314	Total	C	N	O	S	0	0	0
			2507	1607	425	468	7			
1	B	314	Total	C	N	O	S	0	2	0
			2519	1615	428	469	7			
1	C	314	Total	C	N	O	S	0	4	0
			2529	1622	430	470	7			
1	D	314	Total	C	N	O	S	0	0	0
			2507	1607	425	468	7			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	263	ILE	TRP	ENGINEERED MUTATION	UNP Q97VT7
B	263	ILE	TRP	ENGINEERED MUTATION	UNP Q97VT7
C	263	ILE	TRP	ENGINEERED MUTATION	UNP Q97VT7
D	263	ILE	TRP	ENGINEERED MUTATION	UNP Q97VT7

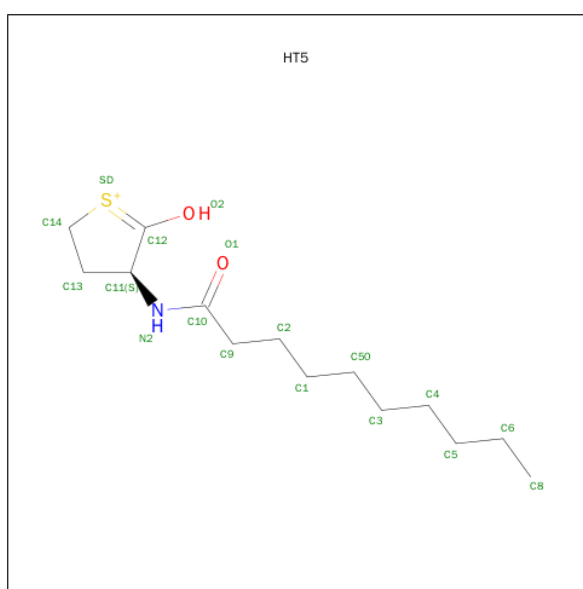
- Molecule 2 is COBALT (II) ION (three-letter code: CO) (formula: Co).

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

- Molecule 3 is FE (II) ION (three-letter code: FE2) (formula: Fe).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	B	1	Total Fe 1 1	0	0
3	A	1	Total Fe 1 1	0	0
3	D	1	Total Fe 1 1	0	0
3	C	1	Total Fe 1 1	0	0

- Molecule 4 is (4S)-4-(DECANOYLAMINO)-5-HYDROXY-3,4-DIHYDRO-2H-THIOPHEN IUM (three-letter code: HT5) (formula: C<sub>14</sub>H<sub>26</sub>NO<sub>2</sub>S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C N O S 18 14 1 2 1	0	0
4	B	1	Total C N O S 18 14 1 2 1	0	0
4	C	1	Total C N O S 18 14 1 2 1	0	0
4	D	1	Total C N O S 18 14 1 2 1	0	0

- Molecule 5 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
5	A	1	Total	C	O	0	0
			13	8	5		
5	B	1	Total	C	O	0	0
			13	8	5		
5	C	1	Total	C	O	0	0
			13	8	5		
5	D	1	Total	C	O	0	0
			13	8	5		

- Molecule 6 is GLYCEROL (three-letter code: GOL) (formula:  $C_3H_8O_3$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	C	O	0	0
			6	3	3		
6	A	1	Total	C	O	0	0
			6	3	3		
6	A	1	Total	C	O	0	0
			6	3	3		
6	A	1	Total	C	O	0	0
			6	3	3		
6	A	1	Total	C	O	0	0
			6	3	3		
6	A	1	Total	C	O	0	0
			6	3	3		
6	B	1	Total	C	O	0	0
			6	3	3		
6	B	1	Total	C	O	0	0
			6	3	3		
6	C	1	Total	C	O	0	0
			6	3	3		
6	C	1	Total	C	O	0	0
			6	3	3		
6	C	1	Total	C	O	0	0
			6	3	3		
6	C	1	Total	C	O	0	0
			6	3	3		
6	D	1	Total	C	O	0	0
			6	3	3		
6	D	1	Total	C	O	0	0
			6	3	3		
6	D	1	Total	C	O	0	0
			6	3	3		
6	D	1	Total	C	O	0	0
			6	3	3		

- Molecule 7 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>).



