



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 07:55 AM GMT

PDB ID : 3CMC  
Title : Thioacylenzyme intermediate of Bacillus stearothermophilus phosphorylating GAPDH  
Authors : Moniot, S.; Vonnrhein, C.; Bricogne, G.; Didierjean, C.; Corbier, C.  
Deposited on : 2008-03-21  
Resolution : 1.77 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.  
We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)  
A user guide is available at  
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>  
with specific help available everywhere you see the ⓘ symbol.

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

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

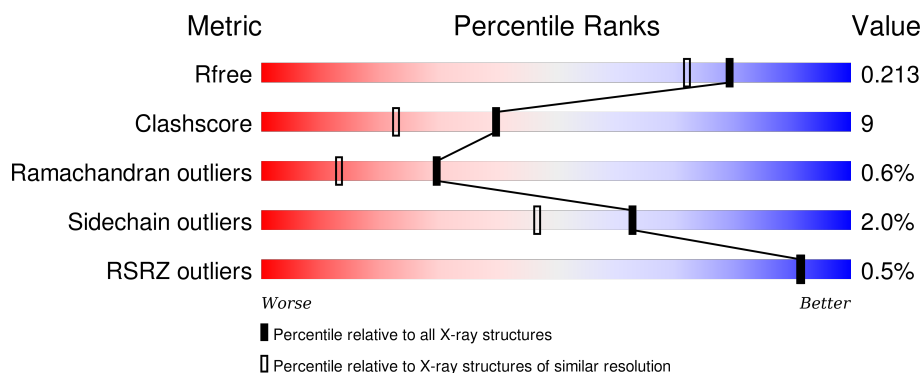
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 1.77 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	6655 (1.80-1.76)
Clashscore	102246	7658 (1.80-1.76)
Ramachandran outliers	100387	7570 (1.80-1.76)
Sidechain outliers	100360	7569 (1.80-1.76)
RSRZ outliers	91569	6671 (1.80-1.76)

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 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	O	334	<div> <div></div> <div>86%13%</div> </div>
1	P	334	<div> <div></div> <div>84%15%</div> </div>
1	Q	334	<div> <div></div> <div>88%11%</div> </div>
1	R	334	<div> <div></div> <div>87%13%</div> </div>

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard

residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	SO4	O	401[A]	-	-	-	X
2	SO4	O	404	-	-	X	-
2	SO4	O	406	-	-	-	X
2	SO4	Q	401[A]	-	-	-	X
2	SO4	Q	403	-	-	-	X
2	SO4	R	401[A]	-	-	-	X
2	SO4	R	407	-	-	X	X
3	G3H	O	400[B]	-	-	-	X
3	G3H	R	400[B]	-	-	X	X
6	GOL	P	404	-	-	-	X
6	GOL	P	405	-	-	X	-
6	GOL	P	406	-	-	X	X
6	GOL	P	407	-	-	-	X
6	GOL	Q	406	-	-	X	X
6	GOL	R	409	-	-	X	-
6	GOL	R	410	-	-	-	X

## 2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 12586 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 Glyceraldehyde-3-phosphate dehydrogenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	O	334	Total	C	N	O	S	0	14	0
			2613	1640	461	501	11			
1	P	334	Total	C	N	O	S	0	17	0
			2635	1658	462	505	10			
1	Q	334	Total	C	N	O	S	0	16	0
			2631	1652	465	504	10			
1	R	334	Total	C	N	O	S	0	14	0
			2609	1639	458	501	11			

- Molecule 2 is SULFATE ION (three-letter code: SO<sub>4</sub>) (formula: O<sub>4</sub>S).



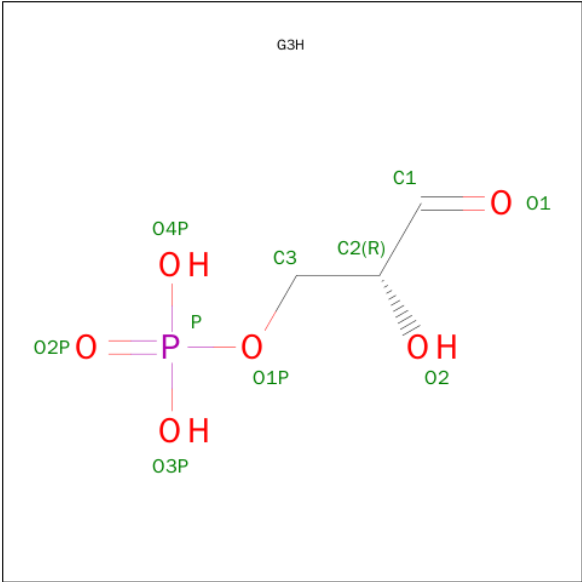
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	O	1	Total	O	S	0	1
			5	4	1		
2	O	1	Total	O	S	0	0
			5	4	1		

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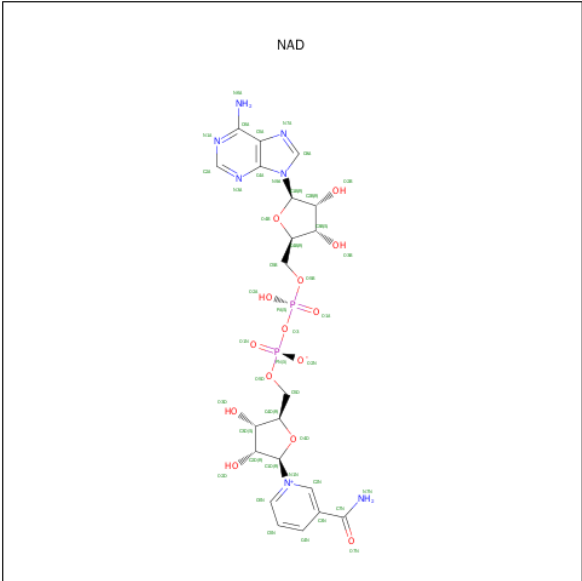
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	O	1	Total	O	S	0	0
			5	4	1		
2	O	1	Total	O	S	0	0
			5	4	1		
2	O	1	Total	O	S	0	0
			5	4	1		
2	O	1	Total	O	S	0	0
			5	4	1		
2	P	1	Total	O	S	0	1
			5	4	1		
2	P	1	Total	O	S	0	0
			5	4	1		
2	Q	1	Total	O	S	0	1
			5	4	1		
2	Q	1	Total	O	S	0	0
			5	4	1		
2	Q	1	Total	O	S	0	0
			5	4	1		
2	R	1	Total	O	S	0	1
			5	4	1		
2	R	1	Total	O	S	0	0
			5	4	1		
2	R	1	Total	O	S	0	0
			5	4	1		
2	R	1	Total	O	S	0	0
			5	4	1		
2	R	1	Total	O	S	0	0
			5	4	1		
2	R	1	Total	O	S	0	0
			5	4	1		

- Molecule 3 is GLYCERALDEHYDE-3-PHOSPHATE (three-letter code: G3H) (formula:  $C_3H_7O_6P$ ).



