



Full wwPDB X-ray Structure Validation Report ⓘ

Apr 9, 2024 – 06:11 PM EDT

PDB ID : 8GJV
Title : Chemical synthesis of maxamycins: Intermediate compound 10
Authors : Stanfield, R.L.; Moore, M.J.; Boger, D.L.
Deposited on : 2023-03-16
Resolution : 0.90 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

<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 : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : 2.36.1
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.1

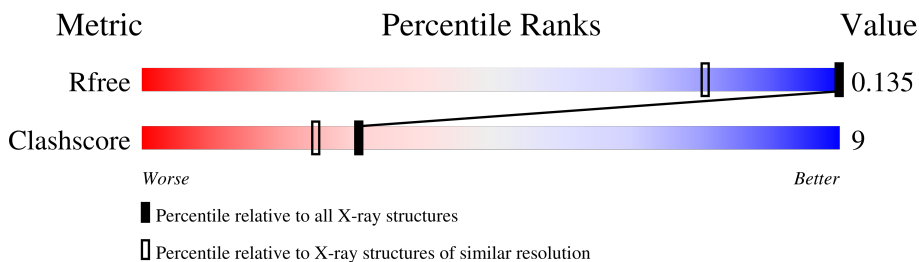
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 0.90 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}	130704	1061 (1.04-0.76)
Clashscore	141614	1132 (1.04-0.76)

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 $\leq 5\%$. 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	8	50% 50%
1	B	8	38% 38% 25%
1	C	8	38% 50% 12%
1	D	8	38% 50% 12%

2 Entry composition [i](#)

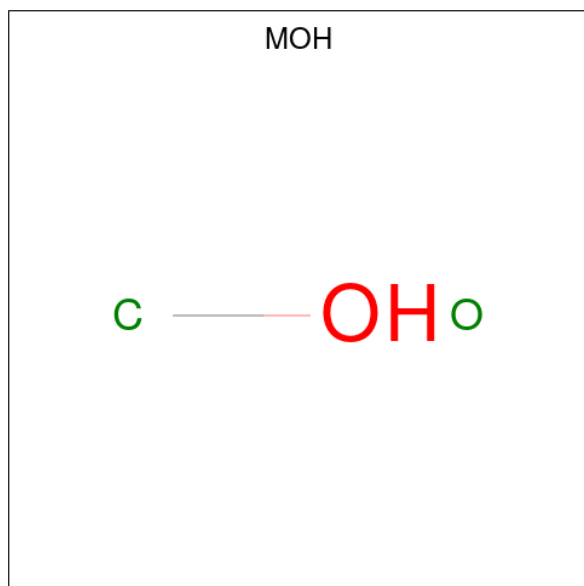
There are 3 unique types of molecules in this entry. The entry contains 1295 atoms, of which 708 are hydrogens and 0 are deuteriums.

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 Intermediate compound 10 for maxamycins synthesis.

Mol	Chain	Residues	Atoms								ZeroOcc	AltConf	Trace
			Total	C	Cl	H	N	O	S	Si			
1	A	8	Total 240	C 87	Cl 2	H 123	N 8	O 17	S 1	Si 2	0	2	0
1	B	8	Total 266	C 95	Cl 2	H 141	N 8	O 17	S 1	Si 2	0	3	0
1	C	8	Total 263	C 94	Cl 2	H 138	N 8	O 17	S 1	Si 3	0	2	0
1	D	8	Total 232	C 85	Cl 2	H 117	N 8	O 17	S 1	Si 2	0	1	0

- Molecule 2 is METHANOL (three-letter code: MOH) (formula: CH₄O).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
2	A	1	Total 6	C 1	H 4	O 1	0	0
2	A	1	Total 6	C 1	H 4	O 1	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total 6	C 1	H 4	O 1	0	0
2	A	1	Total 6	C 1	H 4	O 1	0	0
2	A	1	Total 6	C 1	H 4	O 1	0	0
2	A	1	Total 6	C 1	H 4	O 1	0	0
2	A	1	Total 6	C 1	H 4	O 1	0	0
2	A	1	Total 6	C 1	H 4	O 1	0	0
2	A	1	Total 6	C 1	H 4	O 1	0	0
2	B	1	Total 6	C 1	H 4	O 1	0	0
2	B	1	Total 6	C 1	H 4	O 1	0	0
2	B	1	Total 6	C 1	H 4	O 1	0	0
2	B	1	Total 6	C 1	H 4	O 1	0	0
2	B	1	Total 6	C 1	H 4	O 1	0	0
2	B	1	Total 6	C 1	H 4	O 1	0	0
2	B	1	Total 6	C 1	H 4	O 1	0	0
2	B	1	Total 6	C 1	H 4	O 1	0	0
2	B	1	Total 6	C 1	H 4	O 1	0	0
2	B	1	Total 6	C 1	H 4	O 1	0	0
2	B	1	Total 6	C 1	H 4	O 1	0	0
2	B	1	Total 6	C 1	H 4	O 1	0	0
2	B	1	Total 6	C 1	H 4	O 1	0	0
2	C	1	Total 6	C 1	H 4	O 1	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	C	1	Total 6	C 1	H 4	O 1	0	0
2	C	1	Total 6	C 1	H 4	O 1	0	0
2	C	1	Total 6	C 1	H 4	O 1	0	0
2	C	1	Total 6	C 1	H 4	O 1	0	0
2	C	1	Total 6	C 1	H 4	O 1	0	0
2	C	1	Total 6	C 1	H 4	O 1	0	0
2	C	1	Total 6	C 1	H 4	O 1	0	0
2	C	1	Total 6	C 1	H 4	O 1	0	0
2	C	1	Total 6	C 1	H 4	O 1	0	0
2	C	1	Total 6	C 1	H 4	O 1	0	0
2	C	1	Total 6	C 1	H 4	O 1	0	0
2	D	1	Total 6	C 1	H 4	O 1	0	0
2	D	1	Total 6	C 1	H 4	O 1	0	0
2	D	1	Total 6	C 1	H 4	O 1	0	0
2	D	1	Total 10	C 2	H 7	O 1	0	1
2	D	1	Total 6	C 1	H 4	O 1	0	0
2	D	1	Total 6	C 1	H 4	O 1	0	0
2	D	1	Total 6	C 1	H 4	O 1	0	0
2	D	1	Total 10	C 2	H 7	O 1	0	1
2	D	1	Total 10	C 2	H 7	O 1	0	1

