



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 13, 2017 – 04:28 pm GMT

PDB ID : 4GHL
Title : Structural Basis for Marburg virus VP35 mediate immune evasion mechanisms
Authors : Ramanan, P.; Borek, D.M.; Otwinowski, Z.; Leung, D.W.; Amarasinghe, G.K.
Deposited on : 2012-08-07
Resolution : 2.02 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

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 : 1.7.2 (RC1), CSD as538be (2017)
Xtriage (Phenix) : 1.9-1692
EDS : trunk28620
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)
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) : recalc28949

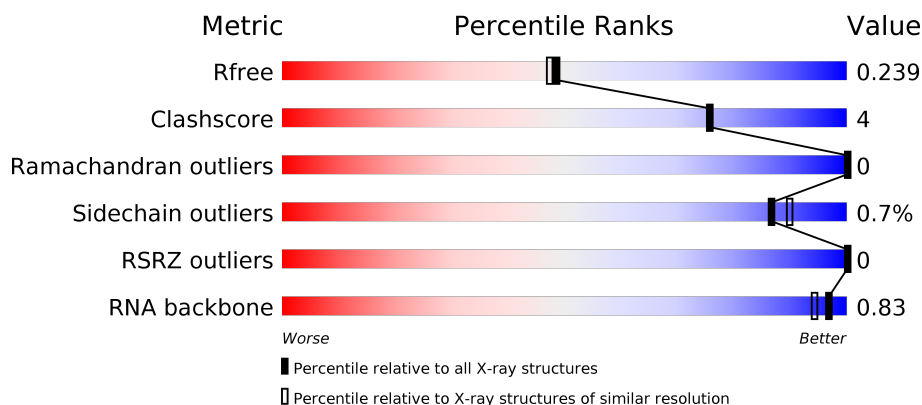
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.02 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}	100719	8396 (2.04-2.00)
Clashscore	112137	9678 (2.04-2.00)
Ramachandran outliers	110173	9566 (2.04-2.00)
Sidechain outliers	110143	9565 (2.04-2.00)
RSRZ outliers	101464	8490 (2.04-2.00)
RNA backbone	2435	1005 (2.66-1.38)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. 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	E	18	 83% 17%
1	F	18	 67% 33%
2	A	133	 93% 6% .
2	B	133	 86% 6% 8%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
2	C	133	
2	D	133	

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	MG	B	401	-	-	-	X
4	EDO	A	403	-	-	-	X

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 5048 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 RNA chain called short palindromic RNA AGACAGCAUAUGCUGUCU.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	E	18	Total	C	N	O	P	0	0	0
			379	171	67	124	17			
1	F	18	Total	C	N	O	P	0	0	0
			379	171	67	124	17			

- Molecule 2 is a protein called Polymerase cofactor VP35.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	A	132	Total	C	N	O	S	0	2	0
			1042	667	183	188	4			
2	B	122	Total	C	N	O	S	0	0	0
			943	606	166	168	3			
2	C	122	Total	C	N	O	S	0	0	0
			943	606	166	168	3			
2	D	122	Total	C	N	O	S	0	1	0
			952	612	168	169	3			

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	197	GLY	-	EXPRESSION TAG	UNP Q03039
A	198	HIS	-	EXPRESSION TAG	UNP Q03039
A	199	MET	-	EXPRESSION TAG	UNP Q03039
A	277	MET	LEU	ENGINEERED MUTATION	UNP Q03039
B	197	GLY	-	EXPRESSION TAG	UNP Q03039
B	198	HIS	-	EXPRESSION TAG	UNP Q03039
B	199	MET	-	EXPRESSION TAG	UNP Q03039
B	277	MET	LEU	ENGINEERED MUTATION	UNP Q03039
C	197	GLY	-	EXPRESSION TAG	UNP Q03039
C	198	HIS	-	EXPRESSION TAG	UNP Q03039
C	199	MET	-	EXPRESSION TAG	UNP Q03039
C	277	MET	LEU	ENGINEERED MUTATION	UNP Q03039

Continued on next page...