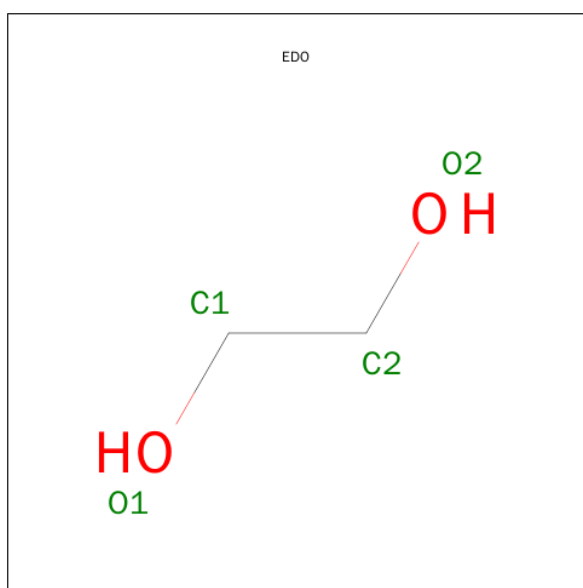
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	O	1	Total	C	O	P	0	1
			10	3	6	1		
3	P	1	Total	C	O	P	0	1
			10	3	6	1		
3	Q	1	Total	C	O	P	0	1
			10	3	6	1		
3	R	1	Total	C	O	P	0	1
			10	3	6	1		

- Molecule 4 is NICOTINAMIDE-ADENINE-DINUCLEOTIDE (three-letter code: NAD) (formula: C<sub>21</sub>H<sub>27</sub>N<sub>7</sub>O<sub>14</sub>P<sub>2</sub>).



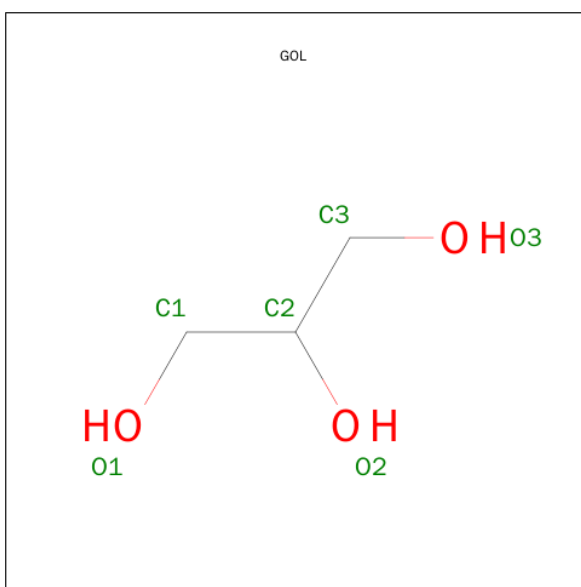
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	O	1	Total	C	N	O	P	0	0
			44	21	7	14	2		
4	P	1	Total	C	N	O	P	0	0
			44	21	7	14	2		
4	Q	1	Total	C	N	O	P	0	0
			44	21	7	14	2		
4	R	1	Total	C	N	O	P	0	0
			44	21	7	14	2		

- Molecule 5 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula:  $C_2H_6O_2$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	Q	1	Total	C	O	0	0
			4	2	2		

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



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	O	1	Total	C	O	0	0
			6	3	3		
6	P	1	Total	C	O	0	0
			6	3	3		
6	P	1	Total	C	O	0	0
			6	3	3		
6	P	1	Total	C	O	0	0
			6	3	3		
6	P	1	Total	C	O	0	0
			6	3	3		
6	Q	1	Total	C	O	0	0
			6	3	3		
6	R	1	Total	C	O	0	0
			6	3	3		
6	R	1	Total	C	O	0	0
			6	3	3		

- Molecule 7 is water.

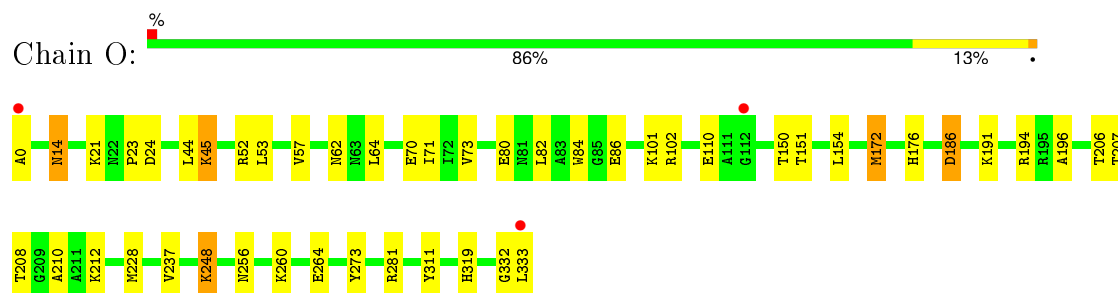
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	O	418	Total	O	0	6
			418	418		
7	P	433	Total	O	0	3
			433	433		
7	Q	449	Total	O	0	2
			449	449		
7	R	440	Total	O	0	5
			440	440		



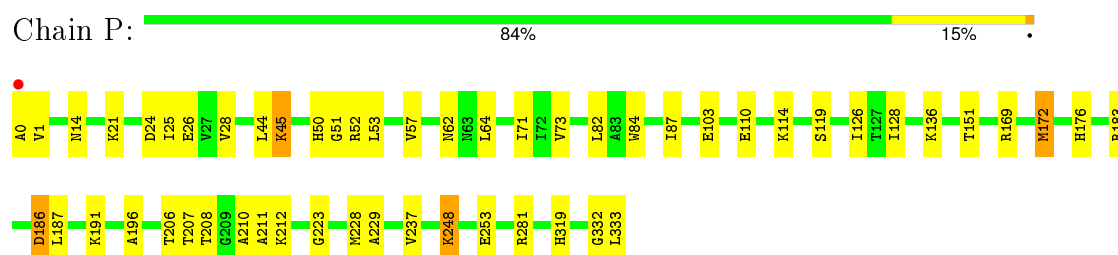
### 3 Residue-property plots

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.

