WORLDWIDE PDB

PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

Mar 27, 2025 – 10:47 AM EDT

PDB ID	:	7I2P
Title	:	Group deposition for crystallographic fragment screening of the NS5 RNA-dependent RNA polymerase from Dengue virus serotype 2 – Crystal structure of the NS5 RNA-dependent RNA polymerase from Dengue virus serotype 2 in complex with Z221421630 (DNV2_NS5A-x0644)
Authors	:	Aschenbrenner, J.C.; Saini, M.; Chopra, A.; Marples, P.G.; Balcomb, B.H.; Lithgo, R.M.; Fearon, D.; von Delft, F.; Ruiz, F.X.; Arnold, E.
Deposited on	:	2025-03-06
Resolution	:	1.76 Å(reported)

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

|		
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.21
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)

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 1.76 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		0.255
Clashscore		7
Ramachandran outliers		0.4%
Sidechain outliers		0.8%
RSRZ outliers		46.9%

Worse — *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
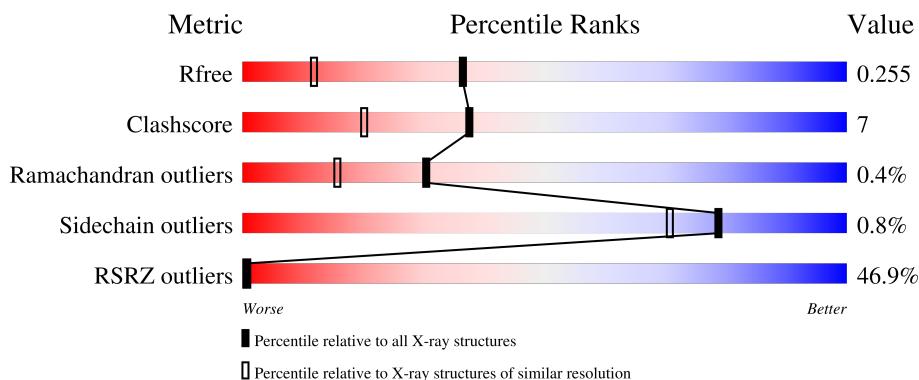
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	164625	2888 (1.76-1.76)
Clashscore	180529	3097 (1.76-1.76)
Ramachandran outliers	177936	3072 (1.76-1.76)
Sidechain outliers	177891	3072 (1.76-1.76)
RSRZ outliers	164620	2887 (1.76-1.76)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	637	42% / 76% / 15% / 10%
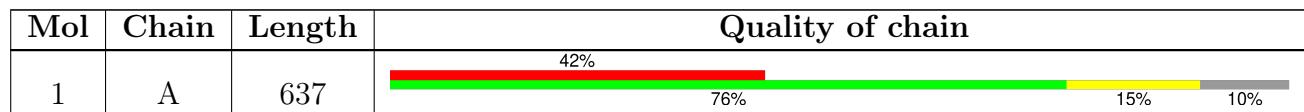
The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.41.4

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
6	PO4	A	1008	-	X	X	-

2 Entry composition ⓘ

There are 10 unique types of molecules in this entry. The entry contains 5159 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 NS5 RNA-dependent RNA polymerase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	574	Total 4740	C 2984	N 850	O 872	S 34	0	6	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	264	GLY	-	expression tag	UNP Q91H74
A	265	PRO	-	expression tag	UNP Q91H74

- Molecule 2 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).
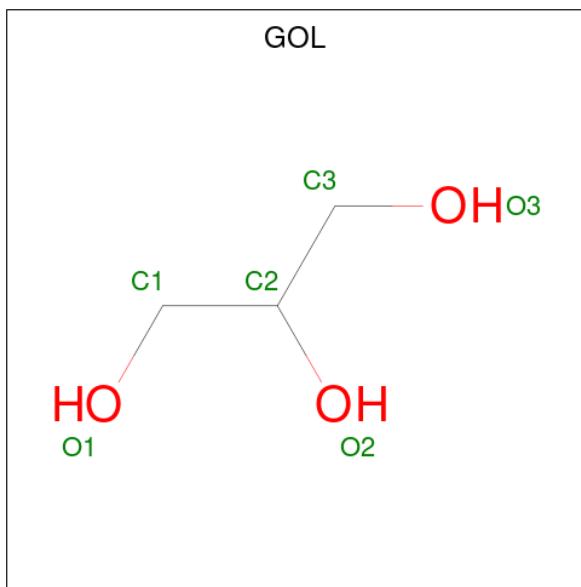
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total 6	C 3	O 3	0	0