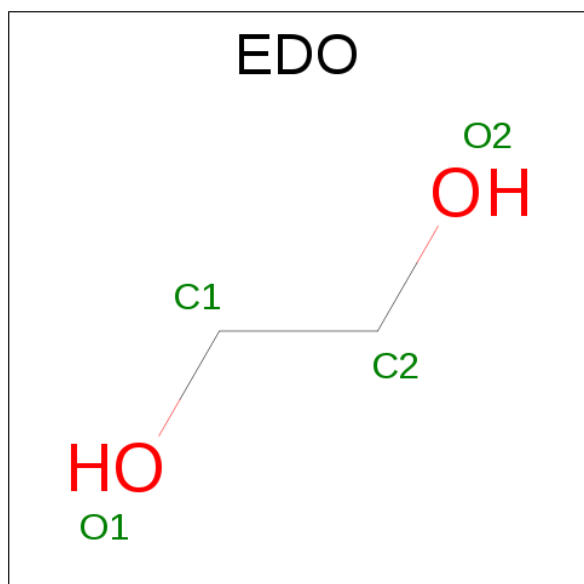
Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
D	197	GLY	-	EXPRESSION TAG	UNP Q03039
D	198	HIS	-	EXPRESSION TAG	UNP Q03039
D	199	MET	-	EXPRESSION TAG	UNP Q03039
D	277	MET	LEU	ENGINEERED MUTATION	UNP Q03039

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	D	1	Total Mg 1 1	0	0
3	E	3	Total Mg 3 3	0	0
3	B	1	Total Mg 1 1	0	0
3	C	2	Total Mg 2 2	0	0
3	A	1	Total Mg 1 1	0	0
3	F	3	Total Mg 3 3	0	0

- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



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

Continued on next page...

Continued from previous page...

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

- Molecule 5 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	3	Total	Cl	0	0
			3	3		
5	C	1	Total	Cl	0	0
			1	1		


- Molecule 6 is water.

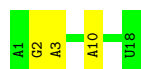
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	E	38	Total	O	0	0
			38	38		
6	F	28	Total	O	0	0
			28	28		
6	A	94	Total	O	0	0
			94	94		
6	B	72	Total	O	0	0
			72	72		
6	C	61	Total	O	0	0
			61	61		
6	D	86	Total	O	0	0
			86	86		

3 Residue-property plots [i](#)

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

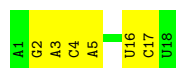
- Molecule 1: short palindromic RNA AGACAGCAUAUGCUGUCU

Chain E: 



- Molecule 1: short palindromic RNA AGACAGCAUAUGCUGUCU

Chain F: 




- Molecule 2: Polymerase cofactor VP35

Chain A: 




- Molecule 2: Polymerase cofactor VP35

Chain B: 




- Molecule 2: Polymerase cofactor VP35

Chain C: 



- Molecule 2: Polymerase cofactor VP35

Chain D: 

GLY	L208	L216	L249	D274	I284	R285	V286	R294	P295	K311	G312	W313	V314	C315	S319	E320	Q321	K328	I329
HIS																			
MET																			
GLU																			
THR																			
PHE																			
SER																			
LYS																			
PRO																			
ASN																			

4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	83.77Å 93.38Å 102.07Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	37.87 – 2.02 37.87 – 2.02	Depositor EDS
% Data completeness (in resolution range)	95.6 (37.87-2.02) 95.6 (37.87-2.02)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.39 (at 2.01Å)	Xtriage
Refinement program	REFMAC 5.6.0117	Depositor
R, R_{free}	0.187 , 0.240 0.187 , 0.239	Depositor DCC
R_{free} test set	2577 reflections (5.32%)	DCC
Wilson B-factor (Å ²)	25.6	Xtriage
Anisotropy	0.122	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 39.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.45$, $\langle L^2 \rangle = 0.28$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	5048	wwPDB-VP
Average B, all atoms (Å ²)	30.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.75% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: MG, EDO, CL

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	E	0.56	0/423	0.88	1/657 (0.2%)
1	F	0.44	0/423	0.86	1/657 (0.2%)
2	A	0.65	0/1068	0.66	1/1449 (0.1%)
2	B	0.63	0/965	0.68	0/1309
2	C	0.59	0/965	0.65	1/1309 (0.1%)
2	D	0.61	1/974 (0.1%)	0.69	0/1320
All	All	0.60	1/4818 (0.0%)	0.72	4/6701 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	313	TRP	CD2-CE2	5.05	1.47	1.41

