



# Full wwPDB X-ray Structure Validation Report ⓘ

Dec 14, 2024 – 07:22 PM EST

PDB ID : 1KMH  
Title : Crystal Structure of spinach chloroplast F1-ATPase complexed with tentoxin  
Authors : Groth, G.  
Deposited on : 2001-12-16  
Resolution : 3.40 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](mailto: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>.

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

MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
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)	:	2.40

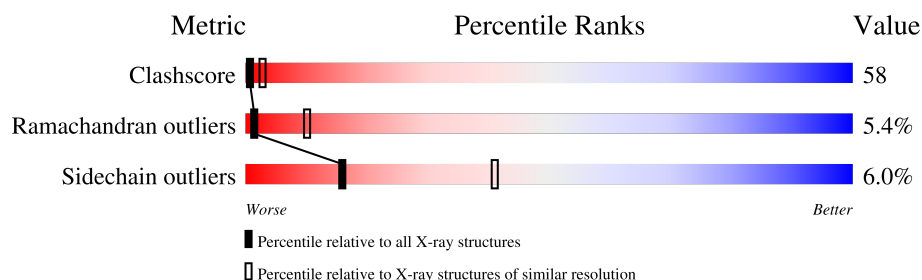
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.40 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	1172 (3.46-3.34)
Ramachandran outliers	177936	1172 (3.46-3.34)
Sidechain outliers	177891	1172 (3.46-3.34)

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  $\geq 3$ , 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 was not executed.

Mol	Chain	Length	Quality of chain
1	A	507	
2	B	498	

## 2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 7217 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.

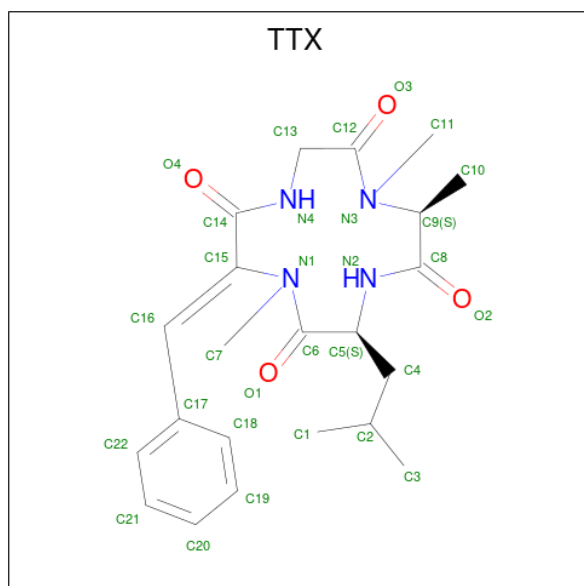
- Molecule 1 is a protein called ATPase alpha subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	477	Total	C	N	O	S	0	0	0
			3647	2296	628	710	13			

- Molecule 2 is a protein called ATPase beta subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	467	Total	C	N	O	S	0	0	0
			3540	2234	612	680	14			

- Molecule 3 is TENTOXIN (three-letter code: TTX) (formula:  $C_{22}H_{30}N_4O_4$ ).