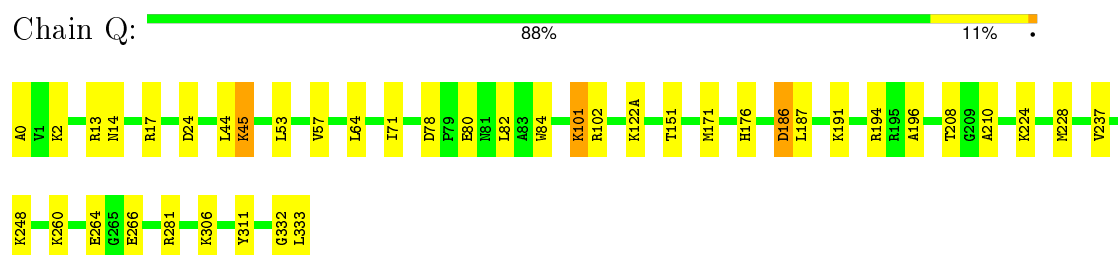
- Molecule 1: Glyceraldehyde-3-phosphate dehydrogenase



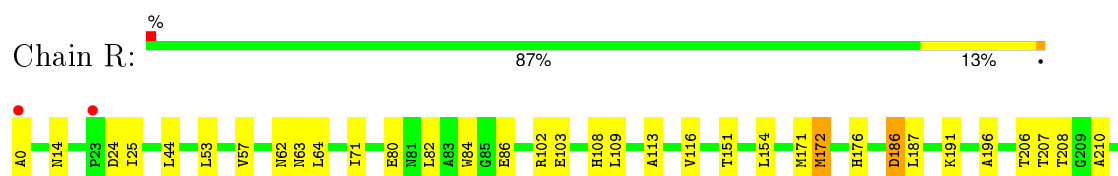
- Molecule 1: Glyceraldehyde-3-phosphate dehydrogenase



- Molecule 1: Glyceraldehyde-3-phosphate dehydrogenase



- Molecule 1: Glyceraldehyde-3-phosphate dehydrogenase





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	81.67Å 122.63Å 81.79Å 90.00° 111.12° 90.00°	Depositor
Resolution (Å)	29.50 – 1.77 29.53 – 1.78	Depositor EDS
% Data completeness (in resolution range)	97.7 (29.50-1.77) 98.9 (29.53-1.78)	Depositor EDS
$R_{merge}$	0.03	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.33 (at 1.78Å)	Xtriage
Refinement program	BUSTER-TNT 2.3.0	Depositor
R, $R_{free}$	0.161 , 0.198 0.173 , 0.213	Depositor DCC
$R_{free}$ test set	7133 reflections (5.26%)	DCC
Wilson B-factor (Å <sup>2</sup> )	20.2	Xtriage
Anisotropy	0.120	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 46.9	EDS
Estimated twinning fraction	0.219 for l,-k,h	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.43$ , $\langle L^2 \rangle = 0.26$	Xtriage
Outliers	0 of 142733 reflections	Xtriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	12586	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	25.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.81% 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 [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: GOL, G3H, EDO, NAD, 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	O	0.63	0/2670	0.72	0/3616
1	P	0.63	0/2704	0.71	0/3659
1	Q	0.66	0/2695	0.73	0/3650
1	R	0.64	0/2666	0.71	0/3612
All	All	0.64	0/10735	0.72	0/14537

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	O	2613	0	2693	53	0
1	P	2635	0	2733	60	0
1	Q	2631	0	2714	37	0
1	R	2609	0	2689	42	0
2	O	30	0	0	2	0
2	P	10	0	0	0	0
2	Q	15	0	0	1	0
2	R	35	0	0	3	0
3	O	10	0	4	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	P	10	0	4	2	0
3	Q	10	0	4	3	0
3	R	10	0	4	4	0
4	O	44	0	26	0	0
4	P	44	0	26	1	0
4	Q	44	0	26	0	0
4	R	44	0	26	0	0
5	Q	4	0	6	0	0
6	O	6	0	8	2	0
6	P	24	0	32	13	0
6	Q	6	0	8	4	0
6	R	12	0	16	4	0
7	O	418	0	0	20	0
7	P	433	0	0	14	0
7	Q	449	0	0	13	0
7	R	440	0	0	5	0
All	All	12586	0	11019	193	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 9.

