Full wwPDB X-ray Structure Validation Report (i)

Oct 11, 2023 – 02:08 PM EDT

PDB ID	:	8EKG
Title	:	MHETase variant Thr159Val, Met192Tyr, Tyr252Phe, Tyr503Trp
Authors	:	Saunders, J.W.; Frkic, R.L.; Jackson, C.J.
Deposited on	:	2022-09-20
Resolution	:	2.65 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 (i) 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 (i)) were used in the production of this report:

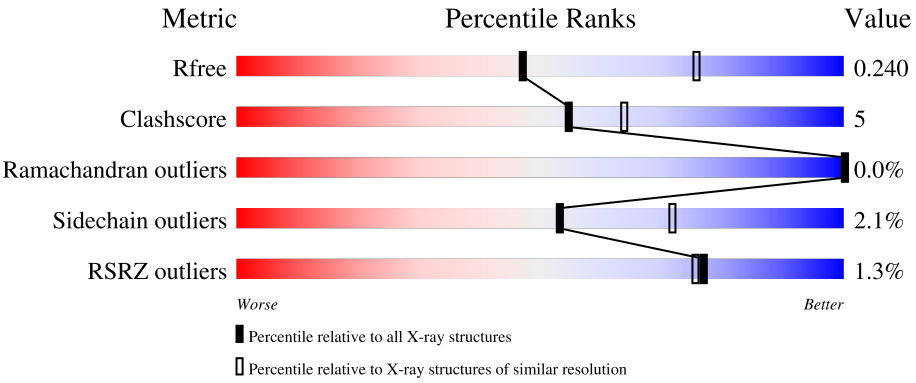
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.65 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	1332 (2.68-2.64)
Clashscore	141614	1374 (2.68-2.64)
Ramachandran outliers	138981	1349 (2.68-2.64)
Sidechain outliers	138945	1349 (2.68-2.64)
RSRZ outliers	127900	1318 (2.68-2.64)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	592	85% 9% 6%
1	B	592	81% 13% 6%
1	C	592	83% 10% 6%
1	D	592	85% 9% 6%
1	E	592	79% 15% 6%

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Mol	Chain	Length	Quality of chain
1	F	592	

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 25228 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 Mono(2-hydroxyethyl) terephthalate hydrolase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	558	Total	C	N	O	P	S	0	0	0
			4128	2583	726	791	1	27			
1	B	557	Total	C	N	O	P	S	0	0	0
			4123	2580	725	790	1	27			
1	C	557	Total	C	N	O	P	S	0	0	0
			4123	2580	725	790	1	27			
1	D	557	Total	C	N	O	P	S	0	0	0
			4123	2580	725	790	1	27			
1	E	558	Total	C	N	O	P	S	0	0	0
			4128	2583	726	791	1	27			
1	F	557	Total	C	N	O	P	S	0	0	0
			4123	2580	725	790	1	27			

There are 72 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	12	MET	-	initiating methionine	UNP A0A0K8P8E7
A	13	GLU	-	expression tag	UNP A0A0K8P8E7
A	14	ASN	-	expression tag	UNP A0A0K8P8E7
A	15	LEU	-	expression tag	UNP A0A0K8P8E7
A	16	TYR	-	expression tag	UNP A0A0K8P8E7
A	17	PHE	-	expression tag	UNP A0A0K8P8E7
A	18	GLN	-	expression tag	UNP A0A0K8P8E7
A	19	GLY	-	expression tag	UNP A0A0K8P8E7
A	159	VAL	THR	engineered mutation	UNP A0A0K8P8E7
A	192	TYR	MET	engineered mutation	UNP A0A0K8P8E7
A	252	PHE	TYR	engineered mutation	UNP A0A0K8P8E7
A	503	TRP	TYR	engineered mutation	UNP A0A0K8P8E7
B	12	MET	-	initiating methionine	UNP A0A0K8P8E7
B	13	GLU	-	expression tag	UNP A0A0K8P8E7
B	14	ASN	-	expression tag	UNP A0A0K8P8E7
B	15	LEU	-	expression tag	UNP A0A0K8P8E7
B	16	TYR	-	expression tag	UNP A0A0K8P8E7

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Chain	Residue	Modelled	Actual	Comment	Reference
B	17	PHE	-	expression tag	UNP A0A0K8P8E7
B	18	GLN	-	expression tag	UNP A0A0K8P8E7
B	19	GLY	-	expression tag	UNP A0A0K8P8E7
B	159	VAL	THR	engineered mutation	UNP A0A0K8P8E7
B	192	TYR	MET	engineered mutation	UNP A0A0K8P8E7
B	252	PHE	TYR	engineered mutation	UNP A0A0K8P8E7
B	503	TRP	TYR	engineered mutation	UNP A0A0K8P8E7
C	12	MET	-	initiating methionine	UNP A0A0K8P8E7
C	13	GLU	-	expression tag	UNP A0A0K8P8E7
C	14	ASN	-	expression tag	UNP A0A0K8P8E7
C	15	LEU	-	expression tag	UNP A0A0K8P8E7
C	16	TYR	-	expression tag	UNP A0A0K8P8E7
C	17	PHE	-	expression tag	UNP A0A0K8P8E7
C	18	GLN	-	expression tag	UNP A0A0K8P8E7
C	19	GLY	-	expression tag	UNP A0A0K8P8E7
C	159	VAL	THR	engineered mutation	UNP A0A0K8P8E7
C	192	TYR	MET	engineered mutation	UNP A0A0K8P8E7
C	252	PHE	TYR	engineered mutation	UNP A0A0K8P8E7
C	503	TRP	TYR	engineered mutation	UNP A0A0K8P8E7
D	12	MET	-	initiating methionine	UNP A0A0K8P8E7
D	13	GLU	-	expression tag	UNP A0A0K8P8E7
D	14	ASN	-	expression tag	UNP A0A0K8P8E7
D	15	LEU	-	expression tag	UNP A0A0K8P8E7
D	16	TYR	-	expression tag	UNP A0A0K8P8E7
D	17	PHE	-	expression tag	UNP A0A0K8P8E7
D	18	GLN	-	expression tag	UNP A0A0K8P8E7
D	19	GLY	-	expression tag	UNP A0A0K8P8E7
D	159	VAL	THR	engineered mutation	UNP A0A0K8P8E7
D	192	TYR	MET	engineered mutation	UNP A0A0K8P8E7
D	252	PHE	TYR	engineered mutation	UNP A0A0K8P8E7
D	503	TRP	TYR	engineered mutation	UNP A0A0K8P8E7
E	12	MET	-	initiating methionine	UNP A0A0K8P8E7
E	13	GLU	-	expression tag	UNP A0A0K8P8E7
E	14	ASN	-	expression tag	UNP A0A0K8P8E7
E	15	LEU	-	expression tag	UNP A0A0K8P8E7
E	16	TYR	-	expression tag	UNP A0A0K8P8E7
E	17	PHE	-	expression tag	UNP A0A0K8P8E7
E	18	GLN	-	expression tag	UNP A0A0K8P8E7
E	19	GLY	-	expression tag	UNP A0A0K8P8E7
E	159	VAL	THR	engineered mutation	UNP A0A0K8P8E7
E	192	TYR	MET	engineered mutation	UNP A0A0K8P8E7
E	252	PHE	TYR	engineered mutation	UNP A0A0K8P8E7