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

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	2	Total 2	Zn 2	0	0

- Molecule 4 is 2-(N-MORPHOLINO)-ETHANESULFONIC ACID (three-letter code: MES) (formula: $C_6H_{13}NO_4S$).
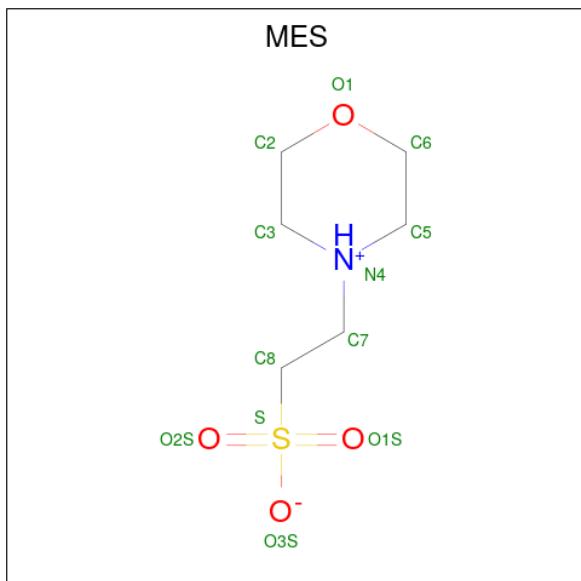
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total 24	C 12	N 2	O 8	S 2	0	1

- Molecule 5 is DIMETHYL SULFOXIDE (three-letter code: DMS) (formula: C_2H_6OS).
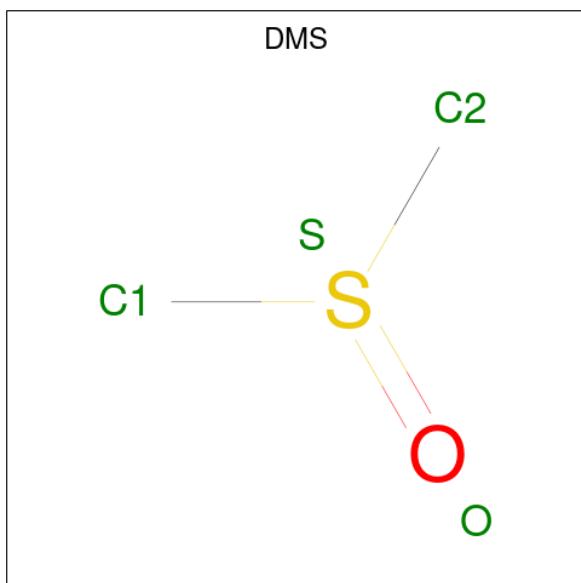
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total 4	C 2	O 1	S 1	0	0
5	A	1	Total 4	C 2	O 1	S 1	0	0
5	A	1	Total 4	C 2	O 1	S 1	0	0

- Molecule 6 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).
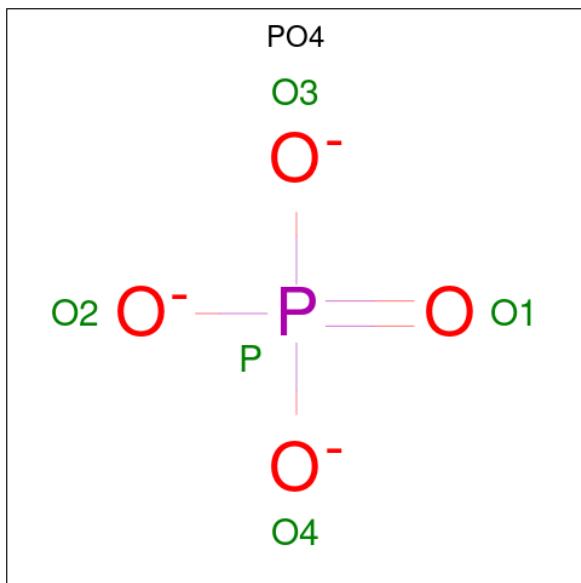
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total 5	O 4	P 1	0	0
6	A	1	Total 5	O 4	P 1	0	0

- Molecule 7 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).

PEG
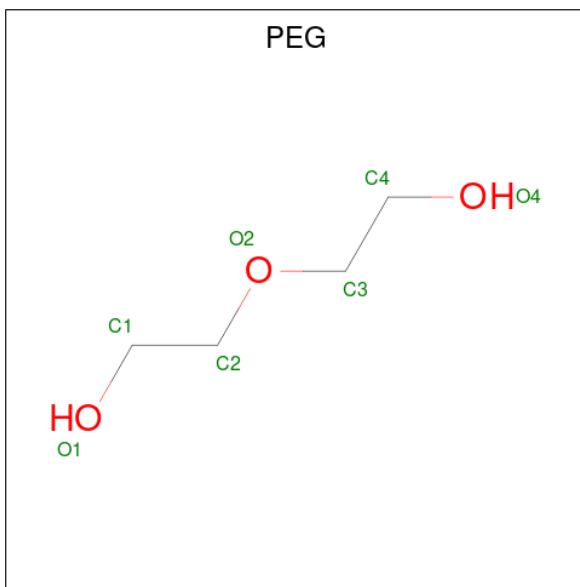
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
7	A	1	7	4	3	0	0

- Molecule 8 is (4-methoxyphenyl)(piperidin-4-yl)methanone (three-letter code: WKP) (formula: $C_{13}H_{17}NO_2$) (labeled as "Ligand of Interest" by depositor).