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

- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	261	Total	O	0	0
			261	261		

*Continued on next page...*



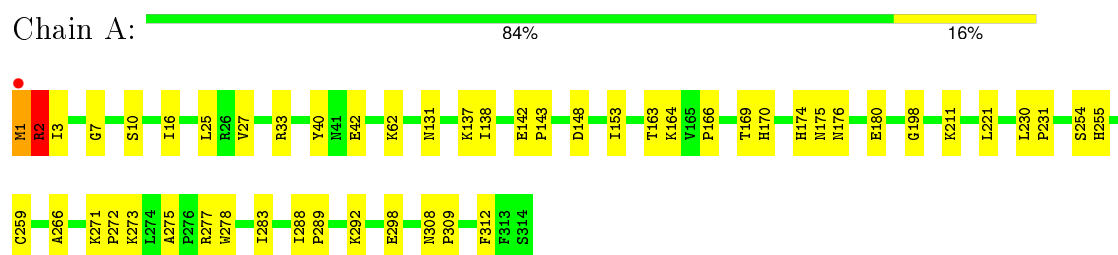
*Continued from previous page...*

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	B	287	Total 287	O 287	0	0
8	C	262	Total 262	O 262	0	0
8	D	232	Total 232	O 232	0	0

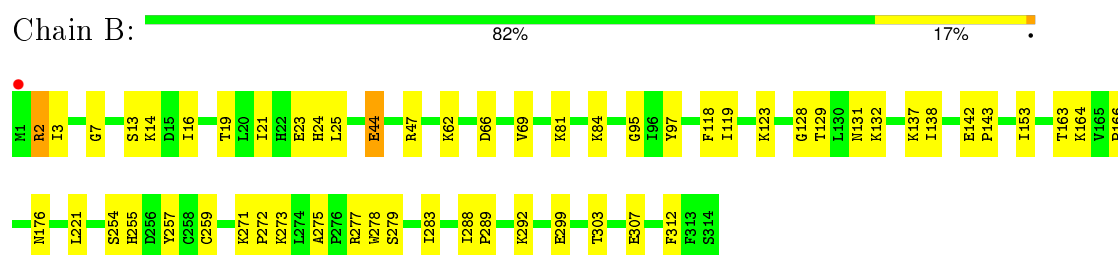
### 3 Residue-property plots

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

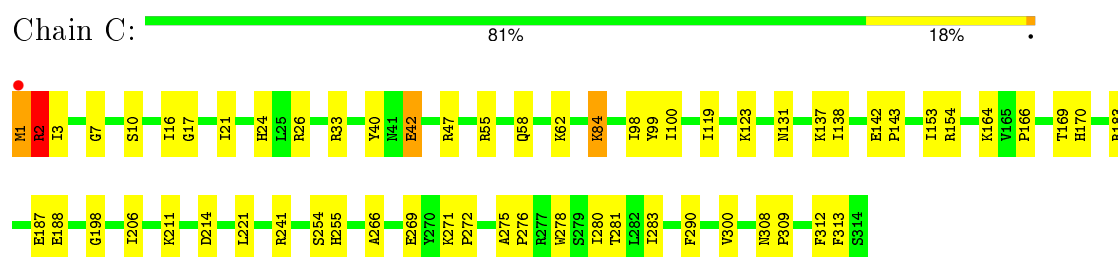
- Molecule 1: Aryldialkylphosphatase



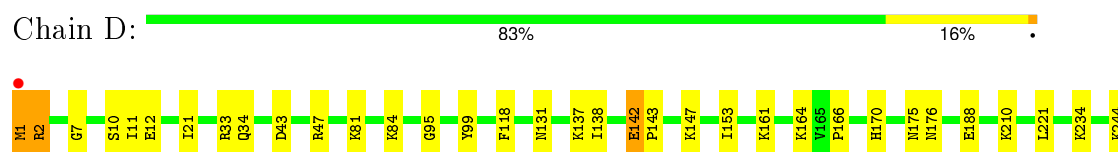
- Molecule 1: Aryldialkylphosphatase



- Molecule 1: Aryldialkylphosphatase



- Molecule 1: Aryldialkylphosphatase



Y247	M252	I253	S254	H255	A266	K271	P272	K273	L274	A275	K278	I283	E298	A302	T303	K306	E307	M308	P309	F312	F313	S314
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	86.78Å 103.53Å 151.71Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	45.44 – 2.00 45.44 – 2.00	Depositor EDS
% Data completeness (in resolution range)	99.6 (45.44-2.00) 99.6 (45.44-2.00)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	4.62 (at 2.00Å)	Xtriage
Refinement program	REFMAC 5.7.0032	Depositor
R, $R_{free}$	0.148 , 0.188 0.150 , 0.191	Depositor DCC
$R_{free}$ test set	4626 reflections (5.26%)	DCC
Wilson B-factor (Å <sup>2</sup> )	21.6	Xtriage
Anisotropy	0.075	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.38 , 52.8	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtriage
Outliers	0 of 92509 reflections	Xtriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	11388	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	24.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.35% 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: GOL, CO, HT5, EDO, PG4, FE2, KCX