All (193) 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:R:329:ALA:HA	1:R:333:LEU:HD11	1.21	1.13
1:P:183:ARG:HH22	6:P:405:GOL:H31	1.21	1.04
6:O:408:GOL:H31	1:P:169:ARG:HH22	1.24	1.00
1:Q:194:ARG:HG3	7:Q:1024:HOH:O	1.66	0.95
1:P:223:GLY:H	6:P:406:GOL:H31	1.42	0.83
1:P:183:ARG:NH2	6:P:405:GOL:H31	1.94	0.82
1:Q:176:HIS:NE2	3:Q:400[B]:G3H:H32	1.95	0.82
1:P:0:ALA:HB3	1:P:24:ASP:O	1.80	0.81
1:Q:13:ARG:O	1:Q:17[A]:ARG:HG3	1.83	0.79
1:Q:0[A]:ALA:HB2	7:Q:946:HOH:O	1.82	0.78
1:R:329:ALA:HA	1:R:333:LEU:CD1	2.09	0.78
1:R:191:LYS:HG3	2:R:406:SO4:O1	1.85	0.77
1:P:176:HIS:NE2	3:P:400[B]:G3H:H32	2.00	0.77
1:P:223:GLY:N	6:P:406:GOL:H31	1.99	0.76
1:P:50:HIS:C	6:P:407:GOL:H12	2.05	0.76
1:P:223:GLY:H	6:P:406:GOL:C3	1.99	0.76
1:P:0:ALA:HB2	7:P:825:HOH:O	1.85	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:R:172[B]:MET:HG2	1:R:227:GLY:HA3	1.68	0.74
1:R:0:ALA:HB3	1:R:24:ASP:O	1.89	0.72
1:O:194:ARG:HG3	7:O:677:HOH:O	1.89	0.72
1:O:86:GLU:HG3	7:O:682:HOH:O	1.90	0.72
1:R:103:GLU:HG2	7:R:645:HOH:O	1.90	0.71
1:O:150:THR:HG21	1:O:172[A]:MET:HE3	1.72	0.70
1:O:0:ALA:HB3	1:O:24:ASP:O	1.91	0.70
1:Q:78:ASP:OD1	1:Q:80[A]:GLU:HG2	1.91	0.70
1:O:23:PRO:HB3	7:O:738:HOH:O	1.92	0.70
3:Q:400[B]:G3H:H2	7:Q:1160:HOH:O	1.91	0.69
1:Q:0[A]:ALA:HB3	1:Q:24:ASP:O	1.92	0.69
6:Q:406:GOL:H2	7:Q:920:HOH:O	1.93	0.69
1:O:154:LEU:HD22	1:O:172[B]:MET:HE2	1.75	0.68
1:O:191:LYS:HG3	2:O:404:SO4:O3	1.92	0.68
1:O:172[B]:MET:HE1	1:O:210[B]:ALA:HB3	1.76	0.67
1:Q:2:LYS:NZ	7:Q:919:HOH:O	2.27	0.67
6:Q:406:GOL:H11	7:Q:1028:HOH:O	1.95	0.67
1:R:281[A]:ARG:NH1	7:R:901:HOH:O	2.29	0.66
1:P:281[A]:ARG:NH2	7:P:735:HOH:O	2.21	0.66
1:Q:44:LEU:HG	1:Q:53:LEU:HD22	1.78	0.66
1:R:208[A]:THR:HG22	1:R:228:MET:HA	1.78	0.66
1:P:212[B]:LYS:NZ	7:P:554:HOH:O	2.29	0.65
1:R:176:HIS:NE2	3:R:400[B]:G3H:C3	2.59	0.65
6:O:408:GOL:H31	1:P:169:ARG:NH2	2.06	0.65
1:P:114[A]:LYS:NZ	7:P:818:HOH:O	2.27	0.65
1:P:110:GLU:HG3	7:P:633:HOH:O	1.97	0.64
1:O:21[B]:LYS:NZ	1:O:319:HIS:HE1	1.95	0.64
1:R:176:HIS:NE2	3:R:400[B]:G3H:H31	2.12	0.63
1:O:208[A]:THR:HG22	1:O:228:MET:HA	1.80	0.63
1:Q:176:HIS:NE2	3:Q:400[B]:G3H:C3	2.61	0.62
1:O:44:LEU:HG	1:O:53:LEU:HD22	1.82	0.62
1:R:303:LYS:HG3	6:R:409:GOL:H31	1.81	0.62
1:P:208[A]:THR:HG22	1:P:228:MET:HA	1.79	0.62
1:P:151:THR:OG1	1:P:210[B]:ALA:HA	1.99	0.61
1:R:281[A]:ARG:NH2	7:R:796:HOH:O	2.33	0.61
1:Q:208[A]:THR:HG22	1:Q:228:MET:HA	1.82	0.61
1:Q:78:ASP:CG	1:Q:80[A]:GLU:HG2	2.21	0.60
1:R:151:THR:OG1	1:R:210[B]:ALA:HA	2.01	0.60
1:Q:191:LYS:HG3	2:Q:403:SO4:O1	2.02	0.60
1:P:44:LEU:HG	1:P:53:LEU:HD22	1.84	0.60
1:R:44:LEU:HG	1:R:53:LEU:HD22	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Q:151:THR:OG1	1:Q:210[B]:ALA:HA	2.00	0.59
1:O:176:HIS:NE2	3:O:400[B]:G3H:C3	2.65	0.59
1:O:260[A]:LYS:NZ	1:O:264:GLU:OE2	2.34	0.59
1:O:151:THR:OG1	1:O:210[B]:ALA:HA	2.02	0.59
1:O:176:HIS:NE2	3:O:400[B]:G3H:H32	2.18	0.59
1:P:172:MET:HG2	1:P:211[A]:ALA:HB2	1.85	0.58
1:P:50:HIS:O	6:P:407:GOL:H12	2.03	0.58
1:R:172[B]:MET:CG	1:R:227:GLY:HA3	2.34	0.57
1:R:154:LEU:HD22	1:R:172[B]:MET:CE	2.34	0.57
1:R:62:ASN:O	1:R:63:ASN:OD1	2.23	0.57
1:P:223:GLY:CA	6:P:406:GOL:H31	2.33	0.57
1:O:80:GLU:HA	7:O:695:HOH:O	2.04	0.57
1:R:329:ALA:CA	1:R:333:LEU:HD11	2.15	0.56
1:O:53:LEU:HD23	1:O:57:VAL:CG2	2.35	0.56
1:P:114[A]:LYS:NZ	1:P:333:LEU:O	2.26	0.55
1:R:303:LYS:NZ	6:R:409:GOL:H31	2.22	0.55
1:P:21[A]:LYS:NZ	1:P:319:HIS:HE1	2.05	0.55
1:P:176:HIS:NE2	3:P:400[B]:G3H:C3	2.68	0.54
1:P:26[A]:GLU:HG2	1:P:28:VAL:HG13	1.88	0.54
1:Q:101[A]:LYS:HE3	7:Q:1088:HOH:O	2.08	0.54
1:R:176:HIS:NE2	3:R:400[B]:G3H:H32	2.23	0.54
1:O:21[A]:LYS:HE3	7:O:772:HOH:O	2.06	0.54
1:P:183:ARG:HH22	6:P:405:GOL:C3	2.07	0.54
1:Q:281[A]:ARG:NH1	7:Q:1025:HOH:O	2.27	0.54
1:O:207[A]:THR:HG23	7:O:724:HOH:O	2.07	0.53
1:O:0:ALA:HB1	7:O:790:HOH:O	2.09	0.53
1:P:1:VAL:CG1	1:P:25:ILE:HG22	2.39	0.53
1:P:223:GLY:HA2	6:P:406:GOL:H31	1.90	0.53
1:O:80:GLU:HG2	7:O:651:HOH:O	2.07	0.53
1:R:113:ALA:O	2:R:407:SO4:O1	2.26	0.53
1:P:87:ILE:HG21	7:P:788:HOH:O	2.09	0.52
1:Q:17[B]:ARG:HH11	6:Q:406:GOL:H12	1.75	0.51
1:O:281[A]:ARG:NH2	7:O:701:HOH:O	2.28	0.51
1:R:247:GLU:C	1:R:248[B]:LYS:HD2	2.31	0.51
1:P:45[B]:LYS:HE3	1:P:45[B]:LYS:HA	1.92	0.51
1:Q:82:LEU:HD13	1:Q:84:TRP:CZ2	2.45	0.51
1:O:191:LYS:HG2	7:O:774:HOH:O	2.09	0.51
1:O:248:LYS:NZ	7:O:806:HOH:O	2.44	0.51
