



Full wwPDB X-ray Structure Validation Report i

Aug 3, 2025 – 08:18 AM EDT

PDB ID : 2WN2 / pdb_00002wn2
Title : Structure of the discoidin I from Dictyostelium discoideum in complex with galactose beta 1-3 galNAc at 1.8 Å resolution.
Authors : Mathieu, S.; Imbert, A.; Varrot, A.
Deposited on : 2009-07-07
Resolution : 1.82 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	:	4-5-2 with Phenix2.0rc1
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0rc1
EDS	:	FAILED
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

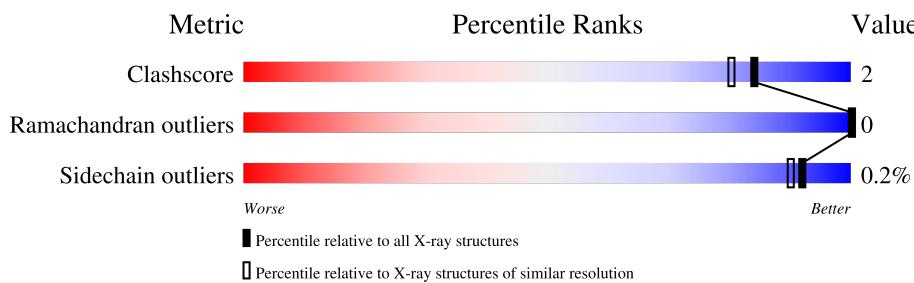
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.82 Å.

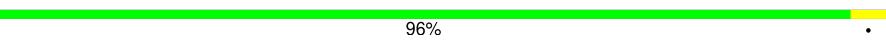
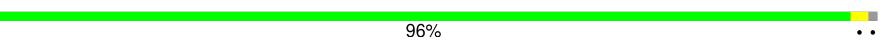
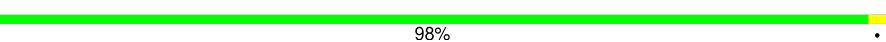
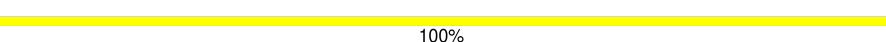
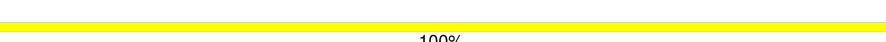
Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	180529	1080 (1.82-1.82)
Ramachandran outliers	177936	1073 (1.82-1.82)
Sidechain outliers	177891	1073 (1.82-1.82)

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 $\leq 5\%$

Note EDS failed to run properly.

Mol	Chain	Length	Quality of chain
1	A	254	96% 
1	B	254	96% 
1	C	254	98% 
2	D	2	100% 
2	E	2	50% 
2	F	2	100% 

2 Entry composition (i)

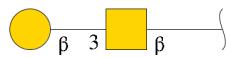
There are 8 unique types of molecules in this entry. The entry contains 7294 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 DISCOIDIN-1 SUBUNIT A.

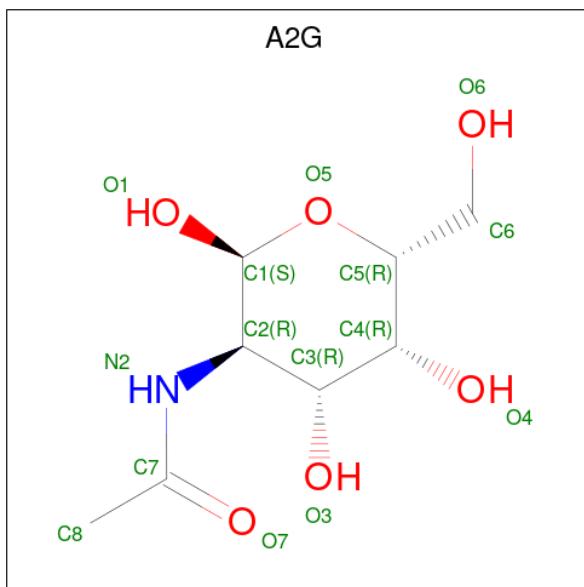
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	254	Total	C	N	O	S	0	3	0
			2015	1262	353	390	10			
1	B	252	Total	C	N	O	S	0	3	0
			1999	1251	351	388	9			
1	C	253	Total	C	N	O	S	0	3	0
			2004	1255	351	388	10			

- Molecule 2 is an oligosaccharide called beta-D-galactopyranose-(1-3)-2-acetamido-2-deoxy-beta-D-galactopyranose.