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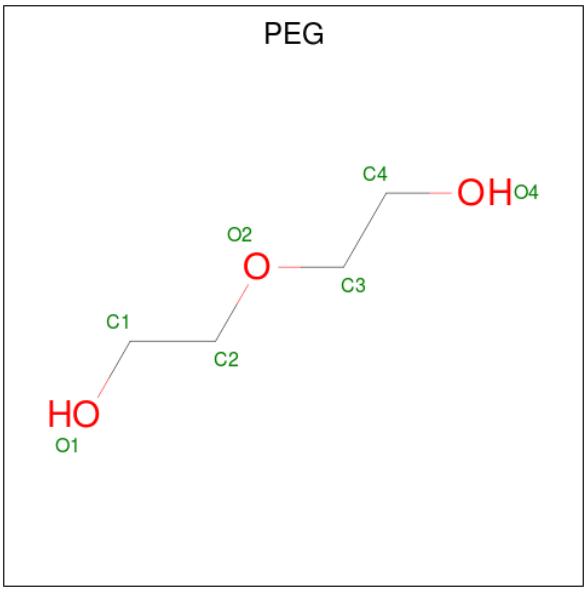
Chain	Residue	Modelled	Actual	Comment	Reference
E	503	TRP	TYR	engineered mutation	UNP A0A0K8P8E7
F	12	MET	-	initiating methionine	UNP A0A0K8P8E7
F	13	GLU	-	expression tag	UNP A0A0K8P8E7
F	14	ASN	-	expression tag	UNP A0A0K8P8E7
F	15	LEU	-	expression tag	UNP A0A0K8P8E7
F	16	TYR	-	expression tag	UNP A0A0K8P8E7
F	17	PHE	-	expression tag	UNP A0A0K8P8E7
F	18	GLN	-	expression tag	UNP A0A0K8P8E7
F	19	GLY	-	expression tag	UNP A0A0K8P8E7
F	159	VAL	THR	engineered mutation	UNP A0A0K8P8E7
F	192	TYR	MET	engineered mutation	UNP A0A0K8P8E7
F	252	PHE	TYR	engineered mutation	UNP A0A0K8P8E7
F	503	TRP	TYR	engineered mutation	UNP A0A0K8P8E7

- Molecule 2 is CALCIUM ION (three-letter code: CA) (formula: Ca).

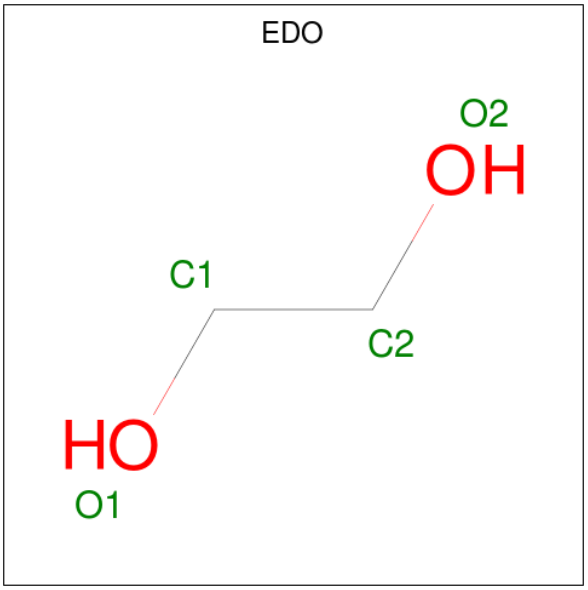
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Ca 1 1	0	0
2	B	1	Total Ca 1 1	0	0
2	C	1	Total Ca 1 1	0	0
2	D	1	Total Ca 1 1	0	0
2	E	1	Total Ca 1 1	0	0
2	F	1	Total Ca 1 1	0	0

- Molecule 3 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



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

- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



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

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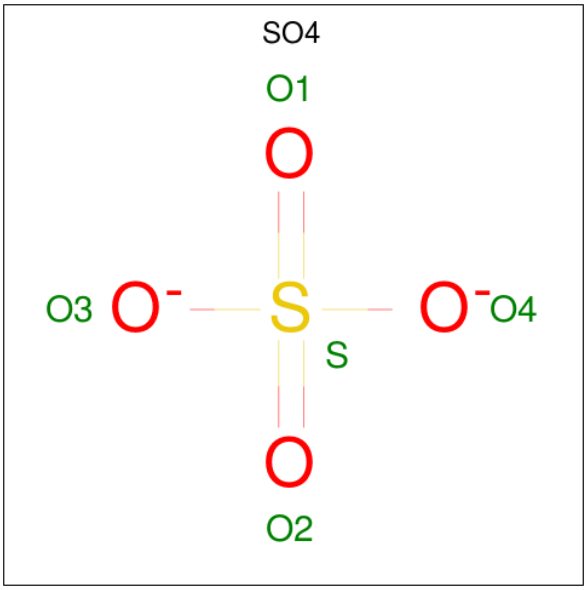
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	C	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	E	1	Total C O 4 2 2	0	0

- Molecule 5 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



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

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

- Molecule 6 is water.

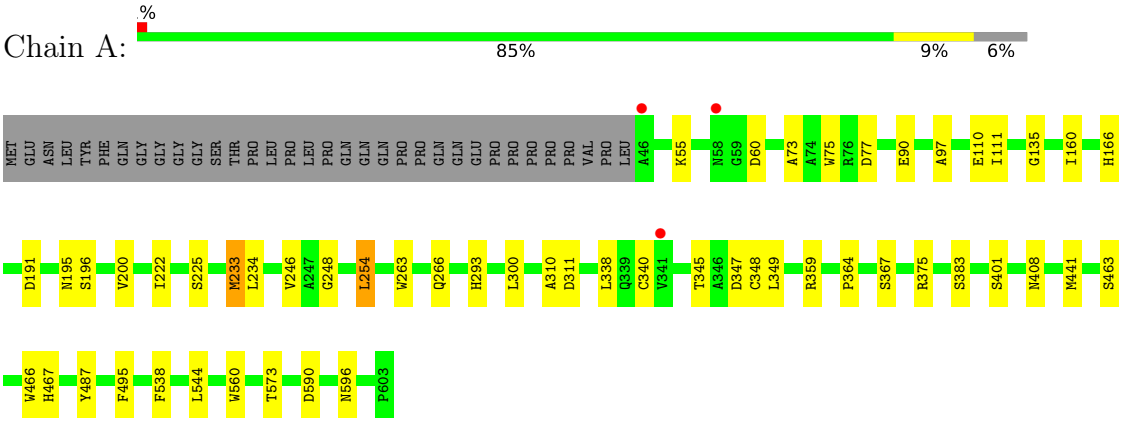
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	70	Total O 70 70	0	0
6	B	91	Total O 91 91	0	0
6	C	71	Total O 71 71	0	0
6	D	64	Total O 64 64	0	0
6	E	52	Total O 52 52	0	0
6	F	55	Total O 55 55	0	0

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.

