



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 9, 2026 – 09:34 PM UTC

PDB ID : 3FG1 / pdb_00003fg1
Title : Crystal structure of Delta413-417:GS LOX
Authors : Neau, D.B.; Newcomer, M.E.
Deposited on : 2008-12-04
Resolution : 1.85 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

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

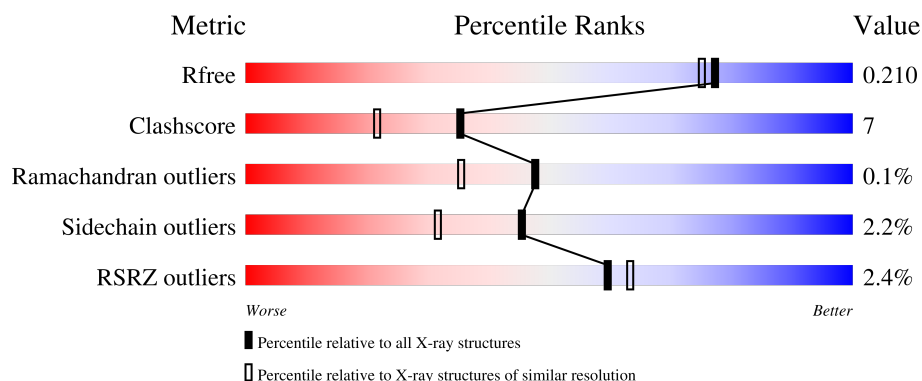
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.85 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}	180053	3428 (1.86-1.86)
Clashscore	190562	3579 (1.86-1.86)
Ramachandran outliers	187476	3553 (1.86-1.86)
Sidechain outliers	187428	3553 (1.86-1.86)
RSRZ outliers	180081	3429 (1.86-1.86)

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 $\leq 5\%$. 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	696	0% 88% 9% ..
1	B	696	5% 85% 11% ..
1	C	696	2% 88% 9% ..
1	D	696	2% 87% 9% ..

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	ACY	A	2200[B]	-	-	X	-
4	ACY	A	2204	-	-	X	-
4	ACY	C	2201[A]	-	-	X	-
4	ACY	D	2204	-	-	X	-
4	ACY	D	2206	-	-	X	-
5	GOL	A	2305	-	-	X	-
5	GOL	A	2306	-	-	X	-
5	GOL	B	2306	-	-	X	-
5	GOL	C	2301[B]	-	-	X	-
5	GOL	C	2305	-	-	X	-
5	GOL	D	2302[A]	-	-	X	-

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 25092 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 Allene oxide synthase-lipoxygenase protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	684	Total	C	N	O	S	1	16	0
			5523	3527	933	1050	13			
1	B	682	Total	C	N	O	S	0	22	0
			5547	3542	933	1059	13			
1	C	683	Total	C	N	O	S	0	18	0
			5536	3536	933	1054	13			
1	D	681	Total	C	N	O	S	0	21	0
			5535	3540	932	1050	13			

There are 52 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	368	MET	-	expression tag	UNP O16025
A	369	HIS	-	expression tag	UNP O16025
A	370	HIS	-	expression tag	UNP O16025
A	371	HIS	-	expression tag	UNP O16025
A	372	HIS	-	expression tag	UNP O16025
A	373	HIS	-	expression tag	UNP O16025
A	?	-	TRP	deletion	UNP O16025
A	?	-	PHE	deletion	UNP O16025
A	?	-	HIS	deletion	UNP O16025
A	413	GLY	ASN	engineered mutation	UNP O16025
A	414	SER	ASP	engineered mutation	UNP O16025
A	782	ILE	VAL	SEE REMARK 999	UNP O16025
A	963	ILE	VAL	SEE REMARK 999	UNP O16025
B	368	MET	-	expression tag	UNP O16025
B	369	HIS	-	expression tag	UNP O16025
B	370	HIS	-	expression tag	UNP O16025
B	371	HIS	-	expression tag	UNP O16025
B	372	HIS	-	expression tag	UNP O16025
B	373	HIS	-	expression tag	UNP O16025
B	?	-	TRP	deletion	UNP O16025
B	?	-	PHE	deletion	UNP O16025