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	2	Total	C	N	O		0	1	0
			26	14	1	11				
2	E	2	Total	C	N	O		0	1	0
			26	14	1	11				
2	F	2	Total	C	N	O		0	1	0
			26	14	1	11				

- Molecule 3 is 2-acetamido-2-deoxy-alpha-D-galactopyranose (CCD ID: A2G) (formula: C₈H₁₅NO₆).

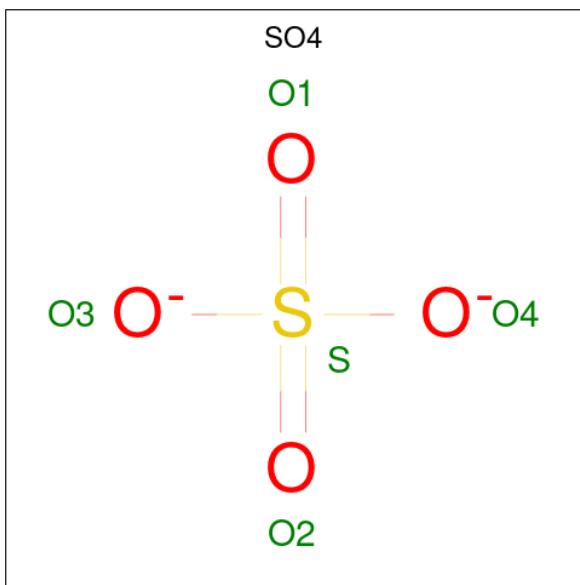


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	1
			15	8	1	6		
3	B	1	Total	C	N	O	0	1
			15	8	1	6		
3	C	1	Total	C	N	O	0	1
			15	8	1	6		

- Molecule 4 is CALCIUM ION (CCD ID: CA) (formula: Ca).

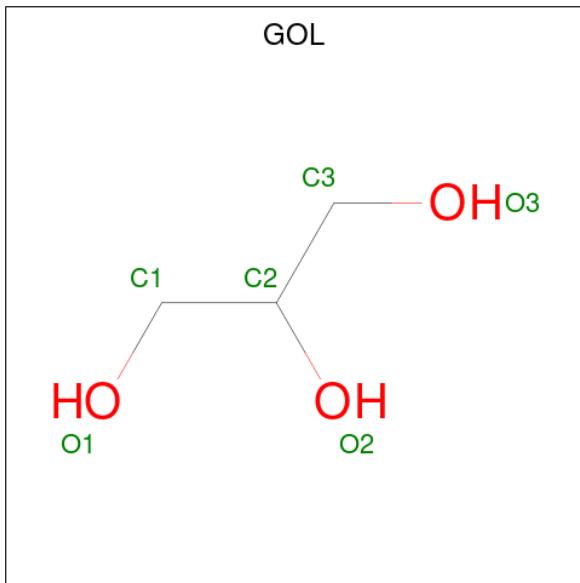
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	Ca	0	0
			1	1		
4	B	1	Total	Ca	0	0
			1	1		
4	C	1	Total	Ca	0	0
			1	1		

- Molecule 5 is SULFATE ION (CCD ID: SO4) (formula: O₄S).



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

- Molecule 6 is GLYCEROL (CCD ID: GOL) (formula: C₃H₈O₃).



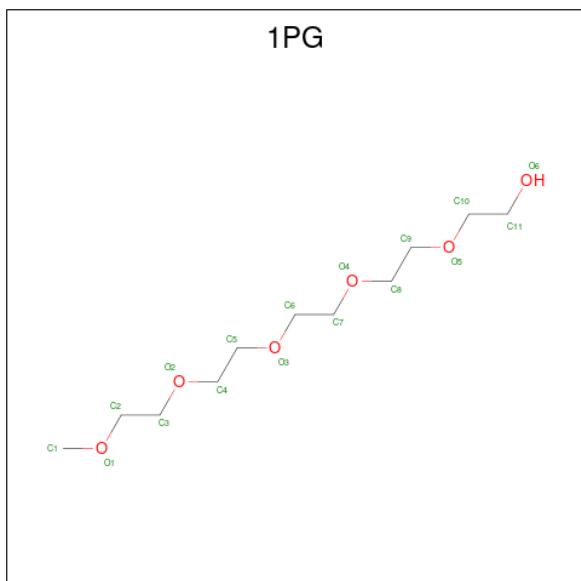
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	C	O	0	0
			6	3	3		
6	A	1	Total	C	O	0	0
			6	3	3		
6	B	1	Total	C	O	0	0
			6	3	3		

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

- Molecule 7 is 2-(2-[2-(2-METHOXY-ETHOXY)-ETHOXY]-ETHOXY)-ETHANOL (CCD ID: 1PG) (formula: C₁₁H₂₄O₆).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	1	Total C O 17 11 6	0	0

- Molecule 8 is water.