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	0.26	0/2543	0.38	0/3433
1	B	0.26	0/2561	0.37	0/3457
1	C	0.26	0/2577	0.37	0/3477
1	D	0.26	0/2543	0.36	0/3433
All	All	0.26	0/10224	0.37	0/13800

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	A	0	1
1	B	0	1
1	C	0	1
1	D	0	2
All	All	0	5

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	221	LEU	Peptide
1	B	221	LEU	Peptide
1	C	221	LEU	Peptide
1	D	1	MET	Peptide
1	D	221	LEU	Peptide

## 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	2507	0	2542	43	0
1	B	2519	0	2562	70	0
1	C	2529	0	2579	64	0
1	D	2507	0	2542	62	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
4	A	18	0	25	9	0
4	B	18	0	25	9	0
4	C	18	0	25	7	0
4	D	18	0	25	11	0
5	A	13	0	18	2	0
5	B	13	0	18	0	0
5	C	13	0	18	1	0
5	D	13	0	18	2	0
6	A	42	0	56	5	0
6	B	12	0	16	0	0
6	C	24	0	32	2	0
6	D	30	0	40	9	0
7	A	20	0	30	6	0
7	B	8	0	12	11	0
7	C	8	0	12	8	0
7	D	8	0	12	4	0
8	A	261	0	0	20	2
8	B	287	0	0	26	0
8	C	262	0	0	23	2
8	D	232	0	0	31	0
All	All	11388	0	10607	275	2

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 13.

The worst 5 of 275 close contacts within the same asymmetric unit are listed below, sorted by

their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:269:GLU:HB2	8:C:759:HOH:O	1.23	1.31
6:D:411:GOL:H31	8:D:729:HOH:O	1.32	1.25
1:A:16:ILE:HB	8:A:751:HOH:O	1.37	1.24
1:B:16:ILE:HB	8:B:760:HOH:O	1.38	1.19
1:D:2:ARG:NH1	1:D:2:ARG:HA	1.56	1.19

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:A:727:HOH:O	8:C:681:HOH:O 3_654	2.09	0.11
8:A:727:HOH:O	8:C:648:HOH:O 3_654	2.19	0.01

## 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	311/314 (99%)	300 (96%)	10 (3%)	1 (0%)	46	41
1	B	313/314 (100%)	302 (96%)	10 (3%)	1 (0%)	46	41
1	C	315/314 (100%)	301 (96%)	13 (4%)	1 (0%)	46	41
1	D	311/314 (99%)	297 (96%)	14 (4%)	0	100	100
All	All	1250/1256 (100%)	1200 (96%)	47 (4%)	3 (0%)	52	48

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	2	ARG
1	C	2	ARG
1	B	2	ARG

### 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	272/272 (100%)	268 (98%)	4 (2%)	72	75
1	B	274/272 (101%)	271 (99%)	3 (1%)	80	83
1	C	276/272 (102%)	270 (98%)	6 (2%)	60	62
1	D	272/272 (100%)	268 (98%)	4 (2%)	72	75
All	All	1094/1088 (101%)	1077 (98%)	17 (2%)	70	73

5 of 17 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	1	MET
1	C	2	ARG
1	D	2	ARG
1	B	299	GLU
1	D	142	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 7 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	131	ASN
1	D	294	ASN
1	C	131	ASN
1	A	174	HIS
1	D	131	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

4 non-standard protein/DNA/RNA residues 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	$\# Z  > 2$
1	KCX	A	137	1,3,2	7,11,12	0.41	0	7,12,14	0.78	0
1	KCX	B	137	1,3,2	7,11,12	0.42	0	7,12,14	0.78	0
1	KCX	C	137	1,3,2	7,11,12	0.45	0	7,12,14	0.78	0
1	KCX	D	137	1,3,2	7,11,12	0.44	0	7,12,14	0.82	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
1	KCX	A	137	1,3,2	-	0/6/10/12	0/0/0/0
1	KCX	B	137	1,3,2	-	0/6/10/12	0/0/0/0
1	KCX	C	137	1,3,2	-	0/6/10/12	0/0/0/0
1	KCX	D	137	1,3,2	-	0/6/10/12	0/0/0/0

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.