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Chain	Residue	Modelled	Actual	Comment	Reference
B	?	-	HIS	deletion	UNP O16025
B	413	GLY	ASN	engineered mutation	UNP O16025
B	414	SER	ASP	engineered mutation	UNP O16025
B	782	ILE	VAL	SEE REMARK 999	UNP O16025
B	963	ILE	VAL	SEE REMARK 999	UNP O16025
C	368	MET	-	expression tag	UNP O16025
C	369	HIS	-	expression tag	UNP O16025
C	370	HIS	-	expression tag	UNP O16025
C	371	HIS	-	expression tag	UNP O16025
C	372	HIS	-	expression tag	UNP O16025
C	373	HIS	-	expression tag	UNP O16025
C	?	-	TRP	deletion	UNP O16025
C	?	-	PHE	deletion	UNP O16025
C	?	-	HIS	deletion	UNP O16025
C	413	GLY	ASN	engineered mutation	UNP O16025
C	414	SER	ASP	engineered mutation	UNP O16025
C	782	ILE	VAL	SEE REMARK 999	UNP O16025
C	963	ILE	VAL	SEE REMARK 999	UNP O16025
D	368	MET	-	expression tag	UNP O16025
D	369	HIS	-	expression tag	UNP O16025
D	370	HIS	-	expression tag	UNP O16025
D	371	HIS	-	expression tag	UNP O16025
D	372	HIS	-	expression tag	UNP O16025
D	373	HIS	-	expression tag	UNP O16025
D	?	-	TRP	deletion	UNP O16025
D	?	-	PHE	deletion	UNP O16025
D	?	-	HIS	deletion	UNP O16025
D	413	GLY	ASN	engineered mutation	UNP O16025
D	414	SER	ASP	engineered mutation	UNP O16025
D	782	ILE	VAL	SEE REMARK 999	UNP O16025
D	963	ILE	VAL	SEE REMARK 999	UNP O16025

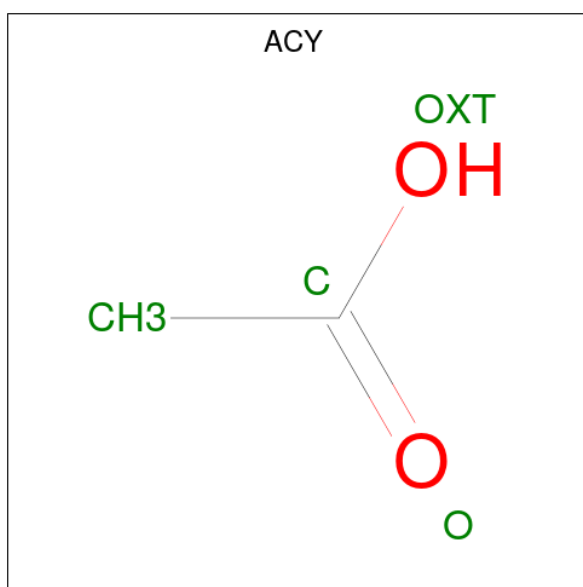
- Molecule 2 is FE (II) ION (CCD ID: FE2) (formula: Fe).

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

- Molecule 3 is CALCIUM ION (CCD ID: CA) (formula: Ca).

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

- Molecule 4 is ACETIC ACID (CCD ID: ACY) (formula: C₂H₄O₂).



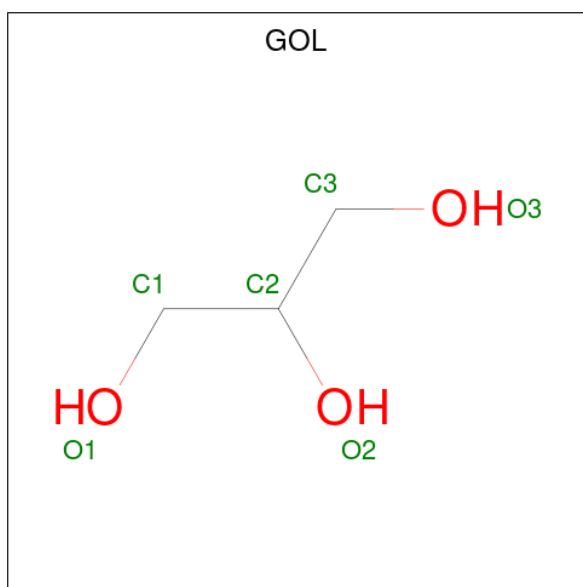
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total 8	C 4	O 4	0	1
4	A	1	Total 8	C 4	O 4	0	1
4	A	1	Total 4	C 2	O 2	0	0
4	A	1	Total 4	C 2	O 2	0	0
4	A	1	Total 4	C 2	O 2	0	0
4	A	1	Total 4	C 2	O 2	0	0
4	A	1	Total 4	C 2	O 2	0	0

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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	B	1	Total	C	O	0	0
			4	2	2		
4	B	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	1
			8	4	4		
4	C	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		