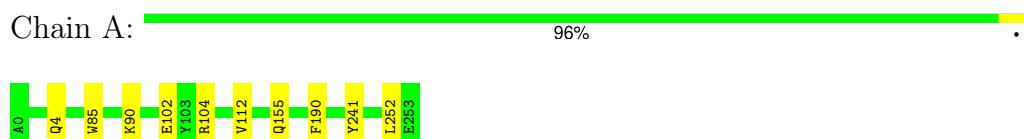
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	384	Total O 384 384	0	0
8	B	363	Total O 363 363	0	0
8	C	333	Total O 333 333	0	0

3 Residue-property plots [\(i\)](#)

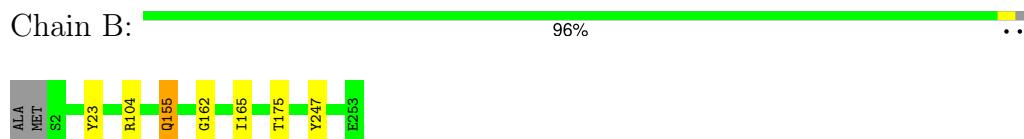
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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. 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.

Note EDS failed to run properly.

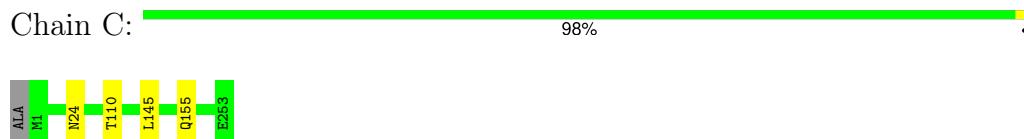
- Molecule 1: DISCOIDIN-1 SUBUNIT A



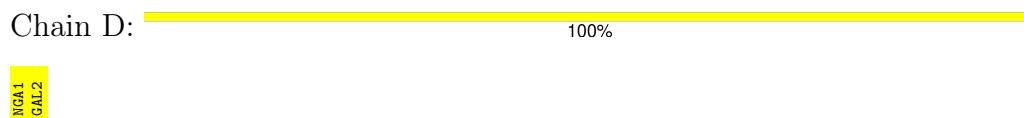
- Molecule 1: DISCOIDIN-1 SUBUNIT A



- Molecule 1: DISCOIDIN-1 SUBUNIT A



- Molecule 2: beta-D-galactopyranose-(1-3)-2-acetamido-2-deoxy-beta-D-galactopyranose



- Molecule 2: beta-D-galactopyranose-(1-3)-2-acetamido-2-deoxy-beta-D-galactopyranose



- Molecule 2: beta-D-galactopyranose-(1-3)-2-acetamido-2-deoxy-beta-D-galactopyranose



NGA1
GA12

4 Data and refinement statistics i

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	72.47 Å 273.70 Å 85.80 Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.33 – 1.82	Depositor
% Data completeness (in resolution range)	99.6 (47.33-1.82)	Depositor
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle^1$	3.36 (at 1.82 Å)	Xtriage
Refinement program	REFMAC 5.5.0072	Depositor
R, R_{free}	0.141, 0.180	Depositor
Wilson B-factor (Å ²)	12.6	Xtriage
Anisotropy	0.536	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.50, \langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	7294	wwPDB-VP
Average B, all atoms (Å ²)	13.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.06% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality [\(i\)](#)

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

Bond lengths and bond angles in the following residue types are not validated in this section: 1PG, GAL, CA, NGA, GOL, SO4, A2G

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	0.97	0/2062	0.84	0/2811
1	B	0.96	1/2049 (0.0%)	0.85	0/2794
1	C	0.94	0/2057	0.87	0/2804
All	All	0.96	1/6168 (0.0%)	0.85	0/8409

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	165	ILE	CA-CB	-5.54	1.47	1.54

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [\(i\)](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2015	0	1934	9	0
1	B	1999	0	1913	7	0
1	C	2004	0	1926	4	0
2	D	26	0	17	0	0
2	E	26	0	20	0	0
2	F	26	0	20	0	0
3	A	15	0	8	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	15	0	9	0	0
3	C	15	0	9	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
5	A	5	0	0	0	0
6	A	12	0	16	1	0
6	B	18	0	24	3	0
6	C	18	0	24	2	0
7	A	17	0	24	7	0
8	A	384	0	0	10	0
8	B	363	0	0	2	0
8	C	333	0	0	3	0
All	All	7294	0	5944	27	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 2.