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
2	D	1	6	1	4	1	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	4	Total 4	O 4	0	0
3	B	1	Total 1	O 1	0	0
3	C	3	Total 3	O 3	0	0
3	D	4	Total 4	O 4	0	0

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: Intermediate compound 10 for maxamycins synthesis

Chain A: 




- Molecule 1: Intermediate compound 10 for maxamycins synthesis

Chain B: 



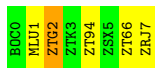
- Molecule 1: Intermediate compound 10 for maxamycins synthesis

Chain C: 



- Molecule 1: Intermediate compound 10 for maxamycins synthesis

Chain D: 



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	23.58Å 19.69Å 51.82Å 90.00° 96.61° 90.00°	Depositor
Resolution (Å)	25.75 – 0.90 25.74 – 0.90	Depositor EDS
% Data completeness (in resolution range)	99.4 (25.75-0.90) 99.5 (25.74-0.90)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.36 (at 0.90Å)	Xtrriage
Refinement program	REFMAC 5.8.0267	Depositor
R, R_{free}	0.118 , 0.132 0.125 , 0.135	Depositor DCC
R_{free} test set	1772 reflections (4.97%)	wwPDB-VP
Wilson B-factor (Å ²)	5.7	Xtrriage
Anisotropy	0.362	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 50.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.99	EDS
Total number of atoms	1295	wwPDB-VP
Average B, all atoms (Å ²)	10.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 45.29 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.3497e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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: BOC, ZT9, ZTK, MLU, MOH, ZT6, ZTG, ZSX, ZRJ

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).

There are no protein, RNA or DNA chains available to summarize Z scores of covalent bonds and angles.

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	117	123	22	0	0
1	B	125	141	22	2	0
1	C	125	138	22	1	0
1	D	115	117	22	1	0
2	A	18	36	0	0	0
2	B	26	52	0	1	0
2	C	24	48	0	0	0
2	D	25	53	0	3	0
3	A	4	0	0	0	0
3	B	1	0	0	0	0
3	C	3	0	0	0	0
3	D	4	0	0	0	0
All	All	587	708	88	6	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 (6) 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:B:7[A]:ZRJ:C2	2:B:106:MOH:C	2.62	0.77
2:D:104[A]:MOH:C	2:D:109[A]:MOH:C	2.64	0.75
2:D:104[B]:MOH:C	2:D:109[B]:MOH:C	2.94	0.46
2:D:102:MOH:C	2:D:108:MOH:O	2.66	0.44
1:C:6[B]:ZT6:C9	1:D:2:ZTG:O	2.69	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

There are no protein backbone outliers to report in this entry.

5.3.2 Protein sidechains [i](#)

There are no protein residues with a non-rotameric sidechain to report in this entry.