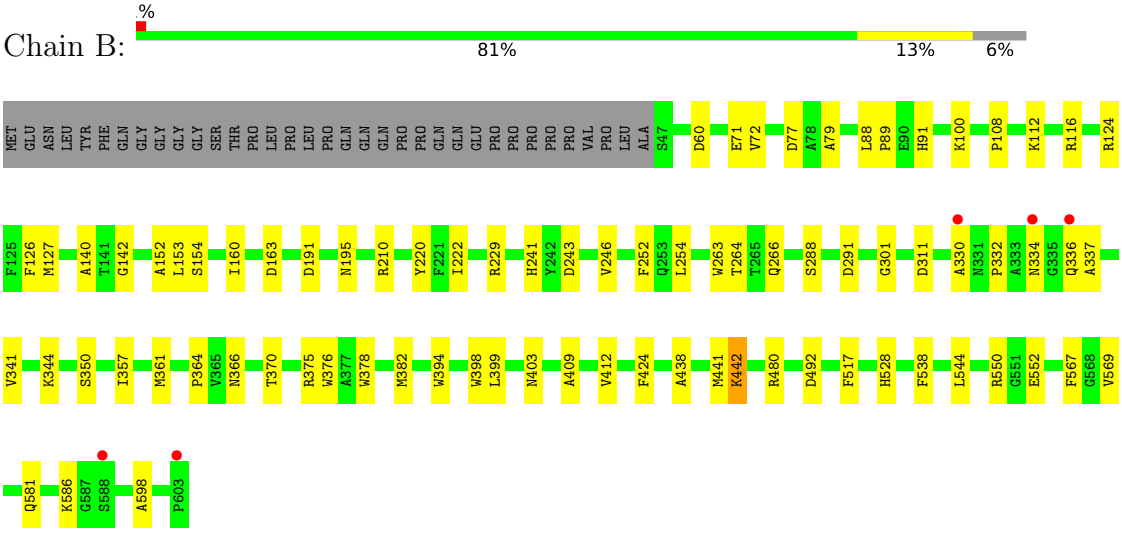
• Molecule 1: Mono(2-hydroxyethyl) terephthalate hydrolase

Chain A:



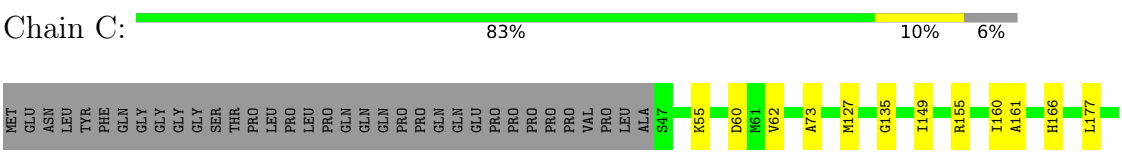
• Molecule 1: Mono(2-hydroxyethyl) terephthalate hydrolase

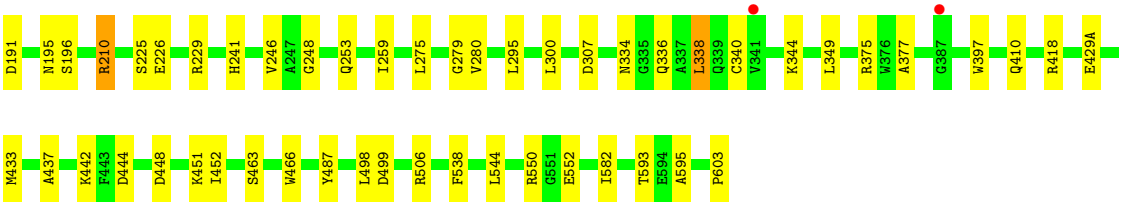
Chain B:



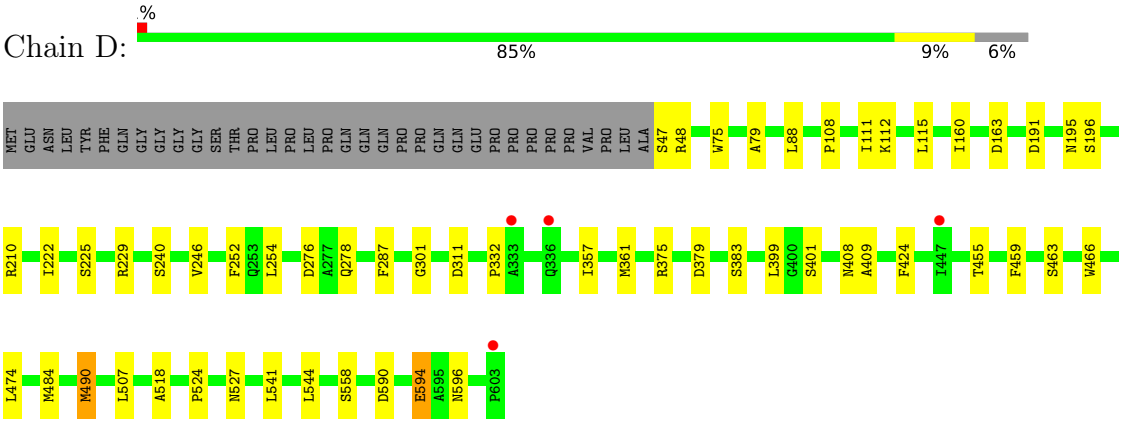
• Molecule 1: Mono(2-hydroxyethyl) terephthalate hydrolase

Chain C:

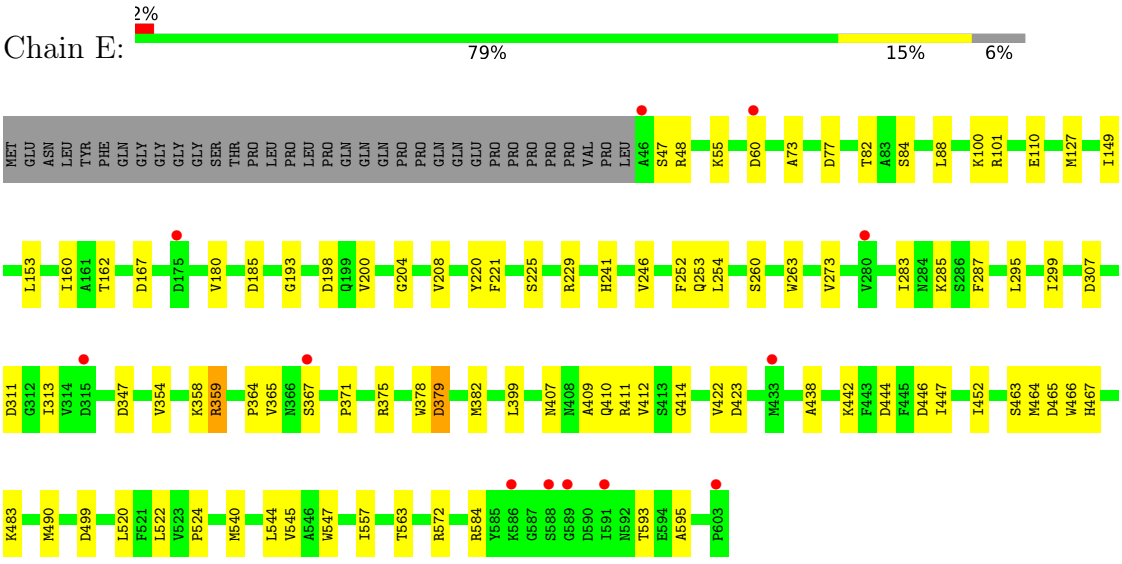




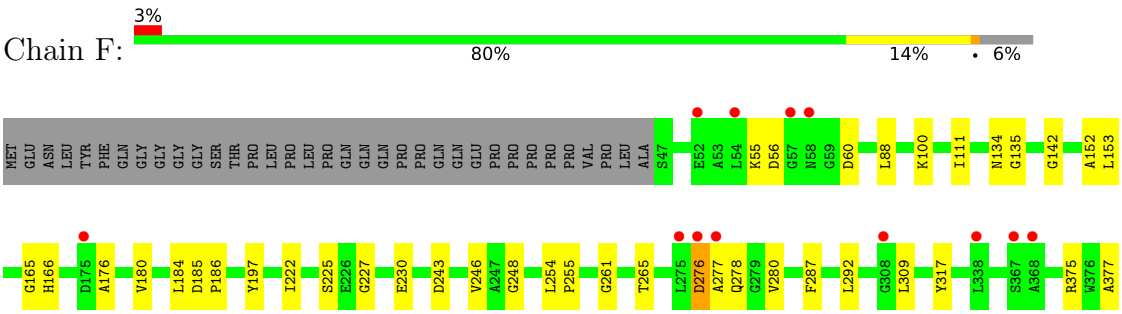
• Molecule 1: Mono(2-hydroxyethyl) terephthalate hydrolase