WKP
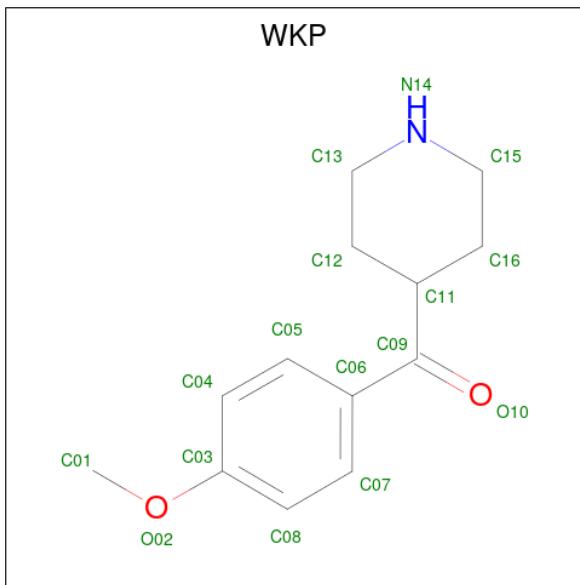
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
8	A	1	16	13	1	2	0	0

- Molecule 9 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	A	1	Total Cl 1 1		0	0

• Molecule 10 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	A	341	Total O 341 341		0	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide 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: NS5 RNA-dependent RNA polymerase
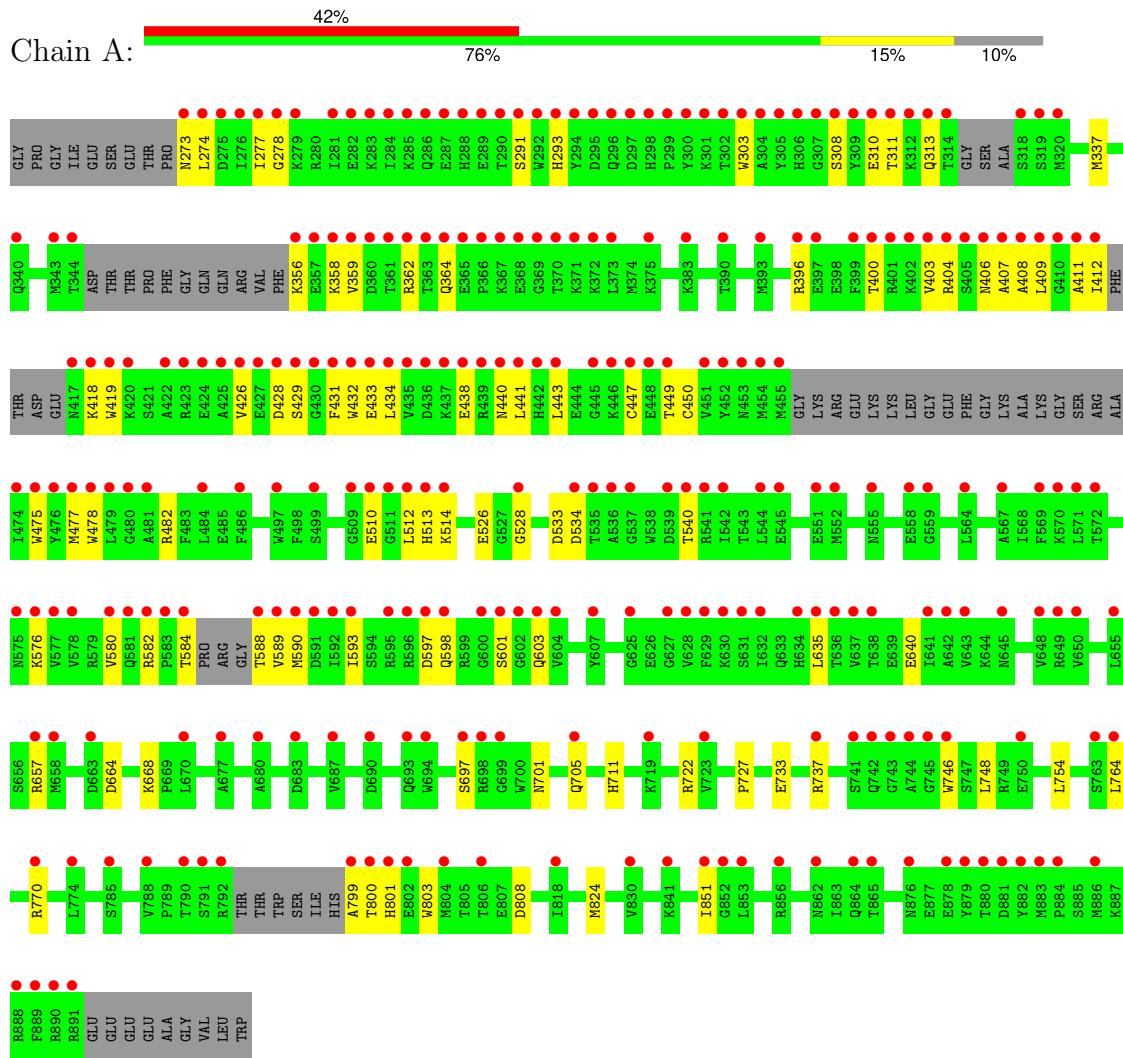
4 Data and refinement statistics (i)