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

36 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	ZT9	C	4[B]	-	10,12,13	1.39	2 (20%)	12,15,17	2.12	4 (33%)
1	ZTG	A	2[A]	-	22,24,25	1.17	2 (9%)	31,35,37	1.30	4 (12%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	ZSX	B	5	1	11,12,13	0.82	0	12,15,17	0.68	0
1	ZT9	A	4[B]	-	10,12,13	1.80	1 (10%)	12,15,17	2.13	2 (16%)
1	ZT6	B	6[A]	-	22,24,25	2.04	5 (22%)	31,35,37	1.81	8 (25%)
1	ZT9	C	4[A]	-	10,12,13	1.90	2 (20%)	12,15,17	1.91	4 (33%)
1	ZRJ	C	7	1	18,19,19	0.77	0	26,27,27	0.94	1 (3%)
1	MLU	B	1	1	7,8,9	0.74	0	6,9,11	1.23	1 (16%)
1	ZT9	A	4[A]	-	10,12,13	1.84	1 (10%)	12,15,17	1.59	2 (16%)
1	ZSX	C	5	1	11,12,13	1.13	1 (9%)	12,15,17	0.97	0
1	ZT6	C	6[B]	-	22,24,25	0.93	1 (4%)	31,35,37	0.88	0
1	ZSX	A	5	1	11,12,13	0.77	0	12,15,17	0.83	0
1	ZTK	B	3	1	4,6,7	0.64	0	2,6,8	0.72	0
1	ZRJ	B	7[B]	-	18,19,19	1.02	1 (5%)	26,27,27	1.29	2 (7%)
1	MLU	A	1	1	7,8,9	0.78	0	6,9,11	0.84	0
1	ZT6	C	6[A]	-	22,24,25	1.27	3 (13%)	31,35,37	1.11	2 (6%)
1	ZRJ	B	7[A]	-	18,19,19	0.87	1 (5%)	26,27,27	1.39	2 (7%)
1	MLU	D	1	1	7,8,9	0.54	0	6,9,11	1.30	2 (33%)
1	ZTG	D	2	1	22,24,25	1.36	2 (9%)	31,35,37	0.91	2 (6%)
1	ZT9	D	4[B]	-	10,12,13	2.15	1 (10%)	12,15,17	1.53	2 (16%)
1	ZTG	C	2	1	22,24,25	0.74	0	31,35,37	0.79	1 (3%)
1	ZT9	D	4[A]	-	10,12,13	1.63	1 (10%)	12,15,17	1.79	2 (16%)
1	ZRJ	D	7	1	18,19,19	0.49	0	26,27,27	0.81	1 (3%)
1	ZRJ	A	7	1	18,19,19	0.55	0	26,27,27	1.00	1 (3%)
1	ZSX	D	5	1	11,12,13	0.76	0	12,15,17	0.80	0
1	ZTG	B	2	1	22,24,25	1.00	1 (4%)	31,35,37	1.20	7 (22%)
1	ZT9	B	4[B]	-	10,12,13	0.93	1 (10%)	12,15,17	1.79	1 (8%)
1	ZT6	D	6	1	22,24,25	1.25	3 (13%)	31,35,37	1.41	4 (12%)
1	ZT6	A	6	1	22,24,25	1.39	4 (18%)	31,35,37	1.45	3 (9%)
1	ZT9	B	4[A]	-	10,12,13	1.35	2 (20%)	12,15,17	1.51	1 (8%)
1	ZTK	D	3	1	4,6,7	0.54	0	2,6,8	1.10	0
1	MLU	C	1	1	7,8,9	0.60	0	6,9,11	0.87	0
1	ZTK	C	3	1	4,6,7	0.56	0	2,6,8	0.89	0
1	ZTG	A	2[B]	-	22,24,25	1.18	2 (9%)	31,35,37	1.14	4 (12%)
1	ZT6	B	6[B]	-	22,24,25	1.54	4 (18%)	31,35,37	2.34	10 (32%)
1	ZTK	A	3	1	4,6,7	0.43	0	2,6,8	0.79	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the

Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns.
'-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	ZT9	C	4[B]	-	-	5/6/8/10	0/1/1/1
1	ZTG	A	2[A]	-	-	2/31/33/35	0/1/1/1
1	ZSX	B	5	1	-	0/6/8/10	0/1/1/1
1	ZT9	A	4[B]	-	-	4/6/8/10	0/1/1/1
1	ZT6	B	6[A]	-	-	2/31/33/35	0/1/1/1
1	ZT9	C	4[A]	-	-	5/6/8/10	0/1/1/1
1	ZRJ	C	7	1	-	2/17/17/17	0/1/1/1
1	MLU	B	1	1	-	0/5/8/10	-
1	ZT9	A	4[A]	-	-	4/6/8/10	0/1/1/1
1	ZSX	C	5	1	-	0/6/8/10	0/1/1/1
1	ZT6	C	6[B]	-	-	2/31/33/35	0/1/1/1
1	ZSX	A	5	1	-	0/6/8/10	0/1/1/1
1	ZTK	B	3	1	-	0/3/5/7	-
1	ZRJ	B	7[B]	-	-	2/17/17/17	0/1/1/1
1	MLU	A	1	1	-	0/5/8/10	-
1	ZT6	C	6[A]	-	-	1/31/33/35	0/1/1/1
1	ZRJ	B	7[A]	-	-	2/17/17/17	0/1/1/1
1	MLU	D	1	1	-	1/5/8/10	-
1	ZTG	D	2	1	-	1/31/33/35	0/1/1/1
1	ZT9	D	4[B]	-	-	4/6/8/10	0/1/1/1
1	ZTG	C	2	1	-	1/31/33/35	0/1/1/1
1	ZT9	D	4[A]	-	-	4/6/8/10	0/1/1/1
1	ZRJ	D	7	1	-	2/17/17/17	0/1/1/1
1	ZRJ	A	7	1	-	2/17/17/17	0/1/1/1
1	ZSX	D	5	1	-	0/6/8/10	0/1/1/1
1	ZTG	B	2	1	-	2/31/33/35	0/1/1/1
1	ZT9	B	4[B]	-	-	4/6/8/10	0/1/1/1
1	ZT6	D	6	1	-	1/31/33/35	0/1/1/1
1	ZT6	A	6	1	-	4/31/33/35	0/1/1/1
1	ZT9	B	4[A]	-	-	4/6/8/10	0/1/1/1
1	ZTK	D	3	1	-	0/3/5/7	-
1	MLU	C	1	1	-	1/5/8/10	-
1	ZTK	C	3	1	-	0/3/5/7	-
1	ZTG	A	2[B]	-	-	0/31/33/35	0/1/1/1
1	ZT6	B	6[B]	-	-	2/31/33/35	0/1/1/1
1	ZTK	A	3	1	-	0/3/5/7	-