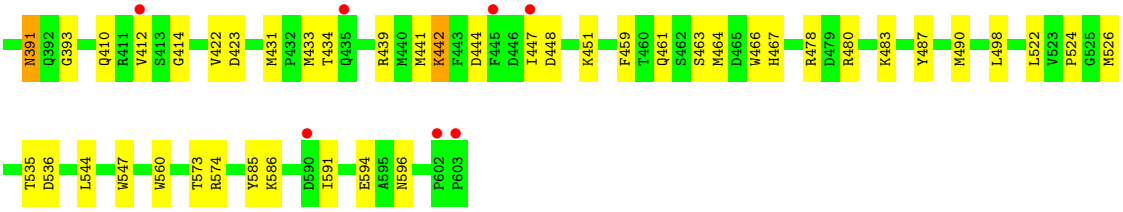


• Molecule 1: Mono(2-hydroxyethyl) terephthalate hydrolase



• Molecule 1: Mono(2-hydroxyethyl) terephthalate hydrolase




N391
Q392
G393
Q410
R411
V412
S413
G414
V422
D423
M431
P432
M433
T434
Q435
R439
M440
M441
K442
F443
D444
F445
D446
I447
D448
K451
F459
T460
Q461
S462
S463
M464
D465
W466
H467
R478
D479
R480
K483
Y487
M490
L498
L522
V523
P524
G525
M526
T535
D536
L544
W547
W560
T573
R574
Y585
K586
D590
I591
E594
A595
N596
P602
P603

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	63.97Å 120.51Å 126.29Å 90.44° 95.15° 90.20°	Depositor
Resolution (Å)	43.87 – 2.65 43.87 – 2.65	Depositor EDS
% Data completeness (in resolution range)	96.0 (43.87-2.65) 96.0 (43.87-2.65)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.43 (at 2.65Å)	Xtriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.184 , 0.241 0.183 , 0.240	Depositor DCC
R_{free} test set	4887 reflections (4.67%)	wwPDB-VP
Wilson B-factor (Å^2)	43.5	Xtriage
Anisotropy	0.360	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 29.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	0.004 for -h,k,-l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	25228	wwPDB-VP
Average B, all atoms (Å^2)	54.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.56% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: SEP, EDO, PEG, SO4, CA

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	0.26	0/4226	0.50	0/5752
1	B	0.26	0/4221	0.49	0/5745
1	C	0.25	0/4221	0.49	0/5745
1	D	0.25	0/4221	0.49	0/5745
1	E	0.25	0/4226	0.49	0/5752
1	F	0.25	0/4221	0.50	0/5745
All	All	0.26	0/25336	0.49	0/34484

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	4128	0	3903	34	0
1	B	4123	0	3898	57	0
1	C	4123	0	3898	32	0
1	D	4123	0	3898	32	0
1	E	4128	0	3903	55	0
1	F	4123	0	3898	48	0
2	A	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0
3	A	7	0	10	0	0
4	A	4	0	6	0	0
4	B	24	0	36	3	0
4	C	4	0	6	1	0
4	D	8	0	12	0	0
4	E	4	0	6	0	0
5	B	10	0	0	0	0
5	E	10	0	0	0	0
6	A	70	0	0	0	0
6	B	91	0	0	0	0
6	C	71	0	0	1	0
6	D	64	0	0	0	0
6	E	52	0	0	2	0
6	F	55	0	0	0	0
All	All	25228	0	23474	252	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 5.