All (27) 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)
7:A:502:1PG:H11	8:A:2384:HOH:O	1.46	1.15
1:A:90:LYS:HD2	8:A:2185:HOH:O	1.87	0.73
1:B:175:THR:HG22	8:B:2258:HOH:O	1.91	0.70
1:B:155[A]:GLN:OE1	8:B:2228:HOH:O	2.11	0.67
1:A:102:GLU:HG2	8:A:2185:HOH:O	1.94	0.67
1:B:104:ARG:HH12	6:B:500:GOL:H12	1.61	0.64
1:C:155[A]:GLN:NE2	8:C:2211:HOH:O	1.99	0.64
1:A:155[B]:GLN:NE2	8:A:2249:HOH:O	2.35	0.57
1:C:24:ASN:OD1	1:C:24:ASN:C	2.50	0.55
7:A:502:1PG:H72	8:A:2172:HOH:O	2.07	0.54
7:A:502:1PG:H32	8:A:2172:HOH:O	2.11	0.51
1:A:4:GLN:NE2	8:A:2009:HOH:O	2.43	0.49
1:C:110:THR:H	6:C:500:GOL:H11	1.78	0.49
1:A:241:TYR:CD1	3:A:301[B]:A2G:H6	2.48	0.49
1:B:23:TYR:CE2	6:B:501:GOL:H31	2.50	0.47
6:C:500:GOL:H2	8:C:2333:HOH:O	2.16	0.46
7:A:502:1PG:H13	8:A:2277:HOH:O	2.15	0.46
1:A:252[A]:LEU:HD11	8:C:2216:HOH:O	2.16	0.45
1:B:162:GLY:HA3	1:B:247:TYR:CE1	2.52	0.45
1:A:104:ARG:HH12	6:A:500:GOL:C3	2.29	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:A:502:1PG:C1	8:A:2277:HOH:O	2.66	0.43
7:A:502:1PG:H51	8:A:2172:HOH:O	2.18	0.43
1:A:190:PHE:CE2	1:B:155[A]:GLN:HG2	2.54	0.43
1:B:104:ARG:HH22	6:B:500:GOL:H12	1.83	0.42
1:A:85:TRP:HB2	1:A:112:VAL:CG2	2.49	0.42
7:A:502:1PG:H72	7:A:502:1PG:H51	1.84	0.42
1:C:145:LEU:C	1:C:145:LEU:HD12	2.47	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	255/254 (100%)	250 (98%)	5 (2%)	0	100 100
1	B	253/254 (100%)	248 (98%)	5 (2%)	0	100 100
1	C	254/254 (100%)	249 (98%)	5 (2%)	0	100 100
All	All	762/762 (100%)	747 (98%)	15 (2%)	0	100 100

There are no Ramachandran outliers to report.

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	221/218 (101%)	221 (100%)	0	100 100
1	B	220/218 (101%)	218 (99%)	2 (1%)	75 66
1	C	221/218 (101%)	221 (100%)	0	100 100
All	All	662/654 (101%)	660 (100%)	2 (0%)	92 89

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	155[A]	GLN
1	B	155[B]	GLN

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	97	ASN
1	A	204	GLN
1	B	204	GLN
1	C	97	ASN
1	C	189	GLN
1	C	201	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 [\(i\)](#)

6 monosaccharides 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	NGA	D	1[A]	2	15,15,15	0.67	0	21,21,21	2.65	3 (14%)
2	GAL	D	2	3,2	11,11,12	0.68	0	15,15,17	0.96	1 (6%)
2	NGA	E	1[A]	2	15,15,15	0.57	0	21,21,21	1.02	1 (4%)
2	GAL	E	2	3,2	11,11,12	0.35	0	15,15,17	0.73	0
2	NGA	F	1[A]	2	15,15,15	0.70	0	21,21,21	4.60	6 (28%)
2	GAL	F	2	3,2	11,11,12	1.00	1 (9%)	15,15,17	0.89	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
2	NGA	D	1[A]	2	-	0/6/26/26	0/1/1/1
2	GAL	D	2	3,2	-	0/2/19/22	0/1/1/1
2	NGA	E	1[A]	2	-	0/6/26/26	0/1/1/1
2	GAL	E	2	3,2	-	0/2/19/22	0/1/1/1
2	NGA	F	1[A]	2	-	0/6/26/26	0/1/1/1
2	GAL	F	2	3,2	-	0/2/19/22	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	2	GAL	O4-C4	-2.22	1.37	1.43