All (41) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	6[A]	ZT6	SI-C1	6.65	2.07	1.88
1	D	4[B]	ZT9	O4-C7	6.59	1.62	1.42
1	A	4[A]	ZT9	O4-C7	5.32	1.58	1.42
1	A	4[B]	ZT9	O4-C7	5.19	1.58	1.42
1	C	4[A]	ZT9	O4-C7	5.10	1.58	1.42
1	D	4[A]	ZT9	O4-C7	4.87	1.57	1.42
1	D	2	ZTG	CZ-CE1	-4.64	1.35	1.39
1	C	6[A]	ZT6	SI-ODE	4.34	1.77	1.65
1	B	6[A]	ZT6	SI-C7	-4.02	1.77	1.88
1	B	6[B]	ZT6	SI-C7	3.65	1.98	1.88
1	B	7[B]	ZRJ	OD2-C2	-3.51	1.32	1.42
1	B	6[B]	ZT6	SI-C4	-3.49	1.78	1.88
1	B	4[A]	ZT9	O4-C7	3.42	1.53	1.42
1	B	6[A]	ZT6	ODE-CB	-3.38	1.39	1.43
1	B	6[B]	ZT6	ODE-CB	-3.38	1.39	1.43
1	A	6	ZT6	C5-C4	3.36	1.66	1.53
1	D	6	ZT6	SI-C7	3.22	1.97	1.88
1	C	4[B]	ZT9	O4-C7	3.05	1.51	1.42
1	A	2[A]	ZTG	OC-CB	-2.99	1.39	1.43
1	A	2[B]	ZTG	OC-CB	-2.99	1.39	1.43
1	A	6	ZT6	C2-C1	-2.90	1.41	1.53
1	A	2[A]	ZTG	CZ-CE1	-2.78	1.36	1.39
1	A	2[B]	ZTG	CZ-CE1	-2.78	1.36	1.39
1	B	7[A]	ZRJ	OD2-C2	-2.69	1.34	1.42
1	C	5	ZSX	CA-C	2.61	1.56	1.51
1	D	6	ZT6	ODE-CB	-2.53	1.40	1.43
1	D	2	ZTG	C6-C4	-2.49	1.43	1.53
1	C	6[A]	ZT6	ODE-CB	-2.46	1.40	1.43
1	C	6[B]	ZT6	ODE-CB	-2.46	1.40	1.43
1	A	6	ZT6	C6-C4	-2.38	1.43	1.53
1	C	6[A]	ZT6	C9-C7	-2.30	1.44	1.53
1	B	6[A]	ZT6	OH-CZ	2.29	1.41	1.36
1	B	6[B]	ZT6	OH-CZ	2.29	1.41	1.36
1	B	6[A]	ZT6	C6-C4	-2.27	1.44	1.53
1	A	6	ZT6	ODE-CB	-2.26	1.40	1.43
1	C	4[A]	ZT9	C1-CA	2.26	1.55	1.52
1	C	4[B]	ZT9	C1-CA	2.26	1.55	1.52
1	B	4[A]	ZT9	CA-C	2.25	1.54	1.51
1	B	4[B]	ZT9	CA-C	2.25	1.54	1.51
1	D	6	ZT6	C9-C7	-2.22	1.44	1.53
1	B	2	ZTG	CZ-CE1	-2.08	1.37	1.39