1:O:150:THR:HG21	1:O:172[A]:MET:CE	2.41	0.50
1:Q:53:LEU:HD23	1:Q:57:VAL:CG2	2.41	0.50
1:P:45[B]:LYS:HD2	7:P:435:HOH:O	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Q:17[B]:ARG:HE	6:Q:406:GOL:C1	2.24	0.50
1:P:26[A]:GLU:HG2	1:P:28:VAL:CG1	2.41	0.50
1:Q:266:GLU:HG2	7:Q:918:HOH:O	2.11	0.50
1:P:248:LYS:NZ	7:P:628:HOH:O	2.30	0.50
1:P:82:LEU:HD13	1:P:84:TRP:CZ2	2.47	0.49
1:R:154:LEU:HD22	1:R:172[B]:MET:HE1	1.94	0.49
1:P:191[A]:LYS:HG3	6:P:405:GOL:O2	2.13	0.49
1:R:102:ARG:HG3	1:R:103:GLU:N	2.27	0.49
1:R:303:LYS:HZ2	6:R:409:GOL:C3	2.25	0.49
1:R:109:LEU:O	2:R:407:SO4:O1	2.30	0.49
1:O:260[A]:LYS:HD2	1:O:273:TYR:CE2	2.47	0.49
1:O:281[A]:ARG:NH2	7:Q:1025:HOH:O	2.46	0.49
1:Q:332:GLY:O	1:Q:333:LEU:HD23	2.13	0.49
1:P:191[B]:LYS:HD2	7:P:745:HOH:O	2.11	0.49
1:O:176:HIS:NE2	3:O:400[B]:G3H:H31	2.28	0.49
7:O:611:HOH:O	1:Q:281[A]:ARG:NH2	2.45	0.49
1:O:212[A]:LYS:HE2	7:O:764:HOH:O	2.12	0.49
1:O:110:GLU:OE1	7:O:651:HOH:O	2.20	0.48
1:P:45[B]:LYS:NZ	1:P:52:ARG:HE	2.11	0.48
1:O:52[B]:ARG:HD2	1:O:53:LEU:N	2.29	0.48
1:O:172[B]:MET:HE1	1:O:210[B]:ALA:CB	2.43	0.48
1:P:208[A]:THR:HG22	1:P:228:MET:CA	2.44	0.48
1:P:62:ASN:O	1:P:73:VAL:HB	2.13	0.48
1:P:1:VAL:HG12	1:P:25:ILE:HG22	1.95	0.47
1:R:208[A]:THR:HG22	1:R:228:MET:CA	2.44	0.47
1:O:281[A]:ARG:NH1	7:O:611:HOH:O	2.34	0.47
1:P:253:GLU:HG2	7:P:741:HOH:O	2.13	0.47
1:O:21[B]:LYS:NZ	1:O:319:HIS:CE1	2.78	0.47
1:R:82:LEU:HD13	1:R:84:TRP:CZ2	2.49	0.47
1:O:62:ASN:O	1:O:73:VAL:HB	2.15	0.47
1:Q:45:LYS:HD3	7:Q:906:HOH:O	2.15	0.47
1:P:212[A]:LYS:NZ	7:P:758:HOH:O	2.37	0.47
1:P:186:ASP:HA	1:P:196:ALA:O	2.15	0.47
1:P:332:GLY:O	1:P:333:LEU:HD23	2.15	0.46
1:O:208[A]:THR:HG22	1:O:228:MET:CA	2.44	0.46
1:Q:208[A]:THR:HG22	1:Q:228:MET:CA	2.45	0.46
1:Q:224:LYS:HE3	7:Q:1092:HOH:O	2.15	0.46
1:O:82:LEU:HD13	1:O:84:TRP:CZ2	2.51	0.46
1:O:191:LYS:HE3	2:O:404:SO4:O1	2.15	0.46
1:P:53:LEU:HD23	1:P:57:VAL:CG2	2.46	0.46
1:R:80:GLU:HA	7:R:692:HOH:O	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Q:186:ASP:HA	1:Q:196:ALA:O	2.16	0.45
1:P:223:GLY:HA2	6:P:406:GOL:C3	2.47	0.45
1:P:24:ASP:HA	7:P:825:HOH:O	2.16	0.45
1:Q:45:LYS:HB2	1:Q:45:LYS:HE3	1.26	0.45
1:R:53:LEU:HD23	1:R:57:VAL:CG2	2.46	0.45
1:O:64:LEU:HB2	1:O:71:ILE:HB	1.99	0.44
1:P:114[B]:LYS:NZ	7:P:818:HOH:O	2.38	0.44
1:Q:260:LYS:HE2	1:Q:264:GLU:OE2	2.18	0.44
1:P:45[B]:LYS:HE2	1:P:52:ARG:HD2	1.99	0.44
1:Q:281[A]:ARG:NH2	7:Q:1026:HOH:O	2.23	0.44
1:O:45:LYS:HE3	1:O:45:LYS:HB2	1.35	0.44
1:P:119:SER:O	4:P:403:NAD:H6N	2.18	0.43
1:O:260[B]:LYS:NZ	7:O:777:HOH:O	2.47	0.43
1:P:45[B]:LYS:CE	1:P:52:ARG:HE	2.31	0.43
1:P:136:LYS:NZ	7:P:595:HOH:O	2.51	0.43
1:Q:187:LEU:O	1:Q:196:ALA:HB1	2.18	0.43
1:R:206[B]:THR:OG1	1:R:207[B]:THR:N	2.51	0.43
1:R:86:GLU:HG3	7:R:762:HOH:O	2.17	0.43
1:R:172[A]:MET:CE	1:R:208[A]:THR:HG21	2.49	0.43
1:O:332:GLY:O	1:O:333:LEU:HD23	2.19	0.43
1:R:64:LEU:HB2	1:R:71:ILE:HB	2.01	0.43
1:Q:101[B]:LYS:HE2	1:Q:101[B]:LYS:HB3	1.79	0.42
1:O:256:ASN:HD22	1:O:256:ASN:HA	1.65	0.42
1:P:187:LEU:O	1:P:196:ALA:HB1	2.19	0.42
1:Q:64:LEU:HB2	1:Q:71:ILE:HB	2.02	0.42
1:P:332:GLY:C	1:P:333:LEU:HD23	2.40	0.42
1:Q:332:GLY:C	1:Q:333:LEU:HD23	2.40	0.42
1:O:53:LEU:HD23	1:O:57:VAL:HG21	2.01	0.41
1:Q:101[A]:LYS:HG2	1:Q:122(A):LYS:HD3	2.01	0.41
1:P:51:GLY:N	6:P:407:GOL:H12	2.34	0.41
1:O:70:GLU:HG2	7:O:696:HOH:O	2.20	0.41
1:Q:171:MET:HG3	1:R:300[A]:ILE:HD12	2.02	0.41
1:R:187:LEU:O	1:R:196:ALA:HB1	2.20	0.41
1:R:303:LYS:HZ3	6:R:409:GOL:H31	1.84	0.41
1:O:186:ASP:HA	1:O:196:ALA:O	2.21	0.41
1:R:108:HIS:HB2	1:R:116:VAL:HG21	2.02	0.41
1:O:21[B]:LYS:CE	1:O:319:HIS:HE1	2.33	0.41
1:O:21[B]:LYS:HZ1	1:O:319:HIS:HE1	1.66	0.41
1:O:101:LYS:HE3	7:O:620:HOH:O	2.20	0.41
1:P:206[B]:THR:OG1	1:P:207[B]:THR:N	2.53	0.41
1:R:186:ASP:HA	1:R:196:ALA:O	2.20	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Q:306:LYS:HB2	1:R:171:MET:SD	2.61	0.40
1:R:176:HIS:CE1	3:R:400[B]:G3H:H31	2.56	0.40
1:O:332:GLY:C	1:O:333:LEU:HD23	2.42	0.40
1:P:208[B]:THR:HB	1:P:229:ALA:HB2	2.02	0.40
1:Q:101[A]:LYS:CG	1:Q:122(A):LYS:HD3	2.51	0.40
1:P:64:LEU:HB2	1:P:71:ILE:HB	2.02	0.40
1:O:206[B]:THR:OG1	1:O:207[B]:THR:N	2.52	0.40
1:O:206[A]:THR:HG23	7:O:809[A]:HOH:O	2.22	0.40
1:P:126:ILE:HD13	1:P:128:ILE:HD11	2.03	0.40
1:O:14:ASN:ND2	7:O:532:HOH:O	2.54	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles ⓘ