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	1[A]	NGA	O5-C1-C2	-19.56	89.86	109.52
2	D	1[A]	NGA	O5-C1-C2	-10.37	99.10	109.52
2	D	1[A]	NGA	O1-C1-C2	-4.79	99.26	109.22
2	F	1[A]	NGA	C1-C2-N2	-3.50	106.68	110.73
2	F	1[A]	NGA	O1-C1-C2	3.29	116.06	109.22
2	F	1[A]	NGA	C1-C2-C3	3.12	114.80	110.54
2	D	2	GAL	C1-O5-C5	2.79	115.92	112.19
2	E	1[A]	NGA	O3-C3-C2	-2.52	104.57	109.58
2	D	1[A]	NGA	C3-C2-N2	-2.44	106.11	110.62
2	F	1[A]	NGA	O5-C5-C4	-2.31	105.53	109.70
2	F	1[A]	NGA	O3-C3-C2	-2.23	105.15	109.58

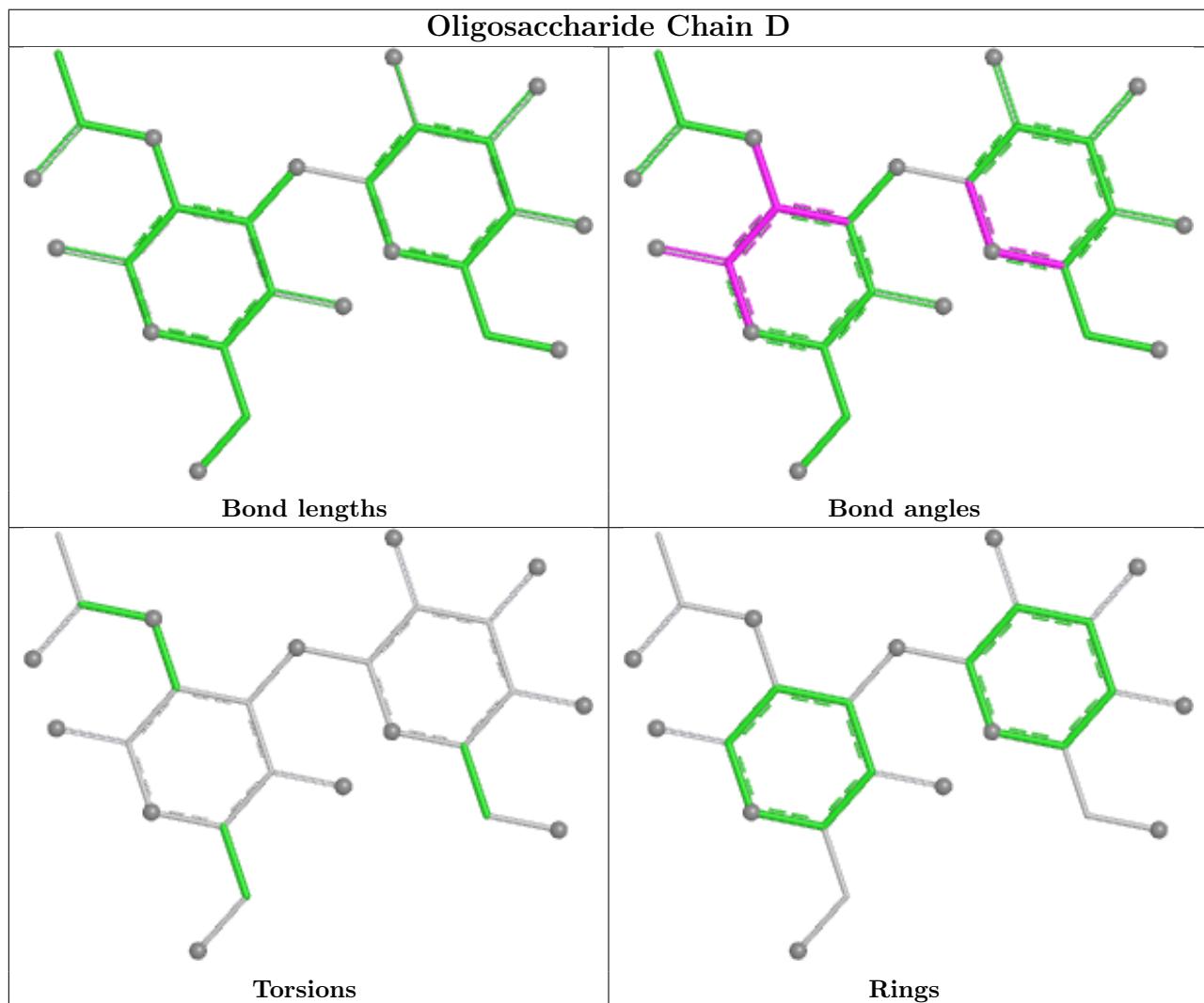
There are no chirality outliers.