All (73) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	6[B]	ZT6	C6-C4-C5	-6.78	89.01	110.50
1	B	6[B]	ZT6	SI-C4-C6	-6.72	92.79	113.81
1	A	4[B]	ZT9	C7-O4-C4	-6.19	104.08	117.51
1	B	4[B]	ZT9	C7-O4-C4	-5.54	105.48	117.51
1	B	7[A]	ZRJ	C2-OD2-CD2	5.48	129.41	117.51
1	D	4[A]	ZT9	C7-O4-C4	-5.41	105.77	117.51
1	C	4[B]	ZT9	C7-O4-C4	-4.88	106.93	117.51
1	B	7[B]	ZRJ	C2-OD2-CD2	4.77	127.86	117.51
1	B	4[A]	ZT9	C7-O4-C4	-4.39	107.98	117.51
1	D	4[B]	ZT9	C7-O4-C4	-4.35	108.08	117.51
1	A	6	ZT6	SI-C1-C2	4.17	126.83	113.81
1	D	6	ZT6	C7-SI-C4	3.89	125.22	111.44
1	B	6[A]	ZT6	SI-C7-C9	-3.86	101.74	113.81
1	A	6	ZT6	C7-SI-C4	-3.82	97.94	111.44
1	B	6[A]	ZT6	C7-SI-C4	3.80	124.88	111.44
1	A	4[A]	ZT9	C7-O4-C4	-3.76	109.35	117.51
1	C	4[A]	ZT9	C7-O4-C4	-3.69	109.50	117.51
1	B	6[A]	ZT6	SI-C4-C6	3.35	124.27	113.81
1	B	6[A]	ZT6	SI-C1-C3	-3.21	103.76	113.81
1	A	2[A]	ZTG	C9-C7-C8	3.20	120.65	110.50
1	B	6[B]	ZT6	C1-SI-C4	3.17	122.68	111.44
1	A	2[A]	ZTG	C6-C4-C5	3.13	120.42	110.50
1	D	6	ZT6	C6-C4-C5	3.11	120.36	110.50
1	B	6[B]	ZT6	C7-SI-C1	-3.03	100.72	111.44
1	C	6[A]	ZT6	SI-C1-C3	-2.85	104.90	113.81
1	B	6[A]	ZT6	CD1-CE1-CZ	-2.82	119.28	120.91
1	B	6[B]	ZT6	CD1-CE1-CZ	-2.82	119.28	120.91
1	B	6[B]	ZT6	SI-C7-C9	2.72	122.30	113.81
1	B	6[A]	ZT6	CE2-CZ-CE1	2.68	121.15	118.55
1	B	6[B]	ZT6	CE2-CZ-CE1	2.68	121.15	118.55
1	B	6[B]	ZT6	SI-C1-C3	-2.67	105.47	113.81
1	B	6[A]	ZT6	C1-SI-C4	-2.66	102.04	111.44
1	C	4[A]	ZT9	C5-C6-C1	-2.61	118.57	121.20
1	C	4[B]	ZT9	C5-C6-C1	-2.61	118.57	121.20
1	D	6	ZT6	CD1-CE1-CZ	-2.58	119.42	120.91
1	B	2	ZTG	C3-C1-C2	-2.58	102.33	110.50
1	C	4[A]	ZT9	C5-C4-C3	-2.52	116.29	120.18
1	C	4[B]	ZT9	C5-C4-C3	-2.52	116.29	120.18
1	D	7	ZRJ	CB-CA-C	2.52	114.09	109.00
1	C	6[A]	ZT6	C6-C4-C5	2.51	118.43	110.50
1	C	2	ZTG	O-C-CA	-2.49	118.26	124.78
1	B	1	MLU	CN-N-CA	2.45	121.27	113.64

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	6[B]	ZT6	SI-C1-C2	2.45	121.47	113.81
1	A	4[A]	ZT9	C5-C6-C1	-2.35	118.83	121.20
1	A	4[B]	ZT9	C5-C6-C1	-2.35	118.83	121.20
1	D	2	ZTG	O-C-CA	-2.32	118.71	124.78
1	B	2	ZTG	C9-C7-C8	-2.29	103.25	110.50
1	D	1	MLU	O-C-CA	-2.23	118.94	124.78
1	A	2[B]	ZTG	C6-C4-C5	2.23	117.55	110.50
1	C	4[A]	ZT9	C6-C5-C4	2.22	122.45	119.73
1	C	4[B]	ZT9	C6-C5-C4	2.22	122.45	119.73
1	D	2	ZTG	CD2-CE2-CZ	-2.19	118.26	120.50
1	B	6[A]	ZT6	CG-CB-CA	-2.17	104.41	111.39
1	B	6[B]	ZT6	CG-CB-CA	-2.17	104.41	111.39
1	A	2[A]	ZTG	CD2-CE2-CZ	-2.15	118.29	120.50
1	A	2[B]	ZTG	CD2-CE2-CZ	-2.15	118.29	120.50
1	B	2	ZTG	CD2-CG-CD1	2.15	121.24	118.76
1	D	1	MLU	CN-N-CA	2.15	120.33	113.64
1	A	7	ZRJ	CB-CA-C	2.14	113.33	109.00
1	B	2	ZTG	CE2-CZ-CE1	2.13	120.61	118.55
1	D	4[A]	ZT9	C5-C6-C1	-2.12	119.06	121.20
1	D	4[B]	ZT9	C5-C6-C1	-2.12	119.06	121.20
1	A	2[A]	ZTG	O-C-CA	-2.11	119.26	124.78
1	A	2[B]	ZTG	O-C-CA	-2.11	119.26	124.78
1	A	2[B]	ZTG	SI-C7-C8	2.09	120.34	113.81
1	A	6	ZT6	C6-C4-C5	-2.09	103.89	110.50
1	B	2	ZTG	SI-C7-C8	2.09	120.33	113.81
1	B	2	ZTG	O-C-CA	-2.07	119.36	124.78
1	B	7[A]	ZRJ	CB-CA-C	2.06	113.18	109.00
1	B	7[B]	ZRJ	CB-CA-C	2.06	113.18	109.00
1	C	7	ZRJ	CG2-CB-CG1	2.06	121.01	118.08
1	B	2	ZTG	CE2-CD2-CG	-2.05	119.14	121.20
1	D	6	ZT6	C8-C7-C9	2.03	116.93	110.50

There are no chirality outliers.