- Molecule 5 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	1
			12	6	6		
5	A	1	Total	C	O	0	0
			6	3	3		
5	B	1	Total	C	O	0	0
			6	3	3		
5	B	1	Total	C	O	0	0
			6	3	3		
5	B	1	Total	C	O	0	1
			12	6	6		
5	B	1	Total	C	O	0	0
			6	3	3		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	C	1	Total	C	O	0	1
			12	6	6		
5	C	1	Total	C	O	0	0
			6	3	3		
5	C	1	Total	C	O	0	0
			6	3	3		
5	C	1	Total	C	O	0	0
			6	3	3		
5	C	1	Total	C	O	0	0
			6	3	3		
5	D	1	Total	C	O	0	0
			6	3	3		
5	D	1	Total	C	O	0	1
			12	6	6		
5	D	1	Total	C	O	0	0
			6	3	3		

- Molecule 6 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

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

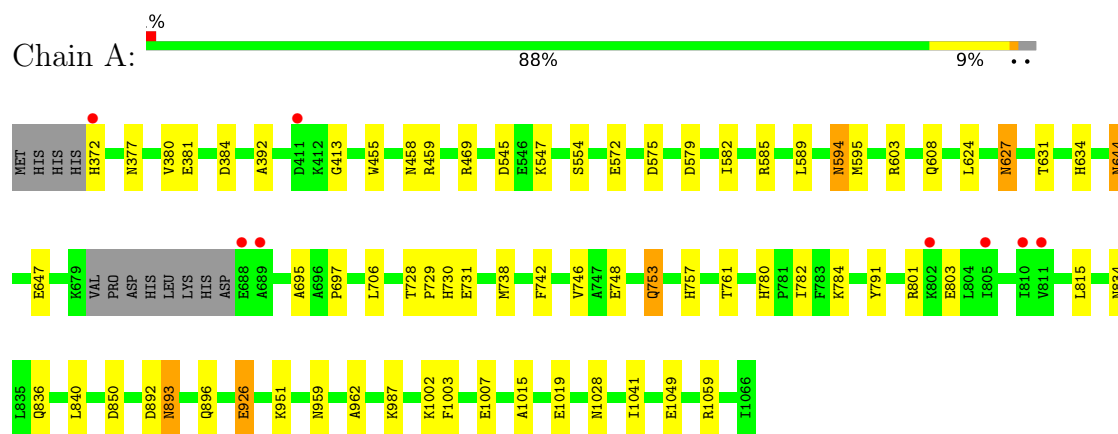
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	821	Total	O	0	0
			821	821		
7	B	565	Total	O	0	0
			565	565		
7	C	705	Total	O	0	0
			705	705		
7	D	576	Total	O	0	0
			576	576		

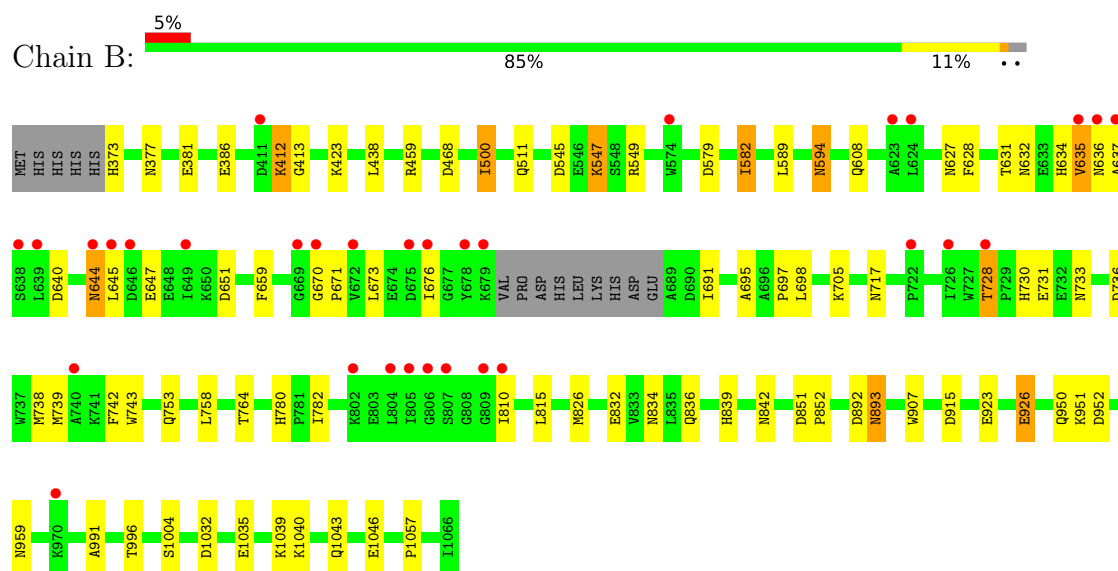
3 Residue-property plots [i](#)

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.