4 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	137	KCX	1	0
1	B	137	KCX	1	0
1	C	137	KCX	1	0
1	D	137	KCX	1	0

## 5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 5.6 Ligand geometry ⓘ

Of 45 ligands modelled in this entry, 8 are monoatomic - leaving 37 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	HT5	A	403	3,2	16,18,18	1.09	1 (6%)	16,21,21	0.92	1 (6%)
5	PG4	A	404	-	12,12,12	0.47	0	11,11,11	0.25	0
6	GOL	A	405	-	5,5,5	0.21	0	5,5,5	0.31	0
6	GOL	A	406	-	5,5,5	0.22	0	5,5,5	0.27	0
7	EDO	A	407	-	3,3,3	0.48	0	2,2,2	0.42	0
6	GOL	A	408	-	5,5,5	0.23	0	5,5,5	0.20	0
7	EDO	A	409	-	3,3,3	0.48	0	2,2,2	0.42	0
6	GOL	A	410	-	5,5,5	0.19	0	5,5,5	0.34	0
7	EDO	A	411	-	3,3,3	0.49	0	2,2,2	0.41	0
6	GOL	A	412	-	5,5,5	0.22	0	5,5,5	0.24	0
7	EDO	A	413	-	3,3,3	0.46	0	2,2,2	0.45	0
7	EDO	A	414	-	3,3,3	0.48	0	2,2,2	0.40	0
6	GOL	A	415	-	5,5,5	0.28	0	5,5,5	0.35	0
6	GOL	A	416	-	5,5,5	0.22	0	5,5,5	0.25	0
4	HT5	B	403	3	16,18,18	0.59	1 (6%)	16,21,21	0.73	0
5	PG4	B	404	-	12,12,12	0.48	0	11,11,11	0.23	0
6	GOL	B	405	-	5,5,5	0.21	0	5,5,5	0.33	0
7	EDO	B	406	-	3,3,3	0.50	0	2,2,2	0.39	0
7	EDO	B	407	-	3,3,3	0.48	0	2,2,2	0.37	0
6	GOL	B	408	-	5,5,5	0.24	0	5,5,5	0.20	0
4	HT5	C	403	3,2	16,18,18	0.56	0	16,21,21	0.72	0
5	PG4	C	404	-	12,12,12	0.46	0	11,11,11	0.29	0
6	GOL	C	405	-	5,5,5	0.23	0	5,5,5	0.25	0
7	EDO	C	406	-	3,3,3	0.50	0	2,2,2	0.36	0
7	EDO	C	407	-	3,3,3	0.44	0	2,2,2	0.49	0
6	GOL	C	408	-	5,5,5	0.20	0	5,5,5	0.27	0
6	GOL	C	409	-	5,5,5	0.21	0	5,5,5	0.25	0
6	GOL	C	410	-	5,5,5	0.24	0	5,5,5	0.14	0
4	HT5	D	403	3	16,18,18	0.60	1 (6%)	16,21,21	0.71	0
5	PG4	D	404	-	12,12,12	0.46	0	11,11,11	0.29	0
6	GOL	D	405	-	5,5,5	0.25	0	5,5,5	0.29	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
6	GOL	D	406	-	5,5,5	0.20	0	5,5,5	0.28	0
6	GOL	D	407	-	5,5,5	0.23	0	5,5,5	0.23	0
7	EDO	D	408	-	3,3,3	0.46	0	2,2,2	0.48	0
6	GOL	D	409	-	5,5,5	0.22	0	5,5,5	0.33	0
7	EDO	D	410	-	3,3,3	0.47	0	2,2,2	0.44	0
6	GOL	D	411	-	5,5,5	0.22	0	5,5,5	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
4	HT5	A	403	3,2	-	0/13/23/23	0/0/1/1
5	PG4	A	404	-	-	0/10/10/10	0/0/0/0
6	GOL	A	405	-	-	0/4/4/4	0/0/0/0
6	GOL	A	406	-	-	0/4/4/4	0/0/0/0
7	EDO	A	407	-	-	0/1/1/1	0/0/0/0
6	GOL	A	408	-	-	0/4/4/4	0/0/0/0
7	EDO	A	409	-	-	0/1/1/1	0/0/0/0
6	GOL	A	410	-	-	0/4/4/4	0/0/0/0
7	EDO	A	411	-	-	0/1/1/1	0/0/0/0
6	GOL	A	412	-	-	0/4/4/4	0/0/0/0
7	EDO	A	413	-	-	0/1/1/1	0/0/0/0
7	EDO	A	414	-	-	0/1/1/1	0/0/0/0
6	GOL	A	415	-	-	0/4/4/4	0/0/0/0
6	GOL	A	416	-	-	0/4/4/4	0/0/0/0
4	HT5	B	403	3	-	0/13/23/23	0/0/1/1
5	PG4	B	404	-	-	0/10/10/10	0/0/0/0
6	GOL	B	405	-	-	0/4/4/4	0/0/0/0
7	EDO	B	406	-	-	0/1/1/1	0/0/0/0
7	EDO	B	407	-	-	0/1/1/1	0/0/0/0
6	GOL	B	408	-	-	0/4/4/4	0/0/0/0
4	HT5	C	403	3,2	-	0/13/23/23	0/0/1/1
5	PG4	C	404	-	-	0/10/10/10	0/0/0/0
6	GOL	C	405	-	-	0/4/4/4	0/0/0/0
7	EDO	C	406	-	-	0/1/1/1	0/0/0/0
7	EDO	C	407	-	-	0/1/1/1	0/0/0/0
6	GOL	C	408	-	-	0/4/4/4	0/0/0/0
6	GOL	C	409	-	-	0/4/4/4	0/0/0/0
6	GOL	C	410	-	-	0/4/4/4	0/0/0/0
4	HT5	D	403	3	-	0/13/23/23	0/0/1/1
5	PG4	D	404	-	-	0/10/10/10	0/0/0/0