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, α, β, γ	82.38Å 115.92Å 146.43Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	57.90 – 1.76 57.90 – 1.76	Depositor EDS
% Data completeness (in resolution range)	98.8 (57.90-1.76) 98.9 (57.90-1.76)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.03 (at 1.76Å)	Xtriage
Refinement program	REFMAC 5.8.0267	Depositor
R, R_{free}	0.185 , 0.224 0.228 , 0.255	Depositor DCC
R_{free} test set	3570 reflections (5.13%)	wwPDB-VP
Wilson B-factor (Å^2)	34.5	Xtriage
Anisotropy	0.175	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 80.7	EDS
L-test for twinning[2]	$< \|L\| > = 0.49, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	5159	wwPDB-VP
Average B, all atoms (Å^2)	55.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.87% 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 ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: WKP, PO4, ZN, MES, PEG, CL, GOL, DMS

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	0.76	0/4844	0.83	0/6530

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	4740	0	4649	64	0
2	A	6	0	8	0	0
3	A	2	0	0	0	0
4	A	24	0	26	1	0
5	A	12	0	18	2	0
6	A	10	0	0	3	0
7	A	7	0	10	0	0
8	A	16	0	0	0	0
9	A	1	0	0	0	0
10	A	341	0	0	4	2
All	All	5159	0	4711	66	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 7.

All (66) 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:A:664:ASP:OD1	6:A:1008:PO4:O4	1.91	0.87
1:A:408:ALA:HB3	1:A:603:GLN:HE22	1.41	0.84
1:A:429:SER:O	1:A:433:GLU:HG3	1.83	0.78
1:A:589:VAL:HG23	1:A:589:VAL:O	1.83	0.76
1:A:418:LYS:O	1:A:418:LYS:HD3	1.85	0.75
1:A:273:ASN:O	1:A:277:ILE:HG12	1.86	0.75
1:A:400:THR:HG23	1:A:426:VAL:HG11	1.75	0.69
1:A:408:ALA:CB	1:A:603:GLN:HE22	2.07	0.68
1:A:534:ASP:OD1	6:A:1008:PO4:O4	2.14	0.65
1:A:362:ARG:HH21	1:A:364:GLN:HA	1.60	0.65
1:A:589:VAL:O	1:A:589:VAL:CG2	2.45	0.64
1:A:403:VAL:HG21	1:A:426:VAL:HG21	1.80	0.63
1:A:408:ALA:HB3	1:A:603:GLN:NE2	2.12	0.63
1:A:582:ARG:O	1:A:588:THR:HA	2.00	0.61
1:A:438:GLU:HG3	1:A:449:THR:OG1	2.01	0.59
1:A:411:ALA:HA	1:A:477:MET:O	2.03	0.58
1:A:664:ASP:OD1	6:A:1008:PO4:P	2.61	0.58
1:A:447:CYS:SG	1:A:450:CYS:HB2	2.44	0.57
1:A:475:TRP:HZ3	1:A:576:LYS:HD3	1.69	0.57
1:A:400:THR:HG23	1:A:426:VAL:CG1	2.35	0.56
1:A:291:SER:HB3	1:A:310:GLU:H	1.70	0.56
1:A:362:ARG:NH2	1:A:364:GLN:HA	2.21	0.56
5:A:1005:DMS:C1	10:A:1241:HOH:O	2.53	0.56
1:A:510:GLU:O	1:A:514:LYS:HG3	2.06	0.56
1:A:412:ILE:HG12	1:A:478:TRP:HA	1.87	0.55
1:A:274:LEU:O	1:A:278:GLY:N	2.40	0.54
1:A:431:PHE:O	1:A:434:LEU:HB2	2.07	0.54
1:A:580:VAL:HG21	1:A:593:ILE:HD11	1.89	0.54
1:A:748:LEU:HD13	4:A:1004[B]:MES:H61	1.89	0.53
1:A:311:THR:HG21	1:A:590:MET:HB2	1.90	0.53
5:A:1005:DMS:H11	10:A:1241:HOH:O	2.08	0.52
1:A:799:ALA:O	1:A:800:THR:C	2.48	0.52
1:A:440:ASN:HA	1:A:443:LEU:HD12	1.91	0.51
1:A:303:TRP:CE3	1:A:593:ILE:HD12	2.46	0.51
1:A:528:GLY:O	1:A:668:LYS:HE3	2.13	0.49
1:A:428:ASP:OD1	1:A:428:ASP:C	2.51	0.48
1:A:512[B]:LEU:HD11	1:A:711:HIS:CE1	2.48	0.48
1:A:293:HIS:NE2	1:A:308:SER:HB2	2.29	0.47
1:A:533:ASP:OD2	1:A:697:SER:OG	2.24	0.47
1:A:337:MET:HG2	10:A:1331:HOH:O	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:526:GLU:O	1:A:657:ARG:NH2	2.40	0.46
1:A:635:LEU:HD23	1:A:640:GLU:HG2	1.97	0.46
1:A:407:ALA:O	1:A:409:LEU:HG	2.16	0.46
1:A:356:LYS:O	1:A:359:VAL:HG12	2.16	0.45
1:A:801:HIS:CD2	1:A:803:TRP:CZ2	3.05	0.45
1:A:733:GLU:O	1:A:737:ARG:HG3	2.17	0.44
1:A:396:ARG:NH1	1:A:432:TRP:HB3	2.33	0.44
1:A:358:LYS:HG3	1:A:540:THR:HG21	2.00	0.44
1:A:512[B]:LEU:HD22	1:A:727:PRO:HB3	2.00	0.43
1:A:582:ARG:HG2	1:A:584:THR:OG1	2.18	0.43
1:A:475:TRP:CD1	1:A:475:TRP:N	2.84	0.43
1:A:597:ASP:O	1:A:598:GLN:HB2	2.19	0.43
1:A:303:TRP:HE1	1:A:359:VAL:HG22	1.82	0.43
1:A:419:TRP:HH2	1:A:434:LEU:HD12	1.83	0.43
1:A:438:GLU:O	1:A:441:LEU:HB2	2.18	0.43
1:A:770:ARG:HD2	1:A:851:ILE:HD13	2.02	0.42
1:A:801:HIS:HD2	1:A:803:TRP:CZ2	2.38	0.41
1:A:400:THR:O	1:A:404:ARG:HG3	2.19	0.41
1:A:400:THR:HG22	1:A:404:ARG:HE	1.85	0.41
1:A:311:THR:O	1:A:588:THR:HB	2.19	0.41
1:A:764:LEU:HD12	1:A:764:LEU:HA	1.87	0.41
1:A:701:ASN:ND2	10:A:1105:HOH:O	2.37	0.41
1:A:722:ARG:HB3	1:A:824:MET:SD	2.62	0.40
1:A:746:TRP:CH2	1:A:754:LEU:HD22	2.56	0.40