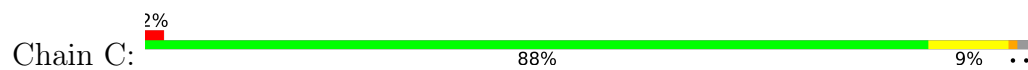
- Molecule 1: Allene oxide synthase-lipoxygenase protein

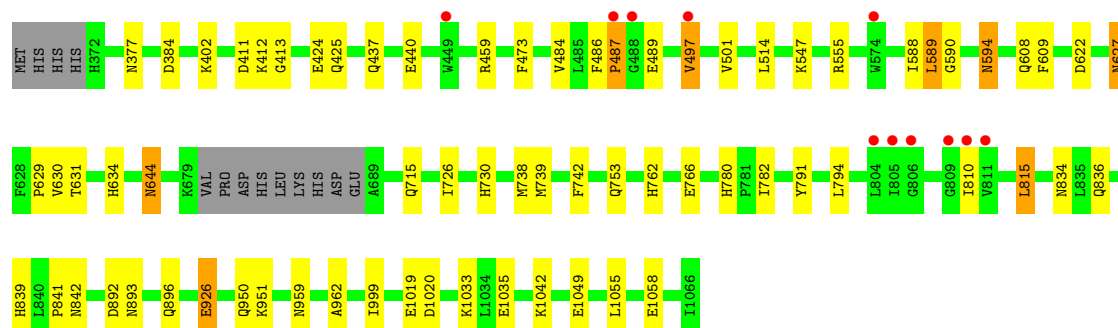


- Molecule 1: Allene oxide synthase-lipoxygenase protein

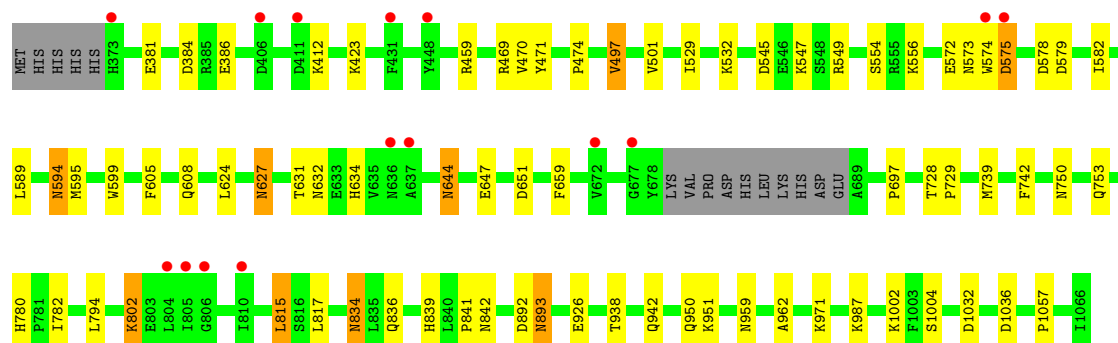
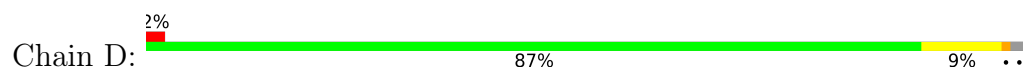


- Molecule 1: Allene oxide synthase-lipoxygenase protein





• Molecule 1: Allene oxide synthase-lipoxygenase protein



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	103.98Å 170.22Å 104.50Å 90.00° 95.88° 90.00°	Depositor
Resolution (Å)	30.00 – 1.85 30.00 – 1.85	Depositor EDS
% Data completeness (in resolution range)	98.6 (30.00-1.85) 98.7 (30.00-1.85)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.57 (at 1.85Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.174 , 0.209 0.174 , 0.210	Depositor DCC
R_{free} test set	15295 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å ²)	23.4	Xtriage
Anisotropy	0.230	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 53.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.35$	Xtriage
Estimated twinning fraction	0.076 for l,-k,h	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	25092	wwPDB-VP
Average B, all atoms (Å ²)	27.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.17% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CL, CA, ACY, FE2, GOL

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	0.89	2/5720 (0.0%)	0.89	4/7778 (0.1%)
1	B	0.79	0/5754	0.86	0/7830
1	C	0.89	0/5737	0.87	1/7804 (0.0%)
1	D	0.83	0/5740	0.86	0/7806
All	All	0.85	2/22951 (0.0%)	0.87	5/31218 (0.0%)

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	D	0	1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	761	THR	CA-C	5.76	1.55	1.52
1	A	761	THR	CA-CB	5.43	1.60	1.54