*Continued on next page...*

*Continued from previous page...*

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	GOL	D	405	-	-	0/4/4/4	0/0/0/0
6	GOL	D	406	-	-	0/4/4/4	0/0/0/0
6	GOL	D	407	-	-	0/4/4/4	0/0/0/0
7	EDO	D	408	-	-	0/1/1/1	0/0/0/0
6	GOL	D	409	-	-	0/4/4/4	0/0/0/0
7	EDO	D	410	-	-	0/1/1/1	0/0/0/0
6	GOL	D	411	-	-	0/4/4/4	0/0/0/0

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	403	HT5	C13-C14	2.03	1.59	1.51
4	D	403	HT5	C13-C14	2.06	1.59	1.51
4	A	403	HT5	C13-C14	4.08	1.68	1.51

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	403	HT5	C13-C14-SD	-2.04	99.54	111.74

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

25 monomers are involved in 82 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	403	HT5	9	0
5	A	404	PG4	2	0
6	A	406	GOL	1	0
7	A	407	EDO	1	0
6	A	408	GOL	1	0
7	A	409	EDO	1	0
6	A	412	GOL	2	0
7	A	413	EDO	3	0
7	A	414	EDO	1	0
6	A	415	GOL	1	0
4	B	403	HT5	9	0
7	B	406	EDO	1	0
7	B	407	EDO	10	0
4	C	403	HT5	7	0

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	C	404	PG4	1	0
6	C	405	GOL	1	0
7	C	406	EDO	1	0
7	C	407	EDO	7	0
6	C	408	GOL	1	0
4	D	403	HT5	11	0
5	D	404	PG4	2	0
6	D	405	GOL	1	0
6	D	407	GOL	5	0
7	D	410	EDO	4	0
6	D	411	GOL	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 ⓘ

### 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	313/314 (99%)	-0.64	1 (0%) 94 94	13, 19, 33, 58	0
1	B	313/314 (99%)	-0.45	1 (0%) 94 94	13, 20, 34, 70	0
1	C	313/314 (99%)	-0.58	1 (0%) 94 94	14, 20, 34, 70	0
1	D	313/314 (99%)	-0.50	1 (0%) 94 94	14, 22, 38, 63	0
All	All	1252/1256 (99%)	-0.54	4 (0%) 94 94	13, 20, 35, 70	0

All (4) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	1	MET	6.0
1	C	1	MET	4.9
1	A	1	MET	3.8
1	D	1	MET	3.3