All (64) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	C	1	MLU	O-C-CA-CB
1	D	1	MLU	O-C-CA-CB
1	C	2	ZTG	O-C-CA-CB
1	D	2	ZTG	O-C-CA-CB
1	C	6[B]	ZT6	CG-CB-ODE-SI
1	A	7	ZRJ	C-CA-CB-CG1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
1	A	7	ZRJ	C-CA-CB-CG2
1	A	4[A]	ZT9	C3-C4-O4-C7
1	A	4[B]	ZT9	C3-C4-O4-C7
1	A	4[B]	ZT9	C5-C4-O4-C7
1	B	4[A]	ZT9	C3-C4-O4-C7
1	B	4[A]	ZT9	C5-C4-O4-C7
1	B	4[B]	ZT9	C3-C4-O4-C7
1	C	4[B]	ZT9	C3-C4-O4-C7
1	C	4[B]	ZT9	C5-C4-O4-C7
1	D	4[A]	ZT9	C3-C4-O4-C7
1	D	4[A]	ZT9	C5-C4-O4-C7
1	D	4[B]	ZT9	C3-C4-O4-C7
1	A	4[A]	ZT9	C5-C4-O4-C7
1	B	4[B]	ZT9	C5-C4-O4-C7
1	C	4[A]	ZT9	C3-C4-O4-C7
1	C	4[A]	ZT9	C5-C4-O4-C7
1	D	4[B]	ZT9	C5-C4-O4-C7
1	C	7	ZRJ	C-CA-CB-CG1
1	C	7	ZRJ	C-CA-CB-CG2
1	D	7	ZRJ	C-CA-CB-CG1
1	D	7	ZRJ	C-CA-CB-CG2
1	B	2	ZTG	CG-CB-OC-SI
1	B	7[A]	ZRJ	C-CA-CB-CG1
1	B	7[A]	ZRJ	C-CA-CB-CG2
1	B	7[B]	ZRJ	C-CA-CB-CG1
1	B	7[B]	ZRJ	C-CA-CB-CG2
1	B	6[B]	ZT6	C9-C7-SI-C1
1	A	2[A]	ZTG	C5-C4-SI-C7
1	A	2[A]	ZTG	C5-C4-SI-C1
1	A	6	ZT6	C3-C1-SI-ODE
1	A	4[A]	ZT9	C2-C1-CA-N
1	A	4[A]	ZT9	C6-C1-CA-N
1	A	4[B]	ZT9	C2-C1-CA-N
1	A	4[B]	ZT9	C6-C1-CA-N
1	B	4[A]	ZT9	C2-C1-CA-N
1	B	4[B]	ZT9	C2-C1-CA-N
1	C	4[A]	ZT9	C2-C1-CA-N
1	C	4[A]	ZT9	C6-C1-CA-N
1	C	4[B]	ZT9	C2-C1-CA-N
1	C	4[B]	ZT9	C6-C1-CA-N
1	D	4[A]	ZT9	C6-C1-CA-N
1	D	4[B]	ZT9	C6-C1-CA-N

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
1	B	6[A]	ZT6	CB-ODE-SI-C4
1	B	2	ZTG	O-C-CA-CB
1	A	6	ZT6	O-C-CA-CB
1	B	6[A]	ZT6	O-C-CA-CB
1	B	6[B]	ZT6	O-C-CA-CB
1	C	6[A]	ZT6	O-C-CA-CB
1	C	6[B]	ZT6	O-C-CA-CB
1	D	6	ZT6	O-C-CA-CB
1	A	6	ZT6	C6-C4-SI-C7
1	A	6	ZT6	C3-C1-SI-C7
1	C	4[A]	ZT9	C6-C1-CA-C
1	C	4[B]	ZT9	C6-C1-CA-C
1	B	4[A]	ZT9	C6-C1-CA-N
1	B	4[B]	ZT9	C6-C1-CA-N
1	D	4[A]	ZT9	C2-C1-CA-N
1	D	4[B]	ZT9	C2-C1-CA-N

There are no ring outliers.

4 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	C	6[B]	ZT6	1	0
1	B	7[A]	ZRJ	1	0
1	D	2	ZTG	1	0
1	B	6[B]	ZT6	1	0