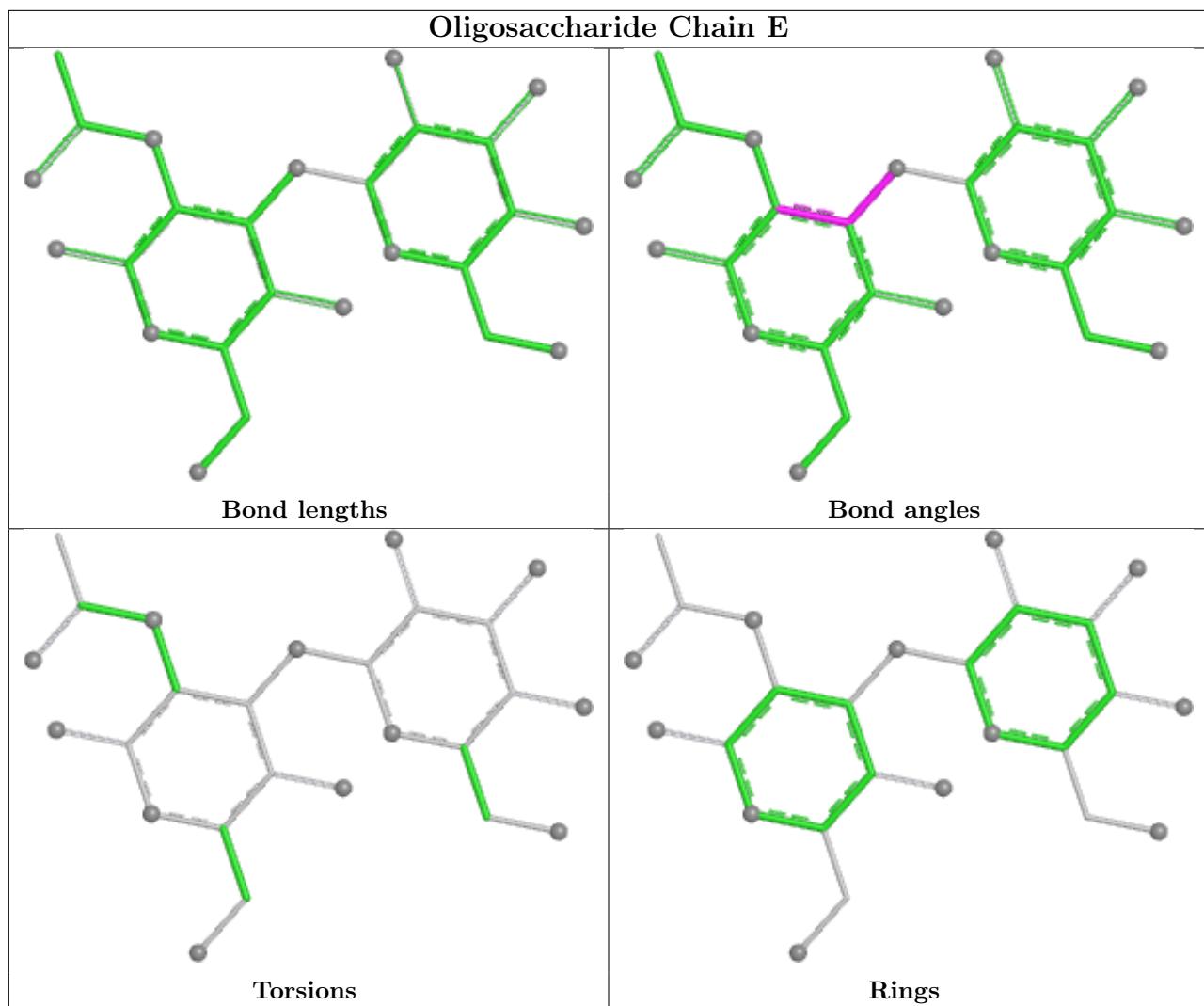
There are no torsion outliers.