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

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
1	KCX	B	137	12/13	0.98	0.09	-	13,14,15,16	0
1	KCX	A	137	12/13	0.99	0.07	-	12,13,14,14	0
1	KCX	D	137	12/13	0.98	0.08	-	14,15,16,16	0
1	KCX	C	137	12/13	0.98	0.06	-	12,14,16,16	0

## 6.3 Carbohydrates ⓘ

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. 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
7	EDO	C	407	4/4	0.93	0.30	26.45	25,26,26,39	0
4	HT5	A	403	18/18	0.87	0.29	22.83	19,34,56,64	18
5	PG4	C	404	13/13	0.88	0.25	19.45	29,44,53,67	0
6	GOL	A	412	6/6	0.91	0.32	18.32	37,38,40,44	0
6	GOL	A	415	6/6	0.70	0.30	17.02	19,27,33,38	0
5	PG4	A	404	13/13	0.87	0.17	12.21	27,41,58,68	0
7	EDO	A	413	4/4	0.83	0.24	11.72	26,43,49,51	0
5	PG4	B	404	13/13	0.85	0.22	10.53	25,37,54,59	0
6	GOL	D	407	6/6	0.86	0.28	8.98	25,38,43,54	0
4	HT5	B	403	18/18	0.85	0.28	8.57	24,34,52,54	18
6	GOL	C	410	6/6	0.95	0.18	8.09	16,26,33,40	0
7	EDO	B	407	4/4	0.71	0.27	7.22	22,33,33,36	0
5	PG4	D	404	13/13	0.88	0.27	7.16	33,43,63,66	0
6	GOL	A	408	6/6	0.86	0.15	7.03	34,38,42,51	0
4	HT5	D	403	18/18	0.85	0.29	7.00	25,37,49,63	18
6	GOL	A	406	6/6	0.95	0.13	6.42	15,22,27,42	0
6	GOL	B	408	6/6	0.98	0.17	6.19	14,18,25,26	0
7	EDO	A	407	4/4	0.76	0.21	5.81	34,36,41,43	0
6	GOL	D	411	6/6	0.88	0.17	4.72	38,48,52,58	0
6	GOL	A	416	6/6	0.86	0.19	4.55	41,50,50,51	0
6	GOL	A	405	6/6	0.96	0.12	4.54	14,17,25,41	0
6	GOL	D	409	6/6	0.95	0.19	4.34	19,27,33,36	0
4	HT5	C	403	18/18	0.89	0.23	4.07	26,35,47,48	18
6	GOL	C	408	6/6	0.94	0.18	3.28	18,25,39,53	0
6	GOL	B	405	6/6	0.94	0.14	3.00	15,19,22,27	0
7	EDO	C	406	4/4	0.88	0.19	2.87	24,26,28,38	0
7	EDO	D	408	4/4	0.85	0.15	2.77	42,47,47,48	0
7	EDO	A	409	4/4	0.89	0.16	1.33	34,41,46,52	0
6	GOL	A	410	6/6	0.94	0.12	1.23	17,20,25,33	0

*Continued on next page...*

*Continued from previous page...*

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
6	GOL	D	406	6/6	0.92	0.12	1.12	25,32,36,37	0
6	GOL	D	405	6/6	0.90	0.14	0.90	22,33,37,45	0
6	GOL	C	405	6/6	0.96	0.11	0.76	21,23,27,29	0
6	GOL	C	409	6/6	0.95	0.10	0.74	32,40,42,42	0
7	EDO	A	414	4/4	0.83	0.16	0.46	35,39,46,46	0
2	CO	C	401	1/1	0.99	0.07	-1.20	16,16,16,16	0
7	EDO	B	406	4/4	0.95	0.09	-1.75	15,15,15,20	0
2	CO	B	401	1/1	1.00	0.06	-2.70	14,14,14,14	0
2	CO	A	401	1/1	1.00	0.06	-5.61	14,14,14,14	0
2	CO	D	401	1/1	0.99	0.04	-10.60	17,17,17,17	0
3	FE2	A	402	1/1	0.99	0.05	-	12,12,12,12	0
3	FE2	B	402	1/1	1.00	0.07	-	13,13,13,13	0
7	EDO	A	411	4/4	0.77	0.16	-	43,43,47,50	0
7	EDO	D	410	4/4	0.89	0.11	-	37,39,40,43	0
3	FE2	C	402	1/1	1.00	0.06	-	13,13,13,13	0
3	FE2	D	402	1/1	0.99	0.06	-	15,15,15,15	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.