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

48 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
2	MOH	B	106	-	1,1,1	0.27	0	-	-	-
2	MOH	A	102	-	1,1,1	0.19	0	-	-	-
2	MOH	D	104[B]	-	1,1,1	0.22	0	-	-	-
2	MOH	A	108	-	1,1,1	0.39	0	-	-	-
2	MOH	A	105	-	1,1,1	0.10	0	-	-	-
2	MOH	C	102	-	1,1,1	0.07	0	-	-	-
2	MOH	C	110	-	1,1,1	0.32	0	-	-	-
2	MOH	D	102	-	1,1,1	0.09	0	-	-	-
2	MOH	C	103	-	1,1,1	0.01	0	-	-	-
2	MOH	D	106	-	1,1,1	0.38	0	-	-	-
2	MOH	A	109	-	1,1,1	1.56	0	-	-	-
2	MOH	C	108	-	1,1,1	0.15	0	-	-	-
2	MOH	A	106	-	1,1,1	0.42	0	-	-	-
2	MOH	D	104[A]	-	1,1,1	0.68	0	-	-	-
2	MOH	C	101	-	1,1,1	0.56	0	-	-	-
2	MOH	D	111	-	1,1,1	0.05	0	-	-	-
2	MOH	C	106	-	1,1,1	0.85	0	-	-	-
2	MOH	B	113	-	1,1,1	0.12	0	-	-	-
2	MOH	C	109	-	1,1,1	0.56	0	-	-	-
2	MOH	A	101	-	1,1,1	0.58	0	-	-	-
2	MOH	C	107	-	1,1,1	0.09	0	-	-	-
2	MOH	B	112	-	1,1,1	0.31	0	-	-	-
2	MOH	C	111	-	1,1,1	0.18	0	-	-	-
2	MOH	B	101	-	1,1,1	0.09	0	-	-	-
2	MOH	A	107	-	1,1,1	0.64	0	-	-	-
2	MOH	D	105	-	1,1,1	0.10	0	-	-	-
2	MOH	D	103	-	1,1,1	0.98	0	-	-	-
2	MOH	D	108	-	1,1,1	0.04	0	-	-	-
2	MOH	A	103	-	1,1,1	0.03	0	-	-	-
2	MOH	D	109[B]	-	1,1,1	0.45	0	-	-	-
2	MOH	A	104	-	1,1,1	0.38	0	-	-	-
2	MOH	B	111	-	1,1,1	0.35	0	-	-	-
2	MOH	D	101	-	1,1,1	1.70	0	-	-	-
2	MOH	D	109[A]	-	1,1,1	1.08	0	-	-	-
2	MOH	D	110[B]	-	1,1,1	0.32	0	-	-	-
2	MOH	B	110	-	1,1,1	0.64	0	-	-	-
2	MOH	B	107	-	1,1,1	0.02	0	-	-	-
2	MOH	C	104	-	1,1,1	0.21	0	-	-	-
2	MOH	B	102	-	1,1,1	0.11	0	-	-	-
2	MOH	D	110[A]	-	1,1,1	0.33	0	-	-	-
2	MOH	C	105	-	1,1,1	1.08	0	-	-	-
2	MOH	B	105	-	1,1,1	0.20	0	-	-	-
2	MOH	B	103	-	1,1,1	0.49	0	-	-	-

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	MOH	B	108	-	1,1,1	0.42	0	-		
2	MOH	D	107	-	1,1,1	0.13	0	-		
2	MOH	B	104	-	1,1,1	0.30	0	-		
2	MOH	C	112	-	1,1,1	0.16	0	-		
2	MOH	B	109	-	1,1,1	0.40	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.

7 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	106	MOH	1	0
2	D	104[B]	MOH	1	0
2	D	102	MOH	1	0
2	D	104[A]	MOH	1	0
2	D	108	MOH	1	0
2	D	109[B]	MOH	1	0
2	D	109[A]	MOH	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	A	0/8	-	-	-	-
1	B	0/8	-	-	-	-
1	C	0/8	-	-	-	-
1	D	0/8	-	-	-	-
All	All	0/32	-	-	-	-

There are no RSRZ outliers to report.

6.2 Non-standard residues in protein, DNA, RNA chains [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(Å ²)	Q<0.9
1	MLU	B	1	9/10	0.98	0.05	7,10,12,16	0
1	MLU	D	1	9/10	0.98	0.05	7,11,14,15	0
1	MLU	C	1	9/10	0.99	0.04	5,7,8,9	0
1	MLU	A	1	9/10	0.99	0.04	5,7,8,11	0
1	ZTG	A	2[A]	24/25	0.99	0.05	4,8,10,11	8
1	ZTG	A	2[B]	24/25	0.99	0.05	4,8,11,12	8
1	ZTG	B	2	24/25	0.99	0.06	5,12,20,21	0
1	ZTG	D	2	24/25	0.99	0.04	4,8,11,11	0
1	ZTK	A	3	7/8	0.99	0.03	4,5,9,11	0
1	ZTK	B	3	7/8	0.99	0.03	5,6,10,13	0
1	ZTK	D	3	7/8	0.99	0.03	5,6,9,11	0
1	ZSX	A	5	12/13	0.99	0.03	4,5,8,8	0
1	ZSX	B	5	12/13	0.99	0.05	3,4,8,8	0
1	ZSX	C	5	12/13	0.99	0.04	4,5,8,8	0
1	ZSX	D	5	12/13	0.99	0.04	4,4,6,6	0