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	C	589	LEU	N-CA-C	6.33	121.95	113.72
1	A	803	GLU	N-CA-C	5.59	119.94	113.18
1	A	840	LEU	CA-C-N	-5.14	113.34	119.05
1	A	840	LEU	C-N-CA	-5.14	113.34	119.05
1	A	575	ASP	N-CA-CB	-5.09	103.28	110.81

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	D	574	TRP	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	5523	0	5257	87	0
1	B	5547	0	5257	72	0
1	C	5536	0	5263	79	1
1	D	5535	0	5271	72	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	3	0	0	0	0
3	B	1	0	0	0	0
3	C	3	0	0	0	0
3	D	1	0	0	0	0
4	A	40	0	30	5	0
4	B	16	0	12	2	0
4	C	28	0	21	2	0
4	D	20	0	15	6	0
5	A	66	0	88	21	0
5	B	30	0	40	13	0
5	C	42	0	56	15	0
5	D	24	0	32	5	0
6	A	2	0	0	0	0
6	B	1	0	0	0	0
6	C	2	0	0	1	0
6	D	1	0	0	0	0
7	A	821	0	0	24	0
7	B	565	0	0	11	1
7	C	705	0	0	20	0
7	D	576	0	0	10	0
All	All	25092	0	21342	322	1

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.

The worst 5 of 322 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:547:LYS:HE2	7:A:2315:HOH:O	1.28	1.29
1:D:1002:LYS:HE2	7:D:1226:HOH:O	1.45	1.17
1:A:372:HIS:O	7:A:1076:HOH:O	1.66	1.12
1:C:412:LYS:HE2	7:C:1159:HOH:O	1.48	1.12
1:A:603[B]:ARG:HG2	1:A:603[B]:ARG:HH11	1.09	1.10

All (1) 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)
1:C:622:ASP:OD2	7:B:1108:HOH:O[1_556]	1.97	0.23

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	696/696 (100%)	674 (97%)	22 (3%)	0	100	100
1	B	699/696 (100%)	677 (97%)	22 (3%)	0	100	100
1	C	697/696 (100%)	667 (96%)	28 (4%)	2 (0%)	36	25
1	D	698/696 (100%)	674 (97%)	24 (3%)	0	100	100
All	All	2790/2784 (100%)	2692 (96%)	96 (3%)	2 (0%)	48	35

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	487	PRO
1	C	762	HIS

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	585/602 (97%)	574 (98%)	11 (2%)	50	38
1	B	588/602 (98%)	567 (96%)	21 (4%)	31	16
1	C	587/602 (98%)	577 (98%)	10 (2%)	53	42
1	D	584/602 (97%)	567 (97%)	17 (3%)	37	22
All	All	2344/2408 (97%)	2285 (98%)	59 (2%)	45	27

5 of 59 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	923	GLU
1	D	893[B]	ASN
1	C	594	ASN
1	D	893[A]	ASN
1	D	644	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 67 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	644	ASN
1	D	750	ASN
1	D	959	ASN
1	B	634	HIS
1	B	627	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](#)