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)
10:A:1283:HOH:O	10:A:1374:HOH:O[2_545]	1.84	0.36
10:A:1132:HOH:O	10:A:1132:HOH:O[2_445]	1.91	0.29

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	566/637 (89%)	546 (96%)	18 (3%)	2 (0%)	30 16

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	313	GLN
1	A	406	ASN

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	510/554 (92%)	506 (99%)	4 (1%)	79 71

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	482	ARG
1	A	601	SER
1	A	705	GLN
1	A	808	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	417	ASN
1	A	513	HIS
1	A	603	GLN
1	A	801	HIS

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 oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 13 ligands modelled in this entry, 3 are monoatomic - leaving 10 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	$\#|Z| > 2$
6	PO4	A	1008	-	4,4,4	6.61	4 (100%)	6,6,6	1.08	1 (16%)
4	MES	A	1004[B]	-	12,12,12	1.05	1 (8%)	15,16,16	0.76	0
5	DMS	A	1005	-	3,3,3	0.95	0	3,3,3	0.40	0
7	PEG	A	1010	-	6,6,6	0.20	0	5,5,5	0.21	0
5	DMS	A	1006	-	3,3,3	0.24	0	3,3,3	0.14	0
2	GOL	A	1001	-	5,5,5	0.09	0	5,5,5	0.23	0
5	DMS	A	1007	-	3,3,3	0.03	0	3,3,3	0.36	0
8	WKP	A	1011	-	17,17,17	0.59	1 (5%)	20,22,22	0.62	0
6	PO4	A	1009	-	4,4,4	1.12	1 (25%)	6,6,6	0.38	0
4	MES	A	1004[A]	-	12,12,12	0.72	0	15,16,16	0.35	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	MES	A	1004[B]	-	-	2/6/14/14	0/1/1/1
7	PEG	A	1010	-	-	2/4/4/4	-
2	GOL	A	1001	-	-	4/4/4/4	-
8	WKP	A	1011	-	-	9/10/18/18	0/2/2/2
4	MES	A	1004[A]	-	-	3/6/14/14	0/1/1/1

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	1008	PO4	P-O1	9.61	1.72	1.50
6	A	1008	PO4	P-O4	-7.02	1.34	1.54
6	A	1008	PO4	P-O2	4.48	1.67	1.54
6	A	1008	PO4	P-O3	3.61	1.65	1.54
4	A	1004[B]	MES	C8-S	2.61	1.81	1.77
8	A	1011	WKP	C11-C09	2.33	1.57	1.51
6	A	1009	PO4	P-O1	2.17	1.55	1.50

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	1008	PO4	O4-P-O1	-2.15	103.33	110.95

There are no chirality outliers.