All (252) 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:E:254:LEU:HD23	1:E:467:HIS:CD2	1.90	1.06
1:E:254:LEU:HD23	1:E:467:HIS:NE2	1.82	0.95
1:D:48:ARG:NH2	1:D:75:TRP:HD1	1.76	0.84
1:E:204:GLY:O	1:E:208:VAL:HG23	1.78	0.83
1:E:82:THR:HG22	1:E:84:SER:H	1.44	0.83
1:D:48:ARG:HH21	1:D:75:TRP:HD1	1.27	0.81
1:D:48:ARG:NH2	1:D:75:TRP:CD1	2.51	0.78
1:B:77:ASP:H	4:B:704:EDO:H11	1.55	0.72
1:E:379:ASP:H	1:E:382:MET:HE3	1.52	0.72
1:C:338:LEU:HD21	1:C:349:LEU:HD12	1.72	0.72
1:D:246:VAL:HG23	1:D:544:LEU:HD22	1.73	0.71
1:F:176:ALA:HB2	1:F:184:LEU:HD11	1.73	0.71
1:A:338:LEU:HD21	1:A:349:LEU:HD12	1.73	0.70
1:A:310:ALA:O	1:B:341:VAL:HG12	1.92	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:410:GLN:HA	1:F:414:GLY:HA3	1.75	0.69
1:B:210:ARG:NH1	1:C:60:ASP:OD2	2.26	0.68
1:E:409:ALA:HB3	1:E:412:VAL:HG12	1.76	0.67
1:F:246:VAL:HG23	1:F:544:LEU:HD22	1.76	0.66
1:A:310:ALA:O	1:B:341:VAL:CG1	2.44	0.66
1:A:345:THR:HG23	1:A:347:ASP:H	1.61	0.65
1:E:260:SER:HA	1:E:364:PRO:HG3	1.79	0.65
1:F:377:ALA:HB2	1:F:498:LEU:HD11	1.79	0.65
1:B:344:LYS:HG3	1:B:350:SER:HB3	1.79	0.64
1:B:79:ALA:HB3	1:B:88:LEU:HB2	1.79	0.64
1:E:198:ASP:OD1	1:E:241:HIS:HE1	1.80	0.63
1:C:127:MET:HG3	1:C:160:ILE:HG23	1.81	0.63
1:B:266:GLN:NE2	1:B:441:MET:O	2.30	0.63
1:C:253:GLN:NE2	1:C:499:ASP:OD2	2.33	0.62
1:E:254:LEU:CD2	1:E:467:HIS:NE2	2.60	0.62
1:A:345:THR:HG22	1:A:348:CYS:SG	2.40	0.62
1:C:177:LEU:HD23	1:C:433:MET:HG2	1.80	0.62
1:E:359:ARG:NH2	6:E:802:HOH:O	2.33	0.62
1:D:79:ALA:HB3	1:D:88:LEU:HB2	1.81	0.62
1:E:246:VAL:HG23	1:E:544:LEU:HD22	1.81	0.61
1:B:264:THR:HG21	1:B:398:TRP:CG	2.35	0.61
1:E:299:ILE:HD13	1:E:378:TRP:HB3	1.82	0.61
1:F:278:GLN:NE2	1:F:434:THR:OG1	2.35	0.60
1:F:483:LYS:HD2	1:F:547:TRP:CE2	2.37	0.60
1:A:311:ASP:OD1	1:A:311:ASP:N	2.35	0.59
1:F:55:LYS:HZ2	1:F:56:ASP:H	1.47	0.59
1:B:126:PHE:HE2	1:B:222:ILE:HD12	1.68	0.59
1:C:582:ILE:HD11	1:C:603:PRO:HD3	1.86	0.58
1:B:222:ILE:HG12	1:B:246:VAL:HB	1.86	0.58
1:A:246:VAL:HG23	1:A:544:LEU:HD22	1.87	0.57
1:F:222:ILE:HG12	1:F:246:VAL:HB	1.86	0.57
1:E:100:LYS:CD	1:E:110:GLU:HB3	2.35	0.56
1:A:401:SER:H	1:A:408:ASN:HD21	1.53	0.56
1:C:506:ARG:NH1	6:C:805:HOH:O	2.35	0.56
1:D:379:ASP:OD2	1:D:490:MET:HB3	2.06	0.56
1:E:463:SER:HA	1:E:466:TRP:CE2	2.40	0.56
1:E:311:ASP:HB2	1:E:572:ARG:HH12	1.71	0.56
1:E:253:GLN:NE2	1:E:499:ASP:OD2	2.39	0.55
1:D:558:SER:HA	1:D:594:GLU:OE2	2.05	0.55
1:F:135:GLY:HA2	1:F:166:HIS:O	2.07	0.55
1:D:48:ARG:CZ	1:D:75:TRP:CD1	2.90	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:560:TRP:HB3	1:A:573:THR:HG22	1.89	0.55
1:C:429(A):GLU:OE2	1:C:451:LYS:HE3	2.07	0.55
1:E:55:LYS:HB2	1:E:73:ALA:HB3	1.90	0.54
1:C:55:LYS:HE2	1:C:73:ALA:HB3	1.88	0.54
1:F:60:ASP:OD1	1:F:60:ASP:N	2.40	0.54
1:D:115:LEU:HB2	1:D:160:ILE:HD12	1.90	0.54
1:A:401:SER:H	1:A:408:ASN:ND2	2.04	0.54
1:E:100:LYS:HD2	1:E:110:GLU:HB3	1.89	0.54
1:F:185:ASP:OD1	1:F:186:PRO:HD2	2.07	0.54
1:D:222:ILE:HD11	1:D:541:LEU:HD13	1.90	0.53
1:E:490:MET:HE2	1:E:522:LEU:HD22	1.90	0.53
1:C:397:TRP:HA	1:C:410:GLN:HB2	1.91	0.53
1:A:75:TRP:CZ2	1:A:90:GLU:HG2	2.44	0.53
1:E:149:ILE:HD12	1:E:149:ILE:H	1.73	0.52
1:F:391:ASN:ND2	1:F:393:GLY:H	2.07	0.52
1:A:111:ILE:HD13	1:A:196:SER:HA	1.92	0.52
1:C:149:ILE:HG12	4:C:702:EDO:H11	1.91	0.52
1:E:180:VAL:HG13	1:E:423:ASP:OD2	2.09	0.52
1:A:160:ILE:HD11	1:A:200:VAL:CG1	2.39	0.52
1:E:295:LEU:O	1:E:299:ILE:HG13	2.10	0.52
1:F:88:LEU:HD22	1:F:153:LEU:HD23	1.92	0.52
1:F:560:TRP:HB3	1:F:573:THR:HG22	1.92	0.52
1:C:226:GLU:OE2	1:C:229:ARG:NE	2.42	0.52
1:C:246:VAL:HG23	1:C:544:LEU:HD22	1.91	0.52
1:F:461:GLN:HB3	1:F:466:TRP:HD1	1.74	0.52
1:D:490:MET:HB2	1:D:524:PRO:HA	1.92	0.51
1:A:254:LEU:HD13	1:A:495:PHE:HE1	1.76	0.51
1:D:111:ILE:HD13	1:D:196:SER:HA	1.92	0.51
1:B:517:PHE:HB3	4:B:706:EDO:H21	1.92	0.51
1:E:254:LEU:HD23	1:E:467:HIS:HD2	1.68	0.51
1:E:273:VAL:HG22	1:E:285:LYS:HB3	1.93	0.51
1:F:254:LEU:HB3	1:F:467:HIS:HD2	1.75	0.51
1:B:254:LEU:HD22	1:B:424:PHE:CE2	2.46	0.51
1:B:263:TRP:CD2	1:B:364:PRO:HA	2.46	0.51
1:A:55:LYS:HB2	1:A:73:ALA:HB3	1.93	0.50
1:E:193:GLY:HA2	1:E:467:HIS:HD1	1.74	0.50
1:E:593:THR:HG22	1:E:595:ALA:H	1.77	0.50
1:E:229:ARG:HG3	1:E:252:PHE:HA	1.94	0.50
1:B:330:ALA:HA	1:B:337:ALA:HA	1.93	0.50
1:B:378:TRP:HA	1:B:382:MET:HE1	1.94	0.50
1:E:365:VAL:HG12	1:E:371:PRO:HA	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:254:LEU:HD22	1:D:424:PHE:CE2	2.47	0.49
1:E:540:MET:HE1	1:E:557:ILE:HG21	1.94	0.49
1:A:233:MET:HE3	1:A:234:LEU:HD22	1.94	0.49
1:B:72:VAL:HG22	1:D:108:PRO:HG3	1.93	0.49
1:B:492:ASP:OD2	1:B:528:HIS:HA	2.13	0.49
1:E:180:VAL:HG12	1:E:422:VAL:HB	1.94	0.49
1:B:126:PHE:CE2	1:B:222:ILE:HD12	2.48	0.49
1:C:60:ASP:HB3	1:C:210:ARG:CZ	2.42	0.49
1:B:142:GLY:HA3	1:B:152:ALA:HB3	1.93	0.49
1:E:162:THR:HB	1:E:200:VAL:HG21	1.94	0.49
1:F:134:ASN:O	1:F:166:HIS:NE2	2.46	0.49
1:C:135:GLY:HA2	1:C:166:HIS:O	2.13	0.49
1:F:261:GLY:O	1:F:265:THR:OG1	2.29	0.49
1:F:309:LEU:HD21	1:F:591:ILE:HG22	1.95	0.48
1:F:490:MET:HE3	1:F:522:LEU:HB3	1.95	0.48
1:C:593:THR:HG22	1:C:595:ALA:H	1.78	0.48
1:E:540:MET:CE	1:E:557:ILE:HG21	2.43	0.48
1:F:526:MET:HG3	1:F:536:ASP:HB3	1.95	0.48
1:D:455:THR:OG1	1:D:459:PHE:O	2.27	0.48
1:D:474:LEU:HD12	1:D:507:LEU:HD11	1.94	0.48
1:B:357:ILE:O	1:B:361:MET:HG2	2.14	0.48
1:E:127:MET:HG3	1:E:160:ILE:HG23	1.96	0.48
1:A:160:ILE:CD1	1:A:200:VAL:HG12	2.44	0.48
1:A:263:TRP:CD2	1:A:364:PRO:HA	2.49	0.48
1:E:520:LEU:HD22	1:E:522:LEU:HG	1.96	0.48
1:D:191:ASP:HA	1:D:195:ASN:HB3	1.96	0.48
1:E:354:VAL:O	1:E:358:LYS:HB2	2.14	0.48
1:F:243:ASP:OD1	1:F:480:ARG:NH1	2.47	0.48
1:E:263:TRP:CD2	1:E:364:PRO:HA	2.49	0.47
1:C:177:LEU:HD22	1:C:418:ARG:HG2	1.97	0.47
1:C:259:ILE:HD11	1:C:452:ILE:HD13	1.97	0.47
1:F:265:THR:HG23	1:F:412:VAL:HG22	1.96	0.47
1:D:47:SER:OG	1:D:48:ARG:N	2.46	0.47
1:F:254:LEU:HD23	1:F:467:HIS:NE2	2.29	0.47