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 71 ligands modelled in this entry, 18 are monoatomic - leaving 53 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	$\# Z > 2$
5	GOL	A	2303	-	5,5,5	0.40	0	5,5,5	0.41	0
4	ACY	B	2201	-	3,3,3	0.79	0	3,3,3	1.03	0
5	GOL	C	2301[A]	-	5,5,5	0.37	0	5,5,5	0.97	0
5	GOL	B	2307[A]	-	5,5,5	0.37	0	5,5,5	0.86	0
4	ACY	D	2201	-	3,3,3	0.75	0	3,3,3	1.17	0
4	ACY	A	2200[A]	-	3,3,3	0.71	0	3,3,3	1.32	0
4	ACY	B	2202	-	3,3,3	0.67	0	3,3,3	1.44	0
4	ACY	B	2204	-	3,3,3	0.80	0	3,3,3	0.71	0
4	ACY	C	2201[A]	-	3,3,3	0.53	0	3,3,3	1.44	0
4	ACY	C	2207	-	3,3,3	0.78	0	3,3,3	0.92	0
5	GOL	C	2307	-	5,5,5	0.37	0	5,5,5	1.00	0
5	GOL	A	2302	-	5,5,5	0.51	0	5,5,5	0.69	0
5	GOL	A	2308	-	5,5,5	0.37	0	5,5,5	0.23	0
4	ACY	C	2205	-	3,3,3	0.87	0	3,3,3	1.09	0
5	GOL	A	2301	-	5,5,5	0.52	0	5,5,5	0.63	0
4	ACY	D	2203	-	3,3,3	0.85	0	3,3,3	0.91	0
5	GOL	A	2309[A]	-	5,5,5	0.38	0	5,5,5	0.67	0
4	ACY	A	2201[A]	-	3,3,3	0.74	0	3,3,3	1.04	0
5	GOL	A	2306	-	5,5,5	0.35	0	5,5,5	0.95	0
4	ACY	B	2203	-	3,3,3	0.81	0	3,3,3	0.88	0
4	ACY	C	2203	-	3,3,3	0.76	0	3,3,3	1.12	0
5	GOL	C	2302	-	5,5,5	0.92	0	5,5,5	1.23	0
4	ACY	A	2204	-	3,3,3	0.73	0	3,3,3	1.33	0
4	ACY	A	2205	-	3,3,3	0.88	0	3,3,3	1.34	0
4	ACY	D	2202	-	3,3,3	0.79	0	3,3,3	1.02	0
5	GOL	B	2305	-	5,5,5	0.29	0	5,5,5	0.24	0
5	GOL	D	2302[B]	-	5,5,5	0.44	0	5,5,5	0.45	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	ACY	D	2206	-	3,3,3	0.93	0	3,3,3	0.76	0
5	GOL	B	2308	-	5,5,5	0.36	0	5,5,5	0.74	0
5	GOL	B	2306	-	5,5,5	0.51	0	5,5,5	2.07	2 (40%)
5	GOL	C	2301[B]	-	5,5,5	0.27	0	5,5,5	0.77	0
4	ACY	D	2204	-	3,3,3	0.90	0	3,3,3	0.33	0
5	GOL	A	2304	-	5,5,5	0.45	0	5,5,5	0.46	0
5	GOL	D	2303	-	5,5,5	0.35	0	5,5,5	0.31	0
5	GOL	C	2303	-	5,5,5	0.59	0	5,5,5	0.89	0
5	GOL	D	2302[A]	-	5,5,5	0.48	0	5,5,5	0.46	0
5	GOL	B	2307[B]	-	5,5,5	0.41	0	5,5,5	0.27	0
4	ACY	A	2200[B]	-	3,3,3	0.92	0	3,3,3	1.00	0
4	ACY	C	2201[B]	-	3,3,3	1.06	0	3,3,3	0.66	0
4	ACY	A	2202	-	3,3,3	0.65	0	3,3,3	1.67	1 (33%)
4	ACY	A	2207	-	3,3,3	0.86	0	3,3,3	0.71	0
4	ACY	C	2204	-	3,3,3	0.76	0	3,3,3	0.98	0
5	GOL	A	2305	-	5,5,5	0.46	0	5,5,5	0.99	0
5	GOL	D	2301	-	5,5,5	0.35	0	5,5,5	0.65	0
5	GOL	A	2310	-	5,5,5	0.47	0	5,5,5	0.40	0
5	GOL	C	2304	-	5,5,5	0.33	0	5,5,5	0.50	0
4	ACY	A	2203	-	3,3,3	0.66	0	3,3,3	1.28	0
4	ACY	A	2206	-	3,3,3	0.85	0	3,3,3	0.62	0
5	GOL	A	2307	-	5,5,5	0.82	0	5,5,5	0.88	0
4	ACY	A	2201[B]	-	3,3,3	0.85	0	3,3,3	0.77	0
5	GOL	A	2309[B]	-	5,5,5	0.39	0	5,5,5	0.56	0
5	GOL	C	2305	-	5,5,5	0.37	0	5,5,5	0.33	0
4	ACY	C	2202	-	3,3,3	0.87	0	3,3,3	0.44	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
5	GOL	A	2303	-	-	0/4/4/4	-
5	GOL	B	2307[A]	-	-	2/4/4/4	-
5	GOL	C	2307	-	-	2/4/4/4	-
5	GOL	A	2302	-	-	0/4/4/4	-
5	GOL	A	2308	-	-	0/4/4/4	-
5	GOL	A	2309[A]	-	-	1/4/4/4	-
5	GOL	A	2301	-	-	0/4/4/4	-
5	GOL	A	2306	-	-	4/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	GOL	C	2302	-	-	1/4/4/4	-
5	GOL	D	2302[B]	-	-	4/4/4/4	-
5	GOL	B	2305	-	-	0/4/4/4	-
5	GOL	B	2308	-	-	2/4/4/4	-
5	GOL	B	2306	-	-	3/4/4/4	-
5	GOL	C	2301[B]	-	-	2/4/4/4	-
5	GOL	A	2304	-	-	0/4/4/4	-
5	GOL	D	2303	-	-	2/4/4/4	-
5	GOL	C	2303	-	-	0/4/4/4	-
5	GOL	D	2302[A]	-	-	2/4/4/4	-
5	GOL	B	2307[B]	-	-	2/4/4/4	-
5	GOL	A	2305	-	-	2/4/4/4	-
5	GOL	D	2301	-	-	2/4/4/4	-
5	GOL	A	2310	-	-	2/4/4/4	-
5	GOL	C	2304	-	-	0/4/4/4	-
5	GOL	A	2307	-	-	2/4/4/4	-
5	GOL	C	2301[A]	-	-	2/4/4/4	-
5	GOL	A	2309[B]	-	-	0/4/4/4	-
5	GOL	C	2305	-	-	2/4/4/4	-