All (20) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1001	GOL	O1-C1-C2-O2
2	A	1001	GOL	O1-C1-C2-C3
2	A	1001	GOL	C1-C2-C3-O3
4	A	1004[A]	MES	C7-C8-S-O1S
4	A	1004[A]	MES	C7-C8-S-O3S
4	A	1004[B]	MES	C8-C7-N4-C3
8	A	1011	WKP	C06-C09-C11-C12
8	A	1011	WKP	O10-C09-C11-C12
8	A	1011	WKP	C05-C06-C09-C11
8	A	1011	WKP	C07-C06-C09-C11
8	A	1011	WKP	C05-C06-C09-O10
8	A	1011	WKP	C07-C06-C09-O10
7	A	1010	PEG	O2-C3-C4-O4
2	A	1001	GOL	O2-C2-C3-O3
4	A	1004[B]	MES	C8-C7-N4-C5

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Mol	Chain	Res	Type	Atoms
8	A	1011	WKP	C04-C03-O02-C01
4	A	1004[A]	MES	C7-C8-S-O2S
8	A	1011	WKP	C08-C03-O02-C01
7	A	1010	PEG	C4-C3-O2-C2
8	A	1011	WKP	C06-C09-C11-C16

There are no ring outliers.

3 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	1008	PO4	3	0
4	A	1004[B]	MES	1	0
5	A	1005	DMS	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand WKP A 1011

Bond lengths

Bond angles

Torsions

Rings
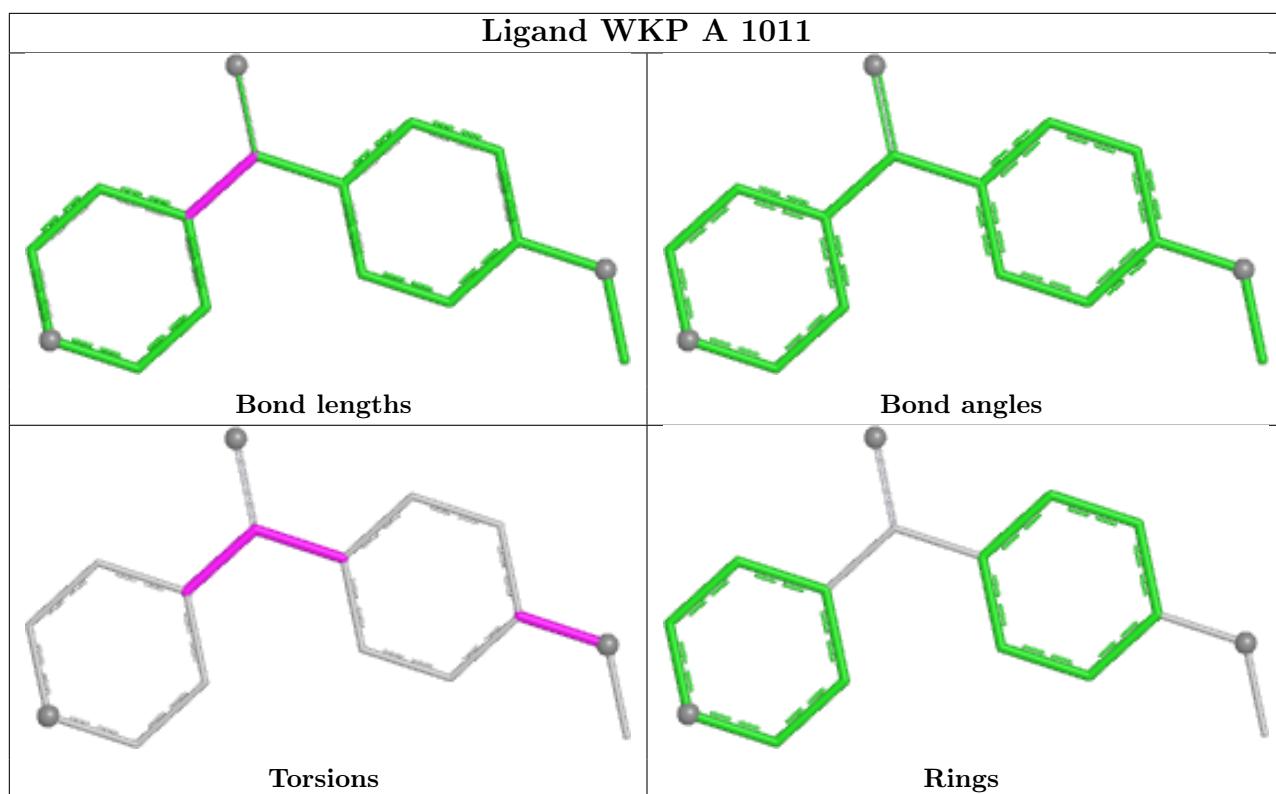
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

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, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	574/637 (90%)	2.80	269 (46%)	0	1	7, 40, 89, 131	129 (22%)

All (269) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	475	TRP	14.3
1	A	637	VAL	13.1
1	A	432	TRP	12.7
1	A	512[A]	LEU	12.6
1	A	800	THR	12.6
1	A	799	ALA	12.6
1	A	419	TRP	12.4
1	A	281	ILE	11.8
1	A	719[A]	LYS	11.8
1	A	441	LEU	11.7
1	A	292	TRP	11.3
1	A	636	THR	11.3
1	A	511	GLY	10.7
1	A	655	LEU	10.7
1	A	276	ILE	10.7
1	A	426	VAL	10.5
1	A	412	ILE	10.4
1	A	474	ILE	10.4
1	A	774	LEU	10.4
1	A	542	ILE	10.3
1	A	407	ALA	10.3
1	A	431	PHE	10.0
1	A	476	TYR	10.0
1	A	580	VAL	9.9
1	A	435	VAL	9.9
1	A	277	ILE	9.8
1	A	514	LYS	9.8