1:A:263:TRP:HB2	1:A:364:PRO:HB3	1.96	0.47
1:B:409:ALA:HB3	1:B:412:VAL:HG23	1.95	0.47
1:B:334:ASN:HB3	1:B:336:GLN:OE1	2.15	0.47
1:B:586:LYS:HE3	1:B:598:ALA:HB2	1.96	0.47
1:D:276:ASP:OD1	1:D:278:GLN:N	2.46	0.47
1:A:160:ILE:HD11	1:A:200:VAL:HG13	1.97	0.47
1:E:563:THR:O	1:E:563:THR:OG1	2.29	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:490:MET:HB2	1:F:524:PRO:HA	1.96	0.47
1:F:255:PRO:HD2	1:F:464:MET:HE1	1.97	0.47
1:B:124:ARG:HD3	1:B:220:TYR:HE2	1.80	0.46
1:B:229:ARG:HG3	1:B:252:PHE:HA	1.97	0.46
1:B:567:PHE:HB2	1:B:569:VAL:HG22	1.97	0.46
1:F:180:VAL:HG12	1:F:422:VAL:HB	1.97	0.46
1:B:60:ASP:HB2	1:B:210:ARG:HH21	1.80	0.46
1:B:91:HIS:NE2	1:B:116:ARG:NH1	2.64	0.46
1:E:410:GLN:HA	1:E:414:GLY:HA3	1.97	0.46
1:B:116:ARG:HD2	1:B:140:ALA:O	2.15	0.46
1:E:88:LEU:HD22	1:E:153:LEU:HD23	1.97	0.46
1:F:248:GLY:HA3	1:F:487:TYR:CZ	2.51	0.46
1:E:367:SER:OG	1:E:446:ASP:OD2	2.31	0.46
1:E:313:ILE:HD12	1:E:572:ARG:HH11	1.80	0.46
1:E:100:LYS:HD3	1:E:110:GLU:HB3	1.98	0.46
1:E:438:ALA:O	1:E:442:LYS:HG2	2.16	0.46
1:F:180:VAL:HG13	1:F:423:ASP:OD2	2.16	0.46
1:F:459:PHE:N	1:F:459:PHE:CD1	2.84	0.45
1:D:301:GLY:HA3	1:D:332:PRO:HG3	1.97	0.45
1:F:276:ASP:N	1:F:280:VAL:O	2.36	0.45
1:D:590:ASP:O	1:D:596:ASN:ND2	2.48	0.45
1:A:590:ASP:O	1:A:596:ASN:ND2	2.38	0.45
1:B:100:LYS:HE2	1:B:108:PRO:HB3	1.98	0.45
1:B:288:SER:OG	1:B:291:ASP:OD1	2.34	0.45
1:E:483:LYS:HD2	1:E:547:TRP:CE2	2.51	0.45
1:C:248:GLY:HA3	1:C:487:TYR:CZ	2.51	0.45
1:A:311:ASP:HA	1:B:341:VAL:HG12	1.98	0.45
1:A:463:SER:HA	1:A:466:TRP:CE2	2.51	0.45
1:D:222:ILE:HG12	1:D:246:VAL:HB	1.99	0.45
1:F:309:LEU:HD13	1:F:585:TYR:CD2	2.52	0.45
1:F:448:ASP:O	1:F:451:LYS:HD2	2.17	0.45
1:C:60:ASP:O	1:C:62:VAL:N	2.50	0.45
1:B:112:LYS:HB2	1:B:163:ASP:OD2	2.17	0.44
1:B:361:MET:HE3	1:B:376:TRP:HB2	2.00	0.44
1:A:222:ILE:HG12	1:A:246:VAL:HB	1.99	0.44
1:A:340:CYS:SG	1:A:349:LEU:O	2.75	0.44
1:C:191:ASP:HA	1:C:195:ASN:HB3	1.99	0.44
1:E:283:ILE:N	1:E:407:ASN:OD1	2.49	0.44
1:F:444:ASP:HB3	1:F:447:ILE:HG12	1.99	0.44
1:F:111:ILE:HG12	1:F:165:GLY:HA2	1.98	0.44
1:F:463:SER:HA	1:F:466:TRP:CE2	2.52	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:127:MET:HB3	1:E:221:PHE:HD2	1.82	0.44
1:C:60:ASP:O	1:C:60:ASP:OD1	2.36	0.44
1:B:60:ASP:HB2	1:B:210:ARG:NH2	2.32	0.44
1:B:336:GLN:HG2	1:B:337:ALA:O	2.18	0.44
1:F:287:PHE:HB3	1:F:292:LEU:HD23	1.98	0.44
1:C:463:SER:HA	1:C:466:TRP:CE2	2.53	0.44
1:D:311:ASP:OD1	1:D:311:ASP:N	2.50	0.44
1:E:47:SER:OG	1:E:48:ARG:N	2.51	0.44
1:B:127:MET:HG3	1:B:160:ILE:HG23	1.99	0.43
1:B:191:ASP:HA	1:B:195:ASN:HB3	2.00	0.43
1:D:463:SER:HA	1:D:466:TRP:CE2	2.53	0.43
1:E:167:ASP:OD1	6:E:801:HOH:O	2.21	0.43
1:F:227:GLY:HA2	1:F:230:GLU:HG3	2.01	0.43
1:D:484:MET:O	1:D:518:ALA:HA	2.19	0.43
1:B:366:ASN:HD21	1:B:370:THR:HB	1.83	0.43
1:F:100:LYS:HA	1:F:100:LYS:HD2	1.81	0.43
1:A:266:GLN:HA	1:A:441:MET:HE1	2.00	0.43
1:E:444:ASP:OD2	1:E:447:ILE:HD12	2.19	0.43
1:A:191:ASP:HA	1:A:195:ASN:HB3	2.00	0.43
1:D:287:PHE:HB2	1:D:399:LEU:HD21	2.01	0.43
1:D:401:SER:HB3	1:D:408:ASN:HD21	1.83	0.43
1:F:142:GLY:HA3	1:F:152:ALA:HB3	2.01	0.43
1:F:439:ARG:NH1	1:F:442:LYS:HE3	2.34	0.43
1:B:88:LEU:HD23	1:B:88:LEU:HA	1.84	0.43
1:A:135:GLY:HA2	1:A:166:HIS:O	2.19	0.43
1:B:89:PRO:HD3	1:B:154:SER:HA	2.01	0.42
1:B:361:MET:HE3	1:B:361:MET:HB3	1.93	0.42
1:C:280:VAL:HG11	1:C:437:ALA:HB1	2.00	0.42
1:E:452:ILE:HD12	1:E:464:MET:HE3	2.02	0.42
1:A:310:ALA:O	1:B:341:VAL:HG11	2.17	0.42
1:C:191:ASP:HB3	1:C:196:SER:HB3	2.00	0.42
1:C:552:GLU:H	1:C:552:GLU:HG2	1.72	0.42
1:B:71:GLU:HG2	1:B:72:VAL:HG23	2.02	0.42
1:E:287:PHE:HB2	1:E:399:LEU:HD21	2.01	0.42
1:B:243:ASP:OD1	1:B:480:ARG:NH1	2.53	0.42
1:C:300:LEU:HD12	1:C:300:LEU:HA	1.89	0.42
1:C:334:ASN:OD1	1:C:336:GLN:N	2.44	0.42
1:B:399:LEU:C	1:B:409:ALA:HB2	2.39	0.42
1:D:229:ARG:HG3	1:D:252:PHE:HA	2.01	0.42
1:B:88:LEU:HD22	1:B:153:LEU:HD23	2.01	0.42
1:B:438:ALA:O	1:B:442:LYS:HG2	2.18	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:311:ASP:N	1:B:311:ASP:OD1	2.53	0.42
1:D:357:ILE:O	1:D:361:MET:HG2	2.20	0.42
1:F:535:THR:HG21	1:F:574:ARG:HB2	2.01	0.42
1:A:97:ALA:HB1	1:A:110:GLU:HG3	2.01	0.41
1:B:116:ARG:HG2	1:B:116:ARG:HH11	1.84	0.41
1:B:341:VAL:HG12	1:B:341:VAL:O	2.20	0.41
1:E:101:ARG:NH2	1:E:185:ASP:OD2	2.50	0.41
1:F:317:TYR:CZ	1:F:522:LEU:HD12	2.55	0.41
1:B:382:MET:HG2	1:B:394:TRP:CE2	2.55	0.41
1:C:275:LEU:HD12	1:C:279:GLY:C	2.41	0.41
1:F:586:LYS:HG3	1:F:596:ASN:C	2.41	0.41
1:A:300:LEU:HD23	1:A:300:LEU:HA	1.93	0.41
1:C:160:ILE:HG13	1:C:161:ALA:N	2.34	0.41
1:E:263:TRP:CE3	1:E:364:PRO:HA	2.56	0.41
1:E:313:ILE:HG23	1:E:524:PRO:HB2	2.02	0.41
1:F:490:MET:HE1	1:F:522:LEU:HD13	2.02	0.41
1:A:367:SER:H	1:A:367:SER:HG	1.55	0.41
1:B:124:ARG:HD3	1:B:220:TYR:CE2	2.56	0.41
1:A:248:GLY:HA3	1:A:487:TYR:CE1	2.54	0.41
1:D:112:LYS:HB2	1:D:163:ASP:OD2	2.20	0.41
1:F:444:ASP:N	1:F:448:ASP:OD2	2.47	0.41
1:B:246:VAL:HG23	1:B:544:LEU:HD22	2.03	0.41
1:E:220:TYR:CZ	1:E:545:VAL:HG22	2.56	0.41
1:B:550:ARG:HH21	1:B:552:GLU:HG3	1.85	0.41
1:B:581:GLN:O	4:B:705:EDO:H11	2.21	0.41
1:C:444:ASP:O	1:C:448:ASP:HB2	2.21	0.41
1:F:490:MET:HE1	1:F:522:LEU:HD22	2.03	0.41
1:F:276:ASP:OD1	1:F:277:ALA:N	2.53	0.41
1:A:293:HIS:HA	1:A:383:SER:OG	2.22	0.40
1:C:377:ALA:HB2	1:C:498:LEU:HD11	2.04	0.40
1:D:399:LEU:C	1:D:409:ALA:HB2	2.41	0.40
1:B:301:GLY:HA3	1:B:332:PRO:HG2	2.03	0.40
1:D:408:ASN:OD1	1:D:408:ASN:N	2.53	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	
1	A	555/592 (94%)	529 (95%)	26 (5%)	0	100	100
1	B	554/592 (94%)	527 (95%)	27 (5%)	0	100	100
1	C	554/592 (94%)	530 (96%)	24 (4%)	0	100	100
1	D	554/592 (94%)	528 (95%)	25 (4%)	1 (0%)	47	64
1	E	555/592 (94%)	526 (95%)	29 (5%)	0	100	100
1	F	554/592 (94%)	527 (95%)	27 (5%)	0	100	100
All	All	3326/3552 (94%)	3167 (95%)	158 (5%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	527	ASN