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
1	ZT6	A	6	24/25	0.99	0.06	4,12,18,19	0
1	ZT6	B	6[A]	24/25	0.99	0.08	4,8,13,13	30
1	ZT6	B	6[B]	24/25	0.99	0.08	4,6,10,13	30
1	ZT6	C	6[A]	24/25	0.99	0.07	5,7,8,9	31
1	ZT6	C	6[B]	24/25	0.99	0.07	5,8,16,17	31
1	ZT6	D	6	24/25	0.99	0.05	4,9,14,15	0
1	ZRJ	A	7	19/19	0.99	0.03	6,8,13,13	0
1	ZRJ	B	7[A]	19/19	0.99	0.04	4,6,9,9	4
1	ZRJ	B	7[B]	19/19	0.99	0.04	4,6,9,9	4
1	ZRJ	C	7	19/19	0.99	0.04	5,9,15,16	0
1	ZRJ	D	7	19/19	0.99	0.04	5,9,15,15	0
1	ZT9	B	4[B]	12/13	1.00	0.05	4,4,6,6	4
1	ZT9	C	4[A]	12/13	1.00	0.05	4,5,6,6	4
1	ZT9	C	4[B]	12/13	1.00	0.05	4,5,6,6	4
1	ZT9	D	4[A]	12/13	1.00	0.05	4,4,6,6	4
1	ZT9	D	4[B]	12/13	1.00	0.05	4,4,5,6	4
1	ZTK	C	3	7/8	1.00	0.04	4,4,5,6	0
1	ZTG	C	2	24/25	1.00	0.04	5,8,11,12	0
1	ZT9	A	4[A]	12/13	1.00	0.04	3,4,6,6	4
1	ZT9	A	4[B]	12/13	1.00	0.04	3,4,6,6	4
1	ZT9	B	4[A]	12/13	1.00	0.05	4,4,7,7	4

6.3 Carbohydrates [i](#)

There are no monosaccharides 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(Å ²)	Q<0.9
2	MOH	B	112	2/2	0.80	0.21	21,21,27,31	0
2	MOH	B	109	2/2	0.82	0.26	15,16,16,16	0
2	MOH	D	108	2/2	0.84	0.26	22,25,26,26	0
2	MOH	D	111	2/2	0.86	0.12	28,29,32,33	0
2	MOH	D	104[B]	2/2	0.91	0.21	10,12,15,16	4
2	MOH	B	106	2/2	0.91	0.30	18,20,23,24	0
2	MOH	D	104[A]	2/2	0.91	0.21	7,8,10,16	4

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	MOH	C	107	2/2	0.93	0.12	25,26,27,27	0
2	MOH	D	109[A]	2/2	0.94	0.12	5,6,9,10	4
2	MOH	D	109[B]	2/2	0.94	0.12	7,7,9,10	4
2	MOH	C	112	2/2	0.94	0.15	31,40,42,42	0
2	MOH	B	113	2/2	0.95	0.20	24,28,28,28	0
2	MOH	B	108	2/2	0.95	0.19	15,23,27,29	0
2	MOH	C	108	2/2	0.95	0.26	21,22,24,26	0
2	MOH	A	109	2/2	0.95	0.11	12,13,14,14	0
2	MOH	D	110[A]	2/2	0.95	0.13	6,7,7,9	4
2	MOH	D	110[B]	2/2	0.95	0.13	5,5,7,9	4
2	MOH	A	105	2/2	0.95	0.12	16,16,17,19	0
2	MOH	C	109	2/2	0.96	0.05	20,21,22,22	0
2	MOH	B	107	2/2	0.96	0.22	10,10,17,25	0
2	MOH	B	104	2/2	0.96	0.25	15,15,16,16	0
2	MOH	B	102	2/2	0.96	0.06	13,14,15,15	0
2	MOH	B	111	2/2	0.96	0.26	13,13,18,21	0
2	MOH	B	110	2/2	0.97	0.10	9,9,11,12	0
2	MOH	A	106	2/2	0.97	0.07	19,20,20,21	0
2	MOH	A	108	2/2	0.97	0.20	12,13,13,13	0
2	MOH	A	103	2/2	0.97	0.11	10,10,12,13	0
2	MOH	D	102	2/2	0.97	0.06	10,10,11,12	0
2	MOH	D	103	2/2	0.97	0.09	10,11,12,12	0
2	MOH	C	105	2/2	0.97	0.07	12,13,13,14	0
2	MOH	A	107	2/2	0.98	0.06	10,16,16,19	0
2	MOH	D	107	2/2	0.98	0.04	13,13,13,14	0
2	MOH	C	106	2/2	0.98	0.11	12,12,16,18	0
2	MOH	D	101	2/2	0.98	0.05	15,15,15,15	0
2	MOH	C	103	2/2	0.99	0.03	8,8,8,8	0
2	MOH	C	104	2/2	0.99	0.09	8,8,8,8	0
2	MOH	A	101	2/2	0.99	0.07	7,8,10,11	0
2	MOH	B	105	2/2	0.99	0.03	10,10,11,12	0
2	MOH	D	106	2/2	0.99	0.04	7,9,9,10	0
2	MOH	B	101	2/2	0.99	0.06	8,10,10,11	0
2	MOH	A	104	2/2	0.99	0.13	12,14,15,16	0
2	MOH	B	103	2/2	0.99	0.09	6,8,9,9	0
2	MOH	C	110	2/2	0.99	0.04	17,22,22,23	0
2	MOH	C	111	2/2	0.99	0.19	9,13,14,15	0
2	MOH	C	101	2/2	0.99	0.04	8,8,11,12	0
2	MOH	C	102	2/2	0.99	0.05	9,9,10,10	0
2	MOH	A	102	2/2	1.00	0.02	9,10,11,11	0
2	MOH	D	105	2/2	1.00	0.02	8,8,9,10	0

6.5 Other polymers [i](#)

There are no such residues in this entry.