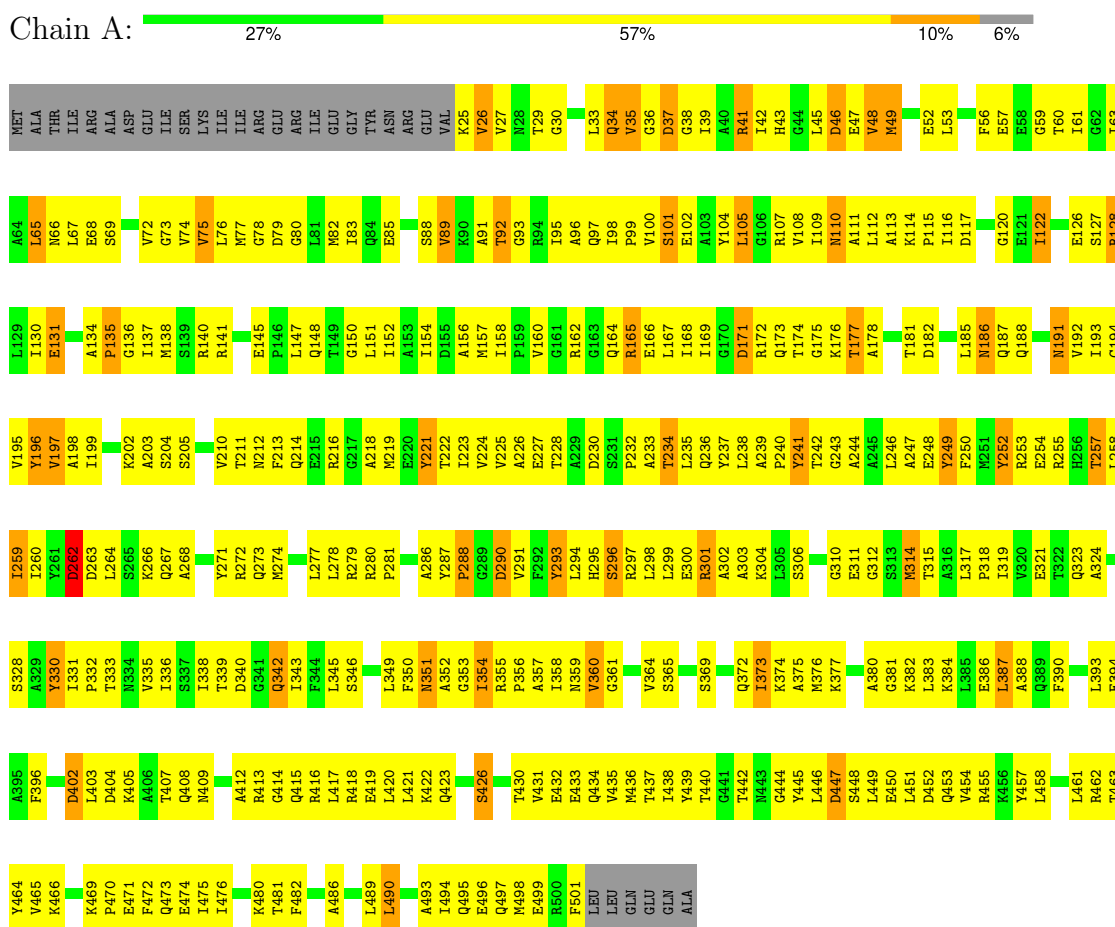
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	B	1	Total	C	N	O	0	0
			30	22	4	4		

### 3 Residue-property plots

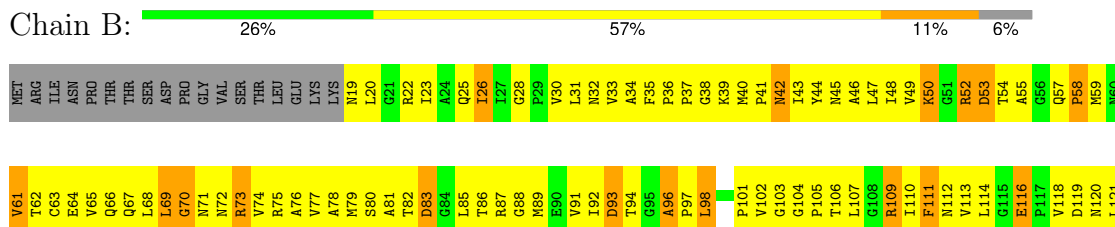
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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 was not executed.

#### • Molecule 1: ATPase alpha subunit



#### • Molecule 2: ATPase beta subunit



L469	K392	S320	L254	I186	R122
L470	D403	D333	T255	I187	P123
D481	I404	L334	T256	N188	
E482	I405	T335	T257	I189	T126
A483	A406		A258	A190	R127
T484	I407	Q325	T259		T128
A485	L408	Q326	T260	H193	T129
LYS	G409	A326	R261	G194	S130
ALA	L410	V327	F262	G195	P131
MET	D411	Q328	D263	V196	T132
ASN	E412	V329	D264	S197	H133
LEU	L413	V329	E265	V198	R134
GLU	S414		E266	F199	S135
MET		A338	E268	G200	A136
	D417	L408	L269	V202	P137
GLU	L418	L409	L270	G201	A138
SER	L419	T341	L271	V202	F139
LYS	L420	T342	F271	G203	F140
LEU	T420	F343	L272	E204	T140
LYS	T421	F344	D273	R205	Q141
	A422	A344	T274	T206	L142
	A423	E412	N275	R207	D143
	R425	H345	T276	E208	T144
R426	L426	L346	F276	G209	K145
I427	L427	D347	R277		L146
A428	L428		F278	L212	S147
R429	L288		V279		I148
F430	G290		Q280	M216	F149
L431	R291		G281		
	P367		G282	S219	G152
	L368		S283	G220	I153
Q433	D369		E284	V221	K154
P434			V285	I222	V155
F435			S286	N223	V156
	S372		A287		N157
	T373		L288	I227	L158
A438	K374		L289	A228	L159
	Q376		G299	K231	A160
L451	P377		P300	V232	P161
	R378		T301	A233	Y162
T454	L379		L302	I234	R163
I455	V380		E305	V235	R164
	G381		S308	V236	G165
F458	L385		L309	G237	K167
Q459	E386		Q310	Q238	I168
L460	L387		R311	M239	G169
L461	A461		R312	K240	L170
L462	L462		I313	R248	
S463	A464		T314	V249	K178
G464	Q464		S315	R249	T179
A465	L465		T316	G250	V180
			R390	L251	L181
			T391	T252	M183
				E253	E184
					L185