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Mol	Chain	Res	Type	RSRZ
1	A	513	HIS	9.7
1	A	851	ILE	9.7
1	A	274	LEU	9.7
1	A	409	LEU	9.6
1	A	300	TYR	9.6
1	A	853	LEU	9.5
1	A	741[A]	SER	9.1
1	A	434	LEU	9.0
1	A	293	HIS	9.0
1	A	294	TYR	8.8
1	A	801	HIS	8.8
1	A	763[A]	SER	8.6
1	A	299	PRO	8.5
1	A	589	VAL	8.4
1	A	509	GLY	8.4
1	A	363	THR	8.4
1	A	852	GLY	8.3
1	A	451	VAL	8.3
1	A	405	SER	8.3
1	A	600	GLY	8.2
1	A	697	SER	8.1
1	A	273	ASN	7.9
1	A	657	ARG	7.9
1	A	400	THR	7.9
1	A	477	MET	7.8
1	A	510	GLU	7.7
1	A	410	GLY	7.6
1	A	430	GLY	7.6
1	A	303	TRP	7.5
1	A	588	THR	7.5
1	A	537	GLY	7.4
1	A	499	SER	7.4
1	A	439	ARG	7.3
1	A	536	ALA	7.3
1	A	453	ASN	7.3
1	A	705	GLN	7.2
1	A	770	ARG	7.2
1	A	295	ASP	7.2
1	A	449	THR	7.1
1	A	411	ALA	7.1
1	A	785[A]	SER	7.0
1	A	602	GLY	7.0

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Mol	Chain	Res	Type	RSRZ
1	A	698	ARG	7.0
1	A	540	THR	7.0
1	A	454	MET	6.9
1	A	864[A]	GLN	6.9
1	A	601	SER	6.8
1	A	856	ARG	6.8
1	A	658	MET	6.8
1	A	429	SER	6.7
1	A	408	ALA	6.7
1	A	551	GLU	6.6
1	A	308	SER	6.6
1	A	418	LYS	6.6
1	A	402	LYS	6.5
1	A	298	HIS	6.5
1	A	802	GLU	6.5
1	A	584	THR	6.5
1	A	541	ARG	6.5
1	A	744	ALA	6.5
1	A	367	LYS	6.5
1	A	404	ARG	6.5
1	A	288	HIS	6.4
1	A	396	ARG	6.4
1	A	406	ASN	6.3
1	A	383	LYS	6.3
1	A	302	THR	6.3
1	A	806	THR	6.3
1	A	291	SER	6.2
1	A	581	GLN	6.2
1	A	437	LYS	6.2
1	A	583	PRO	6.1
1	A	746	TRP	6.1
1	A	582	ARG	6.0
1	A	279	LYS	6.0
1	A	278	GLY	6.0
1	A	452	TYR	5.9
1	A	284	ILE	5.9
1	A	359	VAL	5.8
1	A	311	THR	5.8
1	A	534	ASP	5.8
1	A	283	LYS	5.8
1	A	275	ASP	5.8
1	A	591	ASP	5.8

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Mol	Chain	Res	Type	RSRZ
1	A	590	MET	5.7
1	A	301	LYS	5.7
1	A	438	GLU	5.7
1	A	433	GLU	5.7
1	A	397	GLU	5.6
1	A	423	ARG	5.5
1	A	455	MET	5.4
1	A	880	THR	5.4
1	A	436	ASP	5.4
1	A	403	VAL	5.2
1	A	693	GLN	5.2
1	A	539	ASP	5.2
1	A	286	GLN	5.1
1	A	596	ARG	5.1
1	A	841	LYS	5.1
1	A	440	ASN	5.1
1	A	742	GLN	5.1
1	A	595	ARG	5.1
1	A	479	LEU	5.0
1	A	422	ALA	5.0
1	A	603	GLN	4.9
1	A	282	GLU	4.9
1	A	356	LYS	4.8
1	A	428	ASP	4.6
1	A	478	TRP	4.6
1	A	635	LEU	4.6
1	A	481	ALA	4.6
1	A	792	ARG	4.6
1	A	289	GLU	4.5
1	A	687	VAL	4.4
1	A	309	TYR	4.4
1	A	592	ILE	4.4
1	A	357	GLU	4.4
1	A	362	ARG	4.3
1	A	442	HIS	4.3
1	A	694	TRP	4.2
1	A	318	SER	4.2
1	A	364	GLN	4.1
1	A	366	PRO	4.1
1	A	420	LYS	4.1
1	A	791	SER	4.1
1	A	745	GLY	4.1