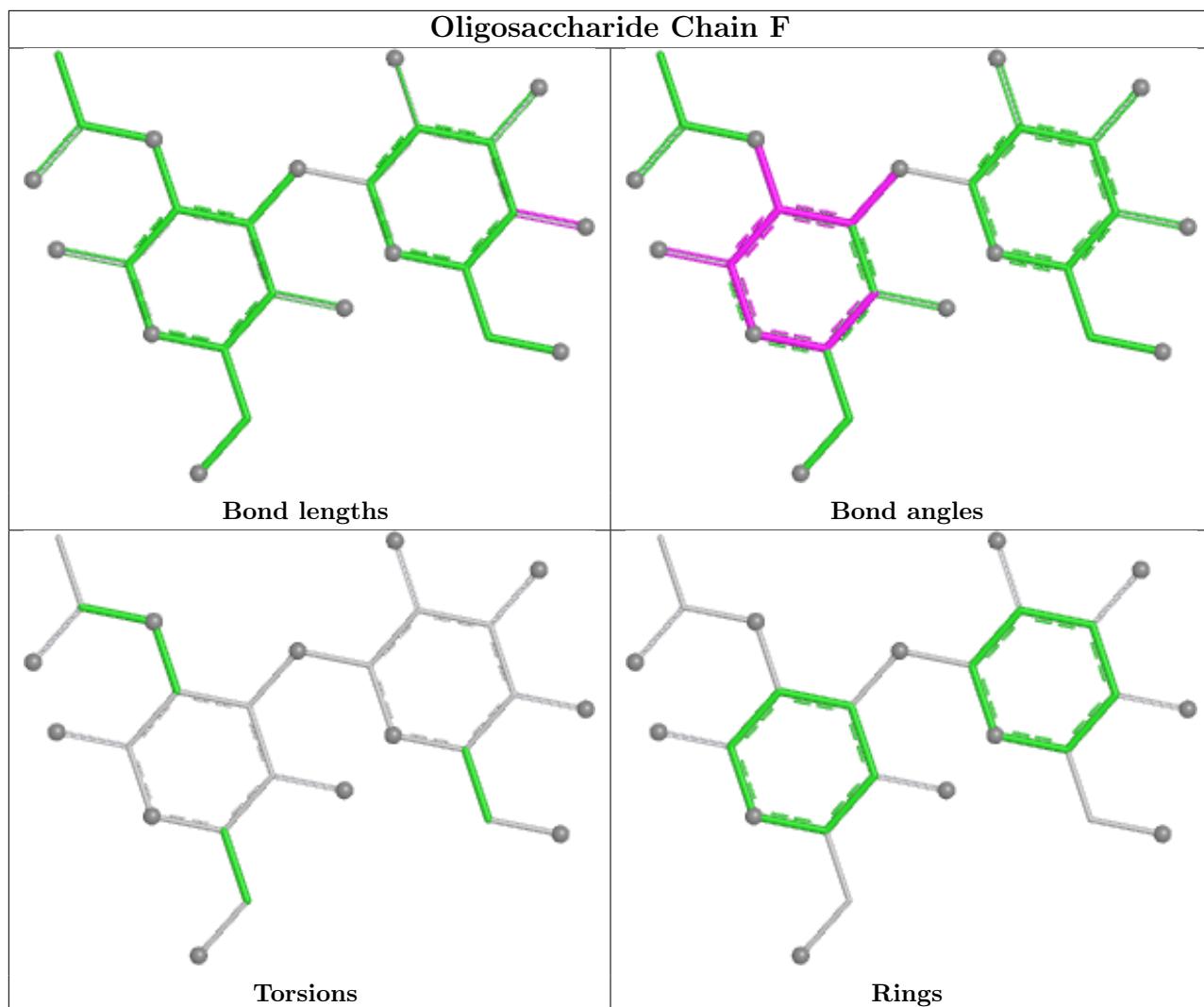
There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.







5.6 Ligand geometry (i)

Of 16 ligands modelled in this entry, 3 are monoatomic - leaving 13 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	SO4	A	401	-	4,4,4	0.41	0	6,6,6	0.39	0
6	GOL	B	500	-	5,5,5	0.93	0	5,5,5	1.47	2 (40%)
6	GOL	B	501	-	5,5,5	0.67	0	5,5,5	1.24	1 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	GOL	A	500	-	5,5,5	0.69	0	5,5,5	0.62	0
6	GOL	C	500	-	5,5,5	0.64	0	5,5,5	0.74	0
6	GOL	C	502	-	5,5,5	0.29	0	5,5,5	1.25	0
7	1PG	A	502	-	16,16,16	1.37	3 (18%)	15,15,15	1.35	2 (13%)
3	A2G	B	301[B]	2	15,15,15	0.56	0	21,21,21	1.06	1 (4%)
6	GOL	C	501	-	5,5,5	0.59	0	5,5,5	1.20	1 (20%)
6	GOL	A	501	-	5,5,5	0.53	0	5,5,5	0.92	0
3	A2G	A	301[B]	2	15,15,15	0.49	0	21,21,21	1.08	1 (4%)
3	A2G	C	301[B]	2	15,15,15	0.49	0	21,21,21	0.80	1 (4%)
6	GOL	B	502	-	5,5,5	0.61	0	5,5,5	0.82	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
6	GOL	B	501	-	-	0/4/4/4	-
6	GOL	B	500	-	-	2/4/4/4	-
7	1PG	A	502	-	-	5/14/14/14	-
6	GOL	A	500	-	-	2/4/4/4	-
6	GOL	C	500	-	-	2/4/4/4	-
6	GOL	C	502	-	-	2/4/4/4	-
3	A2G	B	301[B]	2	-	0/6/26/26	0/1/1/1
6	GOL	C	501	-	-	0/4/4/4	-
6	GOL	A	501	-	-	2/4/4/4	-
3	A2G	A	301[B]	2	-	0/6/26/26	0/1/1/1
3	A2G	C	301[B]	2	-	0/6/26/26	0/1/1/1
6	GOL	B	502	-	-	2/4/4/4	-