## 4 Data and refinement statistics

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	H 3 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	146.89Å 146.89Å 381.68Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	6.00 – 3.40	Depositor
% Data completeness (in resolution range)	92.5 (6.00-3.40)	Depositor
$R_{merge}$	0.09	Depositor
$R_{sym}$	(Not available)	Depositor
Refinement program	REFMAC 5.0, CNS	Depositor
R, $R_{free}$	0.297 , 0.319	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	7217	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	139.0	wwPDB-VP

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: TTX

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	1.13	10/3695 (0.3%)	1.02	11/5002 (0.2%)
2	B	1.16	12/3598 (0.3%)	1.06	16/4883 (0.3%)
All	All	1.15	22/7293 (0.3%)	1.04	27/9885 (0.3%)

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	73	ARG	CZ-NH1	9.20	1.45	1.33
1	A	196	TYR	CE2-CZ	-8.64	1.27	1.38
1	A	197	VAL	CB-CG1	8.01	1.69	1.52
1	A	221	TYR	CG-CD2	-7.17	1.29	1.39
2	B	237	GLY	C-O	-6.61	1.13	1.23
2	B	77	VAL	CA-CB	-6.32	1.41	1.54
2	B	80	SER	CB-OG	6.24	1.50	1.42
2	B	28	GLY	C-O	-5.97	1.14	1.23
2	B	244	GLY	C-O	5.95	1.33	1.23
1	A	252	TYR	CG-CD1	-5.92	1.31	1.39
1	A	75	VAL	C-O	-5.89	1.12	1.23
1	A	241	TYR	CG-CD2	-5.78	1.31	1.39
2	B	111	PHE	CE1-CZ	-5.73	1.26	1.37
2	B	232	VAL	CB-CG1	-5.63	1.41	1.52
1	A	293	TYR	CB-CG	-5.55	1.43	1.51
1	A	74	VAL	CB-CG2	-5.50	1.41	1.52
1	A	72	VAL	CA-CB	-5.30	1.43	1.54
1	A	63	ILE	CA-CB	-5.26	1.42	1.54
2	B	96	ALA	C-O	-5.17	1.13	1.23
2	B	109	ARG	CG-CD	-5.16	1.39	1.51
2	B	305	GLU	CD-OE1	5.09	1.31	1.25
2	B	34	ALA	CA-CB	-5.03	1.41	1.52

All (27) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	73	ARG	NE-CZ-NH2	-12.08	114.26	120.30
2	B	83	ASP	CB-CG-OD2	9.97	127.27	118.30
1	A	117	ASP	CB-CG-OD2	7.85	125.36	118.30
1	A	301	ARG	NE-CZ-NH1	-6.93	116.83	120.30
2	B	333	ASP	CB-CG-OD2	6.69	124.32	118.30
1	A	259	ILE	CG1-CB-CG2	-6.43	97.24	111.40
2	B	116	GLU	OE1-CD-OE2	6.30	130.86	123.30
2	B	305	GLU	OE1-CD-OE2	6.17	130.71	123.30
1	A	79	ASP	CB-CG-OD2	6.16	123.85	118.30
2	B	369	ASP	CB-CG-OD2	6.12	123.81	118.30
1	A	171	ASP	CB-CG-OD2	5.97	123.67	118.30
1	A	290	ASP	CB-CG-OD2	5.97	123.67	118.30
1	A	165	ARG	NE-CZ-NH1	5.71	123.16	120.30
2	B	50	LYS	N-CA-C	5.67	126.32	111.00
2	B	93	ASP	CB-CG-OD1	5.63	123.37	118.30
2	B	347	ASP	CB-CG-OD2	5.59	123.33	118.30
2	B	277	ARG	NE-CZ-NH1	-5.57	117.51	120.30
1	A	262	ASP	CB-CG-OD2	5.46	123.21	118.30
1	A	314	MET	CG-SD-CE	-5.44	91.50	100.20
2	B	73	ARG	NE-CZ-NH1	5.43	123.02	120.30
1	A	165	ARG	NE-CZ-NH2	-5.30	117.65	120.30
2	B	53	ASP	CB-CG-OD2	5.29	123.06	118.30
1	A	402	ASP	CB-CG-OD2	5.22	123.00	118.30
2	B	273	ASP	CB-CG-OD2	5.13	122.92	118.30
2	B	70	GLY	N-CA-C	-5.13	100.28	113.10
2	B	83	ASP	OD1-CG-OD2	-5.08	113.64	123.30
2	B	26	ILE	CG1-CB-CG2	-5.00	