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	5	A	O5'-P-OP2	-7.32	99.11	105.70
1	E	10	A	O5'-P-OP2	-6.10	100.21	105.70
2	C	301	ARG	NE-CZ-NH2	-5.28	117.66	120.30
2	A	213	LEU	CA-CB-CG	5.24	127.35	115.30

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	E	379	0	195	1	0
1	F	379	0	195	3	0
2	A	1042	0	1057	7	0
2	B	943	0	969	5	0
2	C	943	0	969	6	0
2	D	952	0	981	12	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	2	0	0	0	0
3	D	1	0	0	0	0
3	E	3	0	0	0	0
3	F	3	0	0	0	0
4	A	8	0	12	1	0
4	B	4	0	6	1	0
4	C	4	0	6	0	0
5	B	3	0	0	0	0
5	C	1	0	0	0	0
6	A	94	0	0	3	0
6	B	72	0	0	1	0
6	C	61	0	0	0	0
6	D	86	0	0	3	0
6	E	38	0	0	0	0
6	F	28	0	0	0	0
All	All	5048	0	4390	33	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 4.

All (33) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:302:ALA:H	4:B:405:EDO:H12	1.26	0.98
2:A:305[A]:PRO:HB3	2:D:320:GLU:HG2	1.73	0.70
2:A:291:THR:HG21	6:A:507:HOH:O	1.94	0.66
2:D:284:ILE:CD1	2:D:315:CYS:HB2	2.30	0.62
2:C:213:LEU:HD21	2:C:248:PHE:HD1	1.64	0.61
2:A:200:GLU:HG3	6:A:573:HOH:O	2.00	0.60
2:D:274:ASP:HA	6:D:539:HOH:O	2.02	0.60
2:C:288:ASN:OD1	2:C:291:THR:HG23	2.03	0.57
1:F:3:A:H2'	1:F:4:C:O4'	2.07	0.55

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:284:ILE:HD13	2:D:315:CYS:HB2	1.90	0.54
1:F:16:U:H2'	1:F:17:C:C6	2.43	0.54
2:A:287:LYS:NZ	6:A:565:HOH:O	2.42	0.53
2:D:216:LEU:HD12	6:D:572:HOH:O	2.10	0.51
2:C:213:LEU:HD21	2:C:248:PHE:CD1	2.46	0.50
2:C:281:PRO:HB2	2:C:315:CYS:HA	1.97	0.47
4:A:403:EDO:H12	6:B:570:HOH:O	2.14	0.46
2:D:274:ASP:HB3	6:D:543:HOH:O	2.15	0.46
2:B:304:PRO:HG3	2:B:313:TRP:CE2	2.51	0.46
2:A:287:LYS:HD3	2:B:306:ASN:CG	2.37	0.45
2:A:216:LEU:HD23	2:A:216:LEU:C	2.37	0.45
2:D:294:ARG:HB3	2:D:295:PRO:HD3	1.99	0.45
2:D:286:VAL:O	2:D:319:SER:HA	2.18	0.44
2:A:273:PHE:HB3	2:A:276:PHE:CD2	2.54	0.43
2:B:224:ASN:O	2:B:225:ASN:HB2	2.19	0.42
2:B:213:LEU:HD22	2:B:245:SER:HB2	2.01	0.42
2:C:269:LEU:HA	2:C:269:LEU:HD23	1.90	0.42
2:D:216:LEU:HD23	2:D:249:LEU:HD11	2.01	0.42
2:D:321:GLN:O	2:D:321:GLN:CG	2.68	0.42
2:C:240:TYR:HA	2:C:245:SER:HB2	2.02	0.41
1:F:2:G:O2'	1:F:3:A:H5'	2.20	0.41
2:D:311[B]:LYS:HD2	2:D:311[B]:LYS:HA	1.80	0.41
2:D:313:TRP:CZ3	2:D:328:LYS:HB2	2.57	0.40
1:E:2:G:H2'	1:E:3:A:C8	2.56	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
2	A	132/133 (99%)	131 (99%)	1 (1%)	0	100 100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	B	120/133 (90%)	120 (100%)	0	0	100	100
2	C	120/133 (90%)	120 (100%)	0	0	100	100
2	D	121/133 (91%)	120 (99%)	1 (1%)	0	100	100
All	All	493/532 (93%)	491 (100%)	2 (0%)	0	100	100

There are no Ramachandran outliers to report.