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	A	502	1PG	O5-C10	2.98	1.55	1.42
7	A	502	1PG	O6-C11	2.61	1.55	1.42
7	A	502	1PG	O5-C9	2.01	1.50	1.42

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	A	502	1PG	O5-C10-C11	3.14	123.96	110.11
3	B	301[B]	A2G	O3-C3-C2	-3.10	103.42	109.58
3	A	301[B]	A2G	O3-C3-C2	-2.74	104.13	109.58
3	C	301[B]	A2G	O3-C3-C2	-2.50	104.62	109.58
6	B	500	GOL	O3-C3-C2	-2.42	99.47	110.38
6	B	500	GOL	O2-C2-C3	-2.18	100.17	109.18
6	C	501	GOL	O3-C3-C2	-2.16	100.67	110.38
7	A	502	1PG	O5-C9-C8	2.14	120.13	110.35
6	B	501	GOL	O2-C2-C1	2.03	117.57	109.18

There are no chirality outliers.

All (17) torsion outliers are listed below:

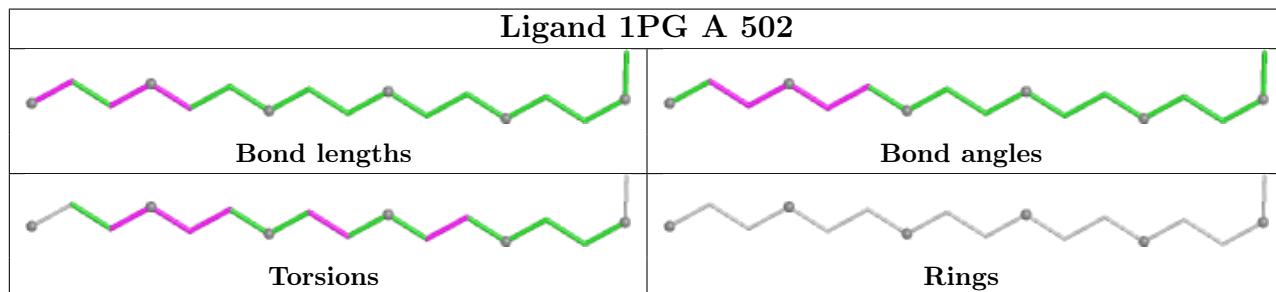
Mol	Chain	Res	Type	Atoms
6	A	501	GOL	O1-C1-C2-C3
6	B	500	GOL	O1-C1-C2-C3
6	B	502	GOL	O1-C1-C2-C3
6	C	502	GOL	O1-C1-C2-C3
7	A	502	1PG	C11-C10-O5-C9
6	B	500	GOL	O1-C1-C2-O2
6	B	502	GOL	O1-C1-C2-O2
6	C	500	GOL	C1-C2-C3-O3
6	C	502	GOL	O1-C1-C2-O2
6	A	500	GOL	O1-C1-C2-C3
6	A	500	GOL	O1-C1-C2-O2
6	C	500	GOL	O2-C2-C3-O3
7	A	502	1PG	O3-C6-C7-O4
7	A	502	1PG	O2-C4-C5-O3
6	A	501	GOL	O1-C1-C2-O2
7	A	502	1PG	C8-C9-O5-C10
7	A	502	1PG	O4-C8-C9-O5

There are no ring outliers.

6 monomers are involved in 14 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	B	500	GOL	2	0
6	B	501	GOL	1	0
6	A	500	GOL	1	0
6	C	500	GOL	2	0
7	A	502	1PG	7	0
3	A	301[B]	A2G	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



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 [\(i\)](#)

EDS failed to run properly - this section is therefore empty.

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

EDS failed to run properly - this section is therefore empty.

6.3 Carbohydrates [\(i\)](#)

EDS failed to run properly - this section is therefore empty.

6.4 Ligands [\(i\)](#)

EDS failed to run properly - this section is therefore empty.

6.5 Other polymers [\(i\)](#)

EDS failed to run properly - this section is therefore empty.