### 5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	O	346/334 (104%)	330 (95%)	14 (4%)	2 (1%)	30	13
1	P	350/334 (105%)	334 (95%)	14 (4%)	2 (1%)	30	13
1	Q	348/334 (104%)	333 (96%)	13 (4%)	2 (1%)	30	13
1	R	346/334 (104%)	330 (95%)	14 (4%)	2 (1%)	30	13
All	All	1390/1336 (104%)	1327 (96%)	55 (4%)	8 (1%)	30	13

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	O	186	ASP
1	O	237	VAL
1	P	186	ASP
1	P	237	VAL
1	Q	186	ASP

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Mol	Chain	Res	Type
1	Q	237	VAL
1	R	186	ASP
1	R	237	VAL

### 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	O	283/272 (104%)	276 (98%)	7 (2%)	55	37
1	P	287/272 (106%)	281 (98%)	6 (2%)	61	44
1	Q	285/272 (105%)	278 (98%)	7 (2%)	55	37
1	R	283/272 (104%)	276 (98%)	7 (2%)	55	37
All	All	1138/1088 (105%)	1111 (98%)	27 (2%)	63	38

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	O	14	ASN
1	O	45	LYS
1	O	102	ARG
1	O	172[A]	MET
1	O	172[B]	MET
1	O	248	LYS
1	O	311	TYR
1	P	14	ASN
1	P	45[A]	LYS
1	P	45[B]	LYS
1	P	103	GLU
1	P	172	MET
1	P	248	LYS
1	Q	14	ASN
1	Q	45	LYS
1	Q	101[A]	LYS
1	Q	101[B]	LYS
1	Q	102	ARG

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Mol	Chain	Res	Type
1	Q	248	LYS
1	Q	311	TYR
1	R	14	ASN
1	R	25	ILE
1	R	172[A]	MET
1	R	172[B]	MET
1	R	248[A]	LYS
1	R	248[B]	LYS
1	R	311	TYR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	O	14	ASN
1	O	146	ASN
1	O	256	ASN
1	O	319	HIS
1	P	14	ASN
1	P	146	ASN
1	P	256	ASN
1	P	319	HIS
1	Q	14	ASN
1	Q	62	ASN
1	Q	146	ASN
1	Q	256	ASN
1	R	14	ASN
1	R	146	ASN
1	R	256	ASN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

## 5.6 Ligand geometry ⓘ

35 ligands 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	$\# Z  > 2$
3	G3H	O	400[B]	1	9,9,9	0.75	0	10,12,12	1.76	4 (40%)
2	SO4	O	401[A]	-	4,4,4	0.24	0	6,6,6	0.16	0
2	SO4	O	402	-	4,4,4	0.96	0	6,6,6	0.38	0
2	SO4	O	403	-	4,4,4	0.49	0	6,6,6	0.09	0
2	SO4	O	404	-	4,4,4	1.77	2 (50%)	6,6,6	0.24	0
2	SO4	O	405	-	4,4,4	0.24	0	6,6,6	0.15	0
2	SO4	O	406	-	4,4,4	0.20	0	6,6,6	0.09	0
4	NAD	O	407	-	38,48,48	1.44	3 (7%)	47,73,73	2.73	11 (23%)
6	GOL	O	408	-	5,5,5	0.46	0	5,5,5	0.46	0
3	G3H	P	400[B]	1	9,9,9	0.98	0	10,12,12	1.68	2 (20%)
2	SO4	P	401[A]	-	4,4,4	0.43	0	6,6,6	0.25	0
2	SO4	P	402	-	4,4,4	1.23	0	6,6,6	0.32	0
4	NAD	P	403	-	38,48,48	1.43	3 (7%)	47,73,73	2.74	8 (17%)
6	GOL	P	404	-	5,5,5	0.42	0	5,5,5	0.53	0
6	GOL	P	405	-	5,5,5	1.27	0	5,5,5	1.44	1 (20%)
6	GOL	P	406	-	5,5,5	0.62	0	5,5,5	1.12	0
6	GOL	P	407	-	5,5,5	0.77	0	5,5,5	0.83	0
3	G3H	Q	400[B]	1	9,9,9	0.91	0	10,12,12	1.62	3 (30%)
2	SO4	Q	401[A]	-	4,4,4	0.37	0	6,6,6	0.08	0
2	SO4	Q	402	-	4,4,4	1.14	0	6,6,6	0.48	0
2	SO4	Q	403	-	4,4,4	1.42	0	6,6,6	0.39	0
4	NAD	Q	404	-	38,48,48	1.48	3 (7%)	47,73,73	2.75	7 (14%)
5	EDO	Q	405	-	3,3,3	0.78	0	2,2,2	0.16	0
6	GOL	Q	406	-	5,5,5	0.67	0	5,5,5	0.69	0
3	G3H	R	400[B]	1	9,9,9	0.80	0	10,12,12	2.12	3 (30%)
2	SO4	R	401[A]	-	4,4,4	0.17	0	6,6,6	0.06	0
2	SO4	R	402	-	4,4,4	1.26	0	6,6,6	0.52	0
2	SO4	R	403	-	4,4,4	0.30	0	6,6,6	0.22	0
2	SO4	R	404	-	4,4,4	0.31	0	6,6,6	0.19	0
2	SO4	R	405	-	4,4,4	0.20	0	6,6,6	0.25	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	SO4	R	406	-	4,4,4	1.64	1 (25%)	6,6,6	0.54	0
2	SO4	R	407	-	4,4,4	0.79	0	6,6,6	0.36	0
4	NAD	R	408	-	38,48,48	1.48	4 (10%)	47,73,73	2.53	11 (23%)
6	GOL	R	409	-	5,5,5	0.54	0	5,5,5	0.42	0
6	GOL	R	410	-	5,5,5	0.52	0	5,5,5	1.36	1 (20%)