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	
2	A	115/113 (102%)	115 (100%)	0	100	100
2	B	103/113 (91%)	103 (100%)	0	100	100
2	C	103/113 (91%)	100 (97%)	3 (3%)	48	46
2	D	104/113 (92%)	104 (100%)	0	100	100
All	All	425/452 (94%)	422 (99%)	3 (1%)	87	90

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	C	215	LEU
2	C	216	LEU
2	C	294	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
2	C	253	HIS

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	E	17/18 (94%)	0	0
1	F	17/18 (94%)	0	0
All	All	34/36 (94%)	0	0

There are no RNA backbone outliers to report.

There are no RNA pucker outliers to report.

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

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

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 19 ligands modelled in this entry, 15 are monoatomic - leaving 4 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	EDO	A	402	-	3,3,3	0.40	0	2,2,2	0.55	0
4	EDO	A	403	-	3,3,3	0.45	0	2,2,2	0.29	0
4	EDO	B	405	-	3,3,3	0.54	0	2,2,2	0.50	0
4	EDO	C	404	-	3,3,3	0.57	0	2,2,2	0.14	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	EDO	A	402	-	-	0/1/1/1	0/0/0/0

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	EDO	A	403	-	-	0/1/1/1	0/0/0/0
4	EDO	B	405	-	-	0/1/1/1	0/0/0/0
4	EDO	C	404	-	-	0/1/1/1	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.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	403	EDO	1	0
4	B	405	EDO	1	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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	E	18/18 (100%)	-0.76	0 100 100	16, 28, 45, 47	0
1	F	18/18 (100%)	-0.64	0 100 100	20, 27, 49, 55	0
2	A	132/133 (99%)	-0.43	0 100 100	12, 24, 49, 72	0
2	B	122/133 (91%)	-0.51	0 100 100	17, 25, 42, 58	0
2	C	122/133 (91%)	-0.22	0 100 100	16, 33, 59, 66	0
2	D	122/133 (91%)	-0.44	0 100 100	16, 25, 50, 55	0
All	All	534/568 (94%)	-0.42	0 100 100	12, 26, 53, 72	0

There are no RSRZ outliers to report.

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

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

6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. 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, 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	LLDF	B-factors(\AA^2)	Q<0.9
3	MG	B	401	1/1	0.88	0.20	5.67	50,50,50,50	0
4	EDO	A	403	4/4	0.94	0.16	2.07	36,43,45,58	0
3	MG	C	402	1/1	0.61	0.17	1.88	55,55,55,55	0
3	MG	F	103	1/1	0.82	0.20	-	58,58,58,58	0
3	MG	D	401	1/1	0.91	0.17	-	65,65,65,65	0
5	CL	B	403	1/1	0.99	0.07	-	60,60,60,60	0
4	EDO	A	402	4/4	0.93	0.12	-	27,29,51,64	0
5	CL	B	402	1/1	0.88	0.35	-	70,70,70,70	0
3	MG	F	101	1/1	0.95	0.22	-	46,46,46,46	0
3	MG	A	401	1/1	0.91	0.37	-	64,64,64,64	0
4	EDO	C	404	4/4	0.94	0.18	-	25,31,48,56	0
3	MG	E	103	1/1	0.82	0.46	-	48,48,48,48	0
5	CL	B	404	1/1	0.71	0.15	-	78,78,78,78	0
3	MG	F	102	1/1	0.90	0.27	-	51,51,51,51	0
3	MG	E	102	1/1	0.90	0.15	-	57,57,57,57	0
4	EDO	B	405	4/4	0.89	0.11	-	28,37,42,53	0
3	MG	C	401	1/1	0.98	0.17	-	23,23,23,23	0
5	CL	C	403	1/1	0.92	0.10	-	57,57,57,57	0
3	MG	E	101	1/1	0.94	0.07	-	50,50,50,50	0

6.5 Other polymers [i](#)

There are no such residues in this entry.