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	B	2306	GOL	O3-C3-C2	-3.75	93.51	110.38
4	A	2202	ACY	O-C-CH3	-2.31	113.08	122.53
5	B	2306	GOL	O2-C2-C1	2.08	117.79	109.18

There are no chirality outliers.

5 of 39 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	2306	GOL	O2-C2-C3-O3
5	A	2307	GOL	C1-C2-C3-O3
5	A	2310	GOL	O1-C1-C2-C3
5	B	2306	GOL	O1-C1-C2-C3
5	B	2307[B]	GOL	C1-C2-C3-O3

There are no ring outliers.

26 monomers are involved in 68 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	2303	GOL	2	0
4	B	2201	ACY	1	0
5	C	2301[A]	GOL	2	0
5	B	2307[A]	GOL	1	0
4	D	2201	ACY	1	0
4	C	2201[A]	ACY	2	0
5	A	2309[A]	GOL	2	0
5	A	2306	GOL	6	0
4	B	2203	ACY	1	0
5	C	2302	GOL	2	0
4	A	2204	ACY	2	0
4	A	2205	ACY	1	0
5	D	2302[B]	GOL	1	0
4	D	2206	ACY	2	0
5	B	2308	GOL	1	0
5	B	2306	GOL	9	0
5	C	2301[B]	GOL	6	0
4	D	2204	ACY	3	0
5	A	2304	GOL	1	0
5	D	2302[A]	GOL	4	0
5	B	2307[B]	GOL	2	0
4	A	2200[B]	ACY	2	0
5	A	2305	GOL	7	0
5	A	2307	GOL	2	0
5	A	2309[B]	GOL	1	0
5	C	2305	GOL	5	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	A	684/696 (98%)	-0.47	8 (1%) 76 80	12, 21, 33, 51	24 (3%)
1	B	682/696 (97%)	0.16	32 (4%) 36 39	12, 28, 52, 64	28 (4%)
1	C	683/696 (98%)	-0.34	11 (1%) 70 74	11, 22, 34, 55	29 (4%)
1	D	681/696 (97%)	-0.01	15 (2%) 62 66	11, 26, 44, 58	25 (3%)
All	All	2730/2784 (98%)	-0.17	66 (2%) 59 63	11, 23, 44, 64	106 (3%)

The worst 5 of 66 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	487	PRO	4.0
1	B	645	LEU	3.7
1	D	411	ASP	3.7
1	D	574	TRP	3.6
1	B	804	LEU	3.6