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
3	G3H	O	400[B]	1	-	0/6/8/8	0/0/0/0
2	SO4	O	401[A]	-	-	0/0/0/0	0/0/0/0
2	SO4	O	402	-	-	0/0/0/0	0/0/0/0
2	SO4	O	403	-	-	0/0/0/0	0/0/0/0
2	SO4	O	404	-	-	0/0/0/0	0/0/0/0
2	SO4	O	405	-	-	0/0/0/0	0/0/0/0
2	SO4	O	406	-	-	0/0/0/0	0/0/0/0
4	NAD	O	407	-	-	0/22/62/62	0/5/5/5
6	GOL	O	408	-	-	0/4/4/4	0/0/0/0
3	G3H	P	400[B]	1	-	0/6/8/8	0/0/0/0
2	SO4	P	401[A]	-	-	0/0/0/0	0/0/0/0
2	SO4	P	402	-	-	0/0/0/0	0/0/0/0
4	NAD	P	403	-	-	0/22/62/62	0/5/5/5
6	GOL	P	404	-	-	0/4/4/4	0/0/0/0
6	GOL	P	405	-	-	0/4/4/4	0/0/0/0
6	GOL	P	406	-	-	0/4/4/4	0/0/0/0
6	GOL	P	407	-	-	0/4/4/4	0/0/0/0
3	G3H	Q	400[B]	1	-	0/6/8/8	0/0/0/0
2	SO4	Q	401[A]	-	-	0/0/0/0	0/0/0/0
2	SO4	Q	402	-	-	0/0/0/0	0/0/0/0
2	SO4	Q	403	-	-	0/0/0/0	0/0/0/0
4	NAD	Q	404	-	-	0/22/62/62	0/5/5/5
5	EDO	Q	405	-	-	0/1/1/1	0/0/0/0
6	GOL	Q	406	-	-	0/4/4/4	0/0/0/0
3	G3H	R	400[B]	1	-	0/6/8/8	0/0/0/0
2	SO4	R	401[A]	-	-	0/0/0/0	0/0/0/0
2	SO4	R	402	-	-	0/0/0/0	0/0/0/0
2	SO4	R	403	-	-	0/0/0/0	0/0/0/0
2	SO4	R	404	-	-	0/0/0/0	0/0/0/0
2	SO4	R	405	-	-	0/0/0/0	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	SO4	R	406	-	-	0/0/0/0	0/0/0/0
2	SO4	R	407	-	-	0/0/0/0	0/0/0/0
4	NAD	R	408	-	-	0/22/62/62	0/5/5/5
6	GOL	R	409	-	-	0/4/4/4	0/0/0/0
6	GOL	R	410	-	-	0/4/4/4	0/0/0/0

All (16) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	O	404	SO4	O3-S	-2.04	1.40	1.47
4	R	408	NAD	O3D-C3D	2.05	1.47	1.43
2	O	404	SO4	O4-S	2.38	1.55	1.47
4	P	403	NAD	C2A-N1A	2.50	1.38	1.33
2	R	406	SO4	O3-S	2.52	1.56	1.47
4	O	407	NAD	C2A-N1A	2.78	1.39	1.33
4	R	408	NAD	C2A-N3A	2.99	1.37	1.32
4	P	403	NAD	C2A-N3A	3.26	1.38	1.32
4	O	407	NAD	C2A-N3A	3.32	1.38	1.32
4	Q	404	NAD	C2A-N1A	3.36	1.40	1.33
4	R	408	NAD	C2A-N1A	3.36	1.40	1.33
4	Q	404	NAD	C2A-N3A	3.88	1.39	1.32
4	R	408	NAD	O7N-C7N	5.66	1.36	1.24
4	O	407	NAD	O7N-C7N	5.68	1.36	1.24
4	Q	404	NAD	O7N-C7N	6.24	1.37	1.24
4	P	403	NAD	O7N-C7N	6.26	1.37	1.24

All (51) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	P	403	NAD	N3A-C2A-N1A	-14.01	118.17	128.89
4	O	407	NAD	N3A-C2A-N1A	-13.85	118.29	128.89
4	R	408	NAD	N3A-C2A-N1A	-13.50	118.56	128.89
4	Q	404	NAD	N3A-C2A-N1A	-13.05	118.90	128.89
4	Q	404	NAD	O7N-C7N-C3N	-7.07	111.87	119.59
4	O	407	NAD	O7N-C7N-C3N	-5.83	113.22	119.59
4	P	403	NAD	O7N-C7N-C3N	-5.76	113.29	119.59
3	R	400[B]	G3H	O1P-P-O2P	-4.75	95.06	107.14
4	R	408	NAD	C1B-N9A-C4A	-4.21	120.59	126.94
4	R	408	NAD	O7N-C7N-C3N	-3.79	115.45	119.59
3	P	400[B]	G3H	O1P-P-O2P	-3.54	98.14	107.14
4	Q	404	NAD	C1B-N9A-C4A	-3.29	121.98	126.94
3	Q	400[B]	G3H	O1P-P-O2P	-3.06	99.35	107.14