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	403/433 (93%)	395 (98%)	8 (2%)	55	73
1	B	403/433 (93%)	398 (99%)	5 (1%)	71	84
1	C	403/433 (93%)	391 (97%)	12 (3%)	41	59
1	D	403/433 (93%)	397 (98%)	6 (2%)	65	80
1	E	403/433 (93%)	393 (98%)	10 (2%)	47	66
1	F	403/433 (93%)	393 (98%)	10 (2%)	47	66

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	2418/2598 (93%)	2367 (98%)	51 (2%)	53 72

All (51) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	60	ASP
1	A	77	ASP
1	A	233	MET
1	A	254	LEU
1	A	359	ARG
1	A	375	ARG
1	A	467	HIS
1	A	538	PHE
1	B	241	HIS
1	B	375	ARG
1	B	403	ASN
1	B	442	LYS
1	B	538	PHE
1	C	155	ARG
1	C	210	ARG
1	C	241	HIS
1	C	295	LEU
1	C	307	ASP
1	C	338	LEU
1	C	340	CYS
1	C	344	LYS
1	C	375	ARG
1	C	442	LYS
1	C	538	PHE
1	C	550	ARG
1	D	210	ARG
1	D	240	SER
1	D	375	ARG
1	D	383	SER
1	D	490	MET
1	D	594	GLU
1	E	60	ASP
1	E	77	ASP
1	E	307	ASP
1	E	347	ASP
1	E	359	ARG
1	E	375	ARG

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Mol	Chain	Res	Type
1	E	379	ASP
1	E	411	ARG
1	E	465	ASP
1	E	584	ARG
1	F	197	TYR
1	F	276	ASP
1	F	375	ARG
1	F	391	ASN
1	F	431	MET
1	F	433	MET
1	F	441	MET
1	F	442	LYS
1	F	478	ARG
1	F	594	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	408	ASN
1	D	556	GLN
1	E	241	HIS
1	F	241	HIS
1	F	278	GLN
1	F	391	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)

6 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	SEP	F	225	1	8,9,10	1.54	1 (12%)	8,12,14	1.39	2 (25%)
1	SEP	E	225	1	8,9,10	1.57	1 (12%)	8,12,14	1.72	2 (25%)
1	SEP	D	225	1	8,9,10	1.56	1 (12%)	8,12,14	1.57	2 (25%)
1	SEP	C	225	1	8,9,10	1.56	1 (12%)	8,12,14	1.52	2 (25%)
1	SEP	A	225	1	8,9,10	1.55	1 (12%)	8,12,14	1.74	2 (25%)
1	SEP	B	225	1	8,9,10	0.57	0	8,12,14	0.69	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	SEP	F	225	1	-	1/5/8/10	-
1	SEP	E	225	1	-	1/5/8/10	-
1	SEP	D	225	1	-	2/5/8/10	-
1	SEP	C	225	1	-	1/5/8/10	-
1	SEP	A	225	1	-	2/5/8/10	-
1	SEP	B	225	1	-	4/5/8/10	-

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	225	SEP	P-O1P	3.43	1.61	1.50
1	D	225	SEP	P-O1P	3.42	1.61	1.50
1	C	225	SEP	P-O1P	3.41	1.61	1.50
1	A	225	SEP	P-O1P	3.38	1.61	1.50
1	F	225	SEP	P-O1P	3.34	1.61	1.50

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	225	SEP	P-OG-CB	-3.27	109.27	118.30
1	E	225	SEP	P-OG-CB	-3.22	109.43	118.30
1	A	225	SEP	OG-CB-CA	3.17	111.23	108.14
1	E	225	SEP	OG-CB-CA	3.12	111.19	108.14
1	D	225	SEP	P-OG-CB	-2.85	110.43	118.30
1	D	225	SEP	OG-CB-CA	2.82	110.89	108.14
1	C	225	SEP	P-OG-CB	-2.77	110.67	118.30
1	C	225	SEP	OG-CB-CA	2.65	110.72	108.14

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	F	225	SEP	P-OG-CB	-2.57	111.22	118.30
1	F	225	SEP	OG-CB-CA	2.31	110.39	108.14

There are no chirality outliers.