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Mol	Chain	Res	Type	RSRZ
1	A	641	ILE	4.0
1	A	544	LEU	4.0
1	A	305	TYR	3.9
1	A	677	ALA	3.9
1	A	572	THR	3.9
1	A	344	THR	3.8
1	A	287	GLU	3.8
1	A	889	PHE	3.8
1	A	648	VAL	3.8
1	A	290	THR	3.7
1	A	627	GLY	3.7
1	A	319	SER	3.7
1	A	484	LEU	3.6
1	A	634	HIS	3.6
1	A	629	PHE	3.6
1	A	593	ILE	3.6
1	A	882	TYR	3.6
1	A	750	GLU	3.6
1	A	296	GLN	3.5
1	A	638	THR	3.5
1	A	790	THR	3.5
1	A	304	ALA	3.5
1	A	571	LEU	3.4
1	A	312	LYS	3.4
1	A	443	LEU	3.3
1	A	888	ARG	3.3
1	A	297	ASP	3.3
1	A	314	THR	3.3
1	A	447	CYS	3.3
1	A	604	VAL	3.2
1	A	393	MET	3.2
1	A	650	VAL	3.2
1	A	804	MET	3.2
1	A	643	VAL	3.2
1	A	670	LEU	3.1
1	A	569	PHE	3.1
1	A	313	GLN	3.1
1	A	417	ASN	3.1
1	A	876	ASN	3.0
1	A	448	GLU	3.0
1	A	743	GLY	2.9
1	A	361	THR	2.9

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Mol	Chain	Res	Type	RSRZ
1	A	445	GLY	2.9
1	A	865	THR	2.9
1	A	649	ARG	2.8
1	A	879	TYR	2.8
1	A	425	ALA	2.8
1	A	597	ASP	2.8
1	A	373	LEU	2.8
1	A	564	LEU	2.8
1	A	570	LYS	2.8
1	A	555	ASN	2.8
1	A	884	PRO	2.7
1	A	699	GLY	2.7
1	A	545	GLU	2.7
1	A	642	ALA	2.7
1	A	399	PHE	2.7
1	A	764	LEU	2.6
1	A	567	ALA	2.6
1	A	497	TRP	2.6
1	A	575	ASN	2.6
1	A	632	ILE	2.6
1	A	368	GLU	2.6
1	A	558	GLU	2.5
1	A	663	ASP	2.5
1	A	343	MET	2.5
1	A	598	GLN	2.5
1	A	358	LYS	2.5
1	A	578	VAL	2.5
1	A	830	VAL	2.5
1	A	307	GLY	2.5
1	A	723	VAL	2.5
1	A	690	ASP	2.5
1	A	486	PHE	2.4
1	A	310	GLU	2.4
1	A	577	VAL	2.4
1	A	680	ALA	2.4
1	A	340	GLN	2.4
1	A	480	GLY	2.4
1	A	881	ASP	2.4
1	A	645	ASN	2.4
1	A	285	LYS	2.4
1	A	628	VAL	2.4
1	A	607	TYR	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	424	GLU	2.4
1	A	625	GLY	2.4
1	A	886	MET	2.3
1	A	372	LYS	2.3
1	A	559	GLY	2.3
1	A	360	ASP	2.2
1	A	883	MET	2.2
1	A	862	ASN	2.2
1	A	427	GLU	2.2
1	A	878	GLU	2.2
1	A	320	MET	2.2
1	A	630	LYS	2.2
1	A	631	SER	2.2
1	A	401	ARG	2.2
1	A	369	GLY	2.2
1	A	370	THR	2.2
1	A	371	LYS	2.2
1	A	446	LYS	2.2
1	A	535	THR	2.2
1	A	890	ARG	2.2
1	A	365	GLU	2.2
1	A	306	HIS	2.2
1	A	818	ILE	2.1
1	A	891	ARG	2.1
1	A	788	VAL	2.1
1	A	737	ARG	2.1
1	A	683	ASP	2.1
1	A	375	LYS	2.0
1	A	390	THR	2.0
1	A	552	MET	2.0
1	A	576	LYS	2.0
1	A	528	GLY	2.0

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides 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
2	GOL	A	1001	6/6	0.60	0.32	52,52,56,59	6
6	PO4	A	1009	5/5	0.67	0.15	84,89,96,119	0
8	WKP	A	1011	16/16	0.70	0.31	48,58,62,63	16
6	PO4	A	1008	5/5	0.81	0.13	34,34,42,62	0
7	PEG	A	1010	7/7	0.83	0.15	64,70,80,86	0
5	DMS	A	1006	4/4	0.90	0.17	70,88,93,101	0
5	DMS	A	1005	4/4	0.93	0.14	42,46,47,47	0
4	MES	A	1004[A]	12/12	0.95	0.23	823,857,860,861	12
4	MES	A	1004[B]	12/12	0.95	0.23	26,30,38,38	12
9	CL	A	1012	1/1	0.97	0.06	45,45,45,45	0
5	DMS	A	1007	4/4	0.98	0.09	59,61,66,70	0
3	ZN	A	1003	1/1	0.99	0.04	57,57,57,57	0
3	ZN	A	1002	1/1	1.00	0.02	26,26,26,26	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around WKP A 1011:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

6.5 Other polymers ⓘ

There are no such residues in this entry.