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 oligosaccharides 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. 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($\text{\AA}^2$)	Q<0.9
4	ACY	D	2204	4/4	0.70	0.20	43,44,44,45	0
4	ACY	A	2205	4/4	0.72	0.19	34,35,37,37	0
4	ACY	C	2202	4/4	0.73	0.21	51,51,51,51	0
4	ACY	D	2201	4/4	0.76	0.20	41,41,42,43	0
4	ACY	A	2207	4/4	0.77	0.20	46,46,47,47	0
4	ACY	A	2206	4/4	0.77	0.17	48,48,49,49	0
4	ACY	C	2205	4/4	0.80	0.15	36,37,38,39	0
5	GOL	B	2307[A]	6/6	0.80	0.17	20,32,33,36	6
5	GOL	B	2307[B]	6/6	0.80	0.17	39,42,42,44	6
4	ACY	C	2203	4/4	0.81	0.18	44,44,44,45	0
5	GOL	D	2303	6/6	0.81	0.16	62,63,64,64	0
4	ACY	A	2202	4/4	0.82	0.15	37,38,39,40	0
4	ACY	B	2203	4/4	0.82	0.15	43,43,44,44	0
4	ACY	B	2204	4/4	0.83	0.15	50,50,50,51	0
4	ACY	C	2207	4/4	0.83	0.17	42,43,43,44	0
5	GOL	A	2307	6/6	0.83	0.17	38,43,45,45	0
5	GOL	A	2303	6/6	0.84	0.12	30,37,39,42	0
5	GOL	C	2301[B]	6/6	0.85	0.11	35,41,41,42	6
5	GOL	C	2301[A]	6/6	0.85	0.11	12,15,16,21	6
4	ACY	C	2204	4/4	0.86	0.11	38,38,38,39	0
4	ACY	A	2203	4/4	0.86	0.13	41,41,41,41	0
5	GOL	C	2305	6/6	0.86	0.11	26,33,35,41	0
4	ACY	B	2202	4/4	0.86	0.15	41,42,43,43	0
5	GOL	C	2302	6/6	0.87	0.12	21,35,37,41	0
5	GOL	B	2308	6/6	0.88	0.12	36,40,42,43	0
5	GOL	A	2309[A]	6/6	0.88	0.14	15,20,23,25	6
5	GOL	A	2309[B]	6/6	0.88	0.14	33,36,37,37	6
5	GOL	B	2306	6/6	0.88	0.12	26,37,38,39	0
4	ACY	D	2202	4/4	0.88	0.12	45,46,46,46	0
5	GOL	D	2302[A]	6/6	0.88	0.10	22,24,25,25	6
5	GOL	D	2302[B]	6/6	0.88	0.10	35,36,37,37	6
5	GOL	A	2308	6/6	0.88	0.12	50,53,54,55	0
4	ACY	D	2203	4/4	0.89	0.13	50,51,51,51	0
4	ACY	B	2201	4/4	0.89	0.12	37,37,37,38	0
4	ACY	A	2201[B]	4/4	0.90	0.18	30,30,31,31	4
4	ACY	A	2201[A]	4/4	0.90	0.18	42,42,42,42	4
5	GOL	C	2307	6/6	0.90	0.11	32,36,38,38	0
5	GOL	A	2305	6/6	0.91	0.13	20,31,35,41	0
5	GOL	A	2306	6/6	0.91	0.14	24,34,35,39	0
5	GOL	A	2304	6/6	0.91	0.12	22,31,35,36	0
4	ACY	D	2206	4/4	0.92	0.12	36,36,37,37	0
4	ACY	A	2204	4/4	0.92	0.15	43,44,44,44	0
5	GOL	D	2301	6/6	0.92	0.09	29,29,31,35	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
5	GOL	A	2310	6/6	0.93	0.09	26,37,40,47	0
5	GOL	A	2301	6/6	0.93	0.08	25,32,33,34	0
5	GOL	C	2303	6/6	0.93	0.09	27,28,34,37	0
5	GOL	A	2302	6/6	0.94	0.08	24,26,30,31	0
5	GOL	C	2304	6/6	0.94	0.07	28,29,30,31	0
6	CL	A	2402	1/1	0.94	0.12	41,41,41,41	0
5	GOL	B	2305	6/6	0.95	0.06	27,30,32,32	0
4	ACY	C	2201[A]	4/4	0.96	0.07	15,16,17,17	4
4	ACY	C	2201[B]	4/4	0.96	0.07	17,18,19,19	4
4	ACY	A	2200[A]	4/4	0.96	0.06	17,17,17,19	4
4	ACY	A	2200[B]	4/4	0.96	0.06	16,16,17,18	4
6	CL	C	2401	1/1	0.98	0.11	34,34,34,34	0
3	CA	B	1501	1/1	0.99	0.02	22,22,22,22	0
3	CA	C	1501	1/1	0.99	0.03	22,22,22,22	0
3	CA	C	1502	1/1	0.99	0.02	20,20,20,20	0
3	CA	C	1067	1/1	0.99	0.02	20,20,20,20	0
3	CA	D	1501	1/1	0.99	0.03	21,21,21,21	0
6	CL	B	2401	1/1	0.99	0.02	25,25,25,25	0
2	FE2	B	1500	1/1	0.99	0.03	24,24,24,24	0
6	CL	C	2402	1/1	0.99	0.02	22,22,22,22	0
2	FE2	D	1500	1/1	1.00	0.02	23,23,23,23	0
3	CA	A	1501	1/1	1.00	0.01	22,22,22,22	0
6	CL	A	2401	1/1	1.00	0.04	22,22,22,22	0
3	CA	A	1502	1/1	1.00	0.01	20,20,20,20	0
3	CA	A	1067	1/1	1.00	0.01	19,19,19,19	0
2	FE2	A	1500	1/1	1.00	0.01	19,19,19,19	0
2	FE2	C	1500	1/1	1.00	0.02	20,20,20,20	0
6	CL	D	2401	1/1	1.00	0.03	26,26,26,26	0

6.5 Other polymers

There are no such residues in this entry.