All (11) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	B	225	SEP	CB-OG-P-O2P
1	B	225	SEP	CB-OG-P-O3P
1	B	225	SEP	CB-OG-P-O1P
1	A	225	SEP	N-CA-CB-OG
1	B	225	SEP	N-CA-CB-OG
1	C	225	SEP	N-CA-CB-OG
1	D	225	SEP	N-CA-CB-OG
1	E	225	SEP	N-CA-CB-OG
1	F	225	SEP	N-CA-CB-OG
1	A	225	SEP	CB-OG-P-O1P
1	D	225	SEP	CB-OG-P-O2P

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 22 ligands modelled in this entry, 6 are monoatomic - leaving 16 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	B	708	-	3,3,3	0.45	0	2,2,2	0.32	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	EDO	E	704	-	3,3,3	0.45	0	2,2,2	0.37	0
5	SO4	B	702	-	4,4,4	0.14	0	6,6,6	0.05	0
5	SO4	B	703	-	4,4,4	0.14	0	6,6,6	0.04	0
4	EDO	A	703	-	3,3,3	0.45	0	2,2,2	0.29	0
4	EDO	D	703	-	3,3,3	0.45	0	2,2,2	0.34	0
4	EDO	B	704	-	3,3,3	0.46	0	2,2,2	0.34	0
4	EDO	B	707	-	3,3,3	0.45	0	2,2,2	0.35	0
4	EDO	B	705	-	3,3,3	0.46	0	2,2,2	0.30	0
3	PEG	A	702	-	6,6,6	0.10	0	5,5,5	0.11	0
4	EDO	B	709	-	3,3,3	0.46	0	2,2,2	0.34	0
4	EDO	D	702	-	3,3,3	0.11	0	2,2,2	0.10	0
4	EDO	C	702	-	3,3,3	0.46	0	2,2,2	0.30	0
5	SO4	E	702	-	4,4,4	0.14	0	6,6,6	0.04	0
4	EDO	B	706	-	3,3,3	0.45	0	2,2,2	0.32	0
5	SO4	E	703	-	4,4,4	0.14	0	6,6,6	0.05	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	B	708	-	-	0/1/1/1	-
4	EDO	E	704	-	-	0/1/1/1	-
4	EDO	A	703	-	-	1/1/1/1	-
4	EDO	D	703	-	-	1/1/1/1	-
4	EDO	B	704	-	-	0/1/1/1	-
4	EDO	B	707	-	-	1/1/1/1	-
4	EDO	B	705	-	-	0/1/1/1	-
3	PEG	A	702	-	-	0/4/4/4	-
4	EDO	B	709	-	-	0/1/1/1	-
4	EDO	D	702	-	-	1/1/1/1	-
4	EDO	C	702	-	-	0/1/1/1	-
4	EDO	B	706	-	-	0/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	703	EDO	O1-C1-C2-O2
4	B	707	EDO	O1-C1-C2-O2
4	D	703	EDO	O1-C1-C2-O2
4	D	702	EDO	O1-C1-C2-O2

There are no ring outliers.

4 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	704	EDO	1	0
4	B	705	EDO	1	0
4	C	702	EDO	1	0
4	B	706	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

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^{th} 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	557/592 (94%)	-0.28	3 (0%)	91	91	34, 46, 66, 120	0
1	B	556/592 (93%)	-0.28	5 (0%)	84	83	30, 44, 66, 127	0
1	C	556/592 (93%)	-0.21	2 (0%)	92	93	33, 52, 80, 120	0
1	D	556/592 (93%)	-0.26	4 (0%)	87	87	34, 48, 73, 119	0
1	E	557/592 (94%)	-0.05	12 (2%)	62	57	37, 59, 83, 111	0
1	F	556/592 (93%)	0.06	19 (3%)	45	41	39, 65, 97, 142	0
All	All	3338/3552 (93%)	-0.17	45 (1%)	77	75	30, 51, 84, 142	0

All (45) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	46	ALA	4.1
1	F	277	ALA	3.8
1	F	412	VAL	3.8
1	C	341	VAL	3.6
1	D	333	ALA	3.5
1	F	367	SER	3.5
1	F	603	PRO	3.4
1	A	341	VAL	3.3
1	C	387	GLY	3.3
1	F	58	ASN	3.1
1	F	368	ALA	3.0
1	F	175	ASP	3.0
1	F	275	LEU	3.0
1	B	603	PRO	2.9
1	D	603	PRO	2.7
1	F	276	ASP	2.6
1	F	54	LEU	2.6
1	F	602	PRO	2.6
1	E	315	ASP	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	58	ASN	2.6
1	F	445	PHE	2.6
1	D	336	GLN	2.5
1	E	589	GLY	2.5
1	A	46	ALA	2.5
1	F	435	GLN	2.4
1	F	308	GLY	2.4
1	B	334	ASN	2.4
1	F	590	ASP	2.4
1	F	447	ILE	2.4
1	E	603	PRO	2.3
1	F	52	GLU	2.3
1	B	330	ALA	2.3
1	B	336	GLN	2.3
1	F	57	GLY	2.3
1	E	60	ASP	2.3
1	E	586	LYS	2.2
1	D	447	ILE	2.2
1	E	591	ILE	2.2
1	E	367	SER	2.2
1	E	588	SER	2.2
1	E	280	VAL	2.1
1	E	175	ASP	2.1
1	B	588	SER	2.1
1	E	433	MET	2.0
1	F	338	LEU	2.0

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, 95^{th} 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	SEP	B	225	10/11	0.90	0.16	32,41,60,100	0
1	SEP	E	225	10/11	0.92	0.14	46,52,64,98	0
1	SEP	F	225	10/11	0.92	0.12	45,53,65,85	0
1	SEP	D	225	10/11	0.94	0.12	40,49,68,91	0
1	SEP	C	225	10/11	0.95	0.16	41,52,67,77	0
1	SEP	A	225	10/11	0.95	0.11	38,48,57,80	0

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, 95^{th} 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
5	SO4	B	702	5/5	0.76	0.32	111,112,123,132	0
3	PEG	A	702	7/7	0.80	0.28	44,63,68,70	0
4	EDO	B	705	4/4	0.82	0.24	38,44,45,49	4
5	SO4	E	703	5/5	0.82	0.34	102,102,109,133	0
4	EDO	B	708	4/4	0.85	0.34	40,45,46,49	4
4	EDO	B	707	4/4	0.86	0.25	54,55,56,60	0
4	EDO	C	702	4/4	0.86	0.31	57,63,68,68	0
4	EDO	E	704	4/4	0.87	0.20	59,63,64,67	0
4	EDO	D	702	4/4	0.88	0.18	44,45,62,64	0
4	EDO	A	703	4/4	0.88	0.28	38,38,48,49	4
5	SO4	E	702	5/5	0.91	0.23	46,54,64,65	5
2	CA	A	701	1/1	0.91	0.15	55,55,55,55	0
2	CA	C	701	1/1	0.92	0.15	58,58,58,58	0
4	EDO	B	706	4/4	0.92	0.26	48,51,53,58	0
4	EDO	B	709	4/4	0.93	0.13	49,55,61,62	0
4	EDO	B	704	4/4	0.94	0.18	48,51,54,59	0
5	SO4	B	703	5/5	0.95	0.20	99,101,105,125	0
4	EDO	D	703	4/4	0.96	0.11	52,59,62,63	0
2	CA	B	701	1/1	0.97	0.12	53,53,53,53	0
2	CA	D	701	1/1	0.97	0.12	60,60,60,60	0
2	CA	E	701	1/1	0.98	0.07	64,64,64,64	0
2	CA	F	701	1/1	0.98	0.07	60,60,60,60	0

6.5 Other polymers (i)

There are no such residues in this entry.