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	O	407	NAD	O5D-PN-O1N	-3.04	97.83	109.62
4	R	408	NAD	C4A-C5A-N7A	-2.75	106.95	109.48
4	O	407	NAD	PN-O3-PA	-2.73	125.06	132.73
3	R	400[B]	G3H	C3-C2-C1	-2.71	105.09	111.03
3	O	400[B]	G3H	O1P-P-O2P	-2.69	100.29	107.14
4	P	403	NAD	C1B-N9A-C4A	-2.65	122.94	126.94
4	Q	404	NAD	O4B-C1B-N9A	-2.62	102.61	108.10
3	O	400[B]	G3H	C3-C2-C1	-2.61	105.32	111.03
4	O	407	NAD	C1B-N9A-C4A	-2.56	123.07	126.94
4	R	408	NAD	C3N-C2N-N1N	-2.56	117.41	120.36
4	O	407	NAD	C4A-C5A-N7A	-2.52	107.16	109.48
3	Q	400[B]	G3H	O1-C1-C2	-2.45	119.15	125.35
3	R	400[B]	G3H	O1-C1-C2	-2.43	119.21	125.35
3	P	400[B]	G3H	O1-C1-C2	-2.39	119.31	125.35
3	O	400[B]	G3H	O1-C1-C2	-2.29	119.55	125.35
4	R	408	NAD	O3D-C3D-C4D	-2.26	104.27	111.05
4	Q	404	NAD	C4A-C5A-N7A	-2.19	107.46	109.48
6	R	410	GOL	C3-C2-C1	-2.09	102.94	111.12
4	O	407	NAD	O2N-PN-O1N	2.04	123.56	112.53
4	R	408	NAD	O2B-C2B-C3B	2.09	118.61	111.83
4	P	403	NAD	C2A-N1A-C6A	2.14	122.59	118.77
4	O	407	NAD	O4D-C1D-N1N	2.17	110.51	108.13
4	P	403	NAD	C2N-C3N-C4N	2.21	120.75	118.29
3	O	400[B]	G3H	O4P-P-O3P	2.23	115.86	107.38
4	P	403	NAD	O2A-PA-O3	2.23	115.22	105.09
3	Q	400[B]	G3H	O3P-P-O2P	2.24	117.80	110.58
4	R	408	NAD	C4D-O4D-C1D	2.31	112.26	109.72
4	R	408	NAD	O3-PA-O5B	2.70	110.09	102.94
4	Q	404	NAD	C2N-C3N-C4N	2.79	121.39	118.29
4	O	407	NAD	C2A-N1A-C6A	2.83	123.82	118.77
6	P	405	GOL	O2-C2-C3	2.89	121.91	108.65
4	R	408	NAD	C3N-C7N-N7N	2.92	121.01	117.82
4	P	403	NAD	O4D-C1D-N1N	3.22	111.67	108.13
4	R	408	NAD	C2N-C3N-C4N	3.29	121.95	118.29
4	O	407	NAD	C2N-C3N-C4N	3.74	122.45	118.29
4	O	407	NAD	C3N-C7N-N7N	5.98	124.36	117.82
4	P	403	NAD	C3N-C7N-N7N	6.42	124.85	117.82
4	Q	404	NAD	C3N-C7N-N7N	7.64	126.18	117.82

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.



15 monomers are involved in 42 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	O	400[B]	G3H	3	0
2	O	404	SO4	2	0
6	O	408	GOL	2	0
3	P	400[B]	G3H	2	0
4	P	403	NAD	1	0
6	P	405	GOL	4	0
6	P	406	GOL	6	0
6	P	407	GOL	3	0
3	Q	400[B]	G3H	3	0
2	Q	403	SO4	1	0
6	Q	406	GOL	4	0
3	R	400[B]	G3H	4	0
2	R	406	SO4	1	0
2	R	407	SO4	2	0
6	R	409	GOL	4	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	O	334/334 (100%)	-0.36	3 (0%) 85 85	12, 22, 38, 56	0
1	P	334/334 (100%)	-0.47	1 (0%) 94 93	12, 22, 37, 56	0
1	Q	334/334 (100%)	-0.50	0 100 100	12, 21, 36, 55	0
1	R	334/334 (100%)	-0.34	3 (0%) 85 85	12, 22, 40, 52	0
All	All	1336/1336 (100%)	-0.42	7 (0%) 91 91	12, 22, 38, 56	0

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	R	0	ALA	2.9
1	R	248[A]	LYS	2.8
1	R	23	PRO	2.6
1	O	0	ALA	2.4
1	O	333	LEU	2.3
1	P	0	ALA	2.3
1	O	112	GLY	2.1

### 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 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
6	GOL	P	404	6/6	0.88	0.15	20.90	36,42,44,45	0
2	SO4	R	407	5/5	0.84	0.42	16.31	33,36,38,38	5
6	GOL	P	407	6/6	0.64	0.35	11.59	43,45,46,47	6
6	GOL	Q	406	6/6	0.82	0.26	9.31	16,26,27,32	6
2	SO4	O	401[A]	5/5	0.91	0.19	4.75	42,45,47,47	5
6	GOL	R	410	6/6	0.85	0.12	4.42	37,42,45,47	0
6	GOL	P	406	6/6	0.73	0.22	4.04	39,45,46,47	0
2	SO4	R	401[A]	5/5	0.89	0.17	3.24	42,46,47,48	5
2	SO4	O	406	5/5	0.91	0.24	3.15	45,50,51,51	5
3	G3H	R	400[B]	10/10	0.93	0.14	2.84	17,28,31,31	10
2	SO4	Q	401[A]	5/5	0.91	0.18	2.80	41,45,46,46	5
2	SO4	Q	403	5/5	0.88	0.13	2.38	18,22,25,30	5
3	G3H	O	400[B]	10/10	0.96	0.12	2.14	17,28,31,32	10
3	G3H	P	400[B]	10/10	0.91	0.14	1.52	17,29,31,31	10
3	G3H	Q	400[B]	10/10	0.95	0.11	1.47	14,28,29,32	10
5	EDO	Q	405	4/4	0.87	0.10	1.37	40,42,43,47	0
2	SO4	O	404	5/5	0.95	0.11	1.20	23,23,27,29	5
2	SO4	P	401[A]	5/5	0.91	0.14	1.13	41,44,47,47	5
6	GOL	P	405	6/6	0.91	0.15	0.85	25,29,30,36	0
4	NAD	Q	404	44/44	0.98	0.07	0.02	12,16,21,22	0
4	NAD	O	407	44/44	0.98	0.07	-0.19	12,17,20,22	0
4	NAD	P	403	44/44	0.98	0.06	-0.23	11,17,21,24	0
4	NAD	R	408	44/44	0.99	0.06	-0.56	12,16,18,21	0
2	SO4	R	404	5/5	0.94	0.10	-	50,53,54,56	5
2	SO4	R	405	5/5	0.97	0.10	-	35,37,40,41	5
2	SO4	R	403	5/5	0.93	0.12	-	38,40,43,43	5
6	GOL	R	409	6/6	0.80	0.15	-	46,51,52,54	0
2	SO4	R	406	5/5	0.86	0.17	-	15,17,20,24	5
2	SO4	R	402	5/5	0.99	0.10	-	30,33,37,38	0
2	SO4	O	403	5/5	0.91	0.12	-	47,51,51,52	5
2	SO4	O	405	5/5	0.69	0.28	-	59,63,64,64	5
2	SO4	P	402	5/5	0.99	0.09	-	30,33,36,38	0
6	GOL	O	408	6/6	0.76	0.14	-	46,47,48,48	0
2	SO4	O	402	5/5	0.99	0.08	-	31,35,38,38	0
2	SO4	Q	402	5/5	0.99	0.08	-	28,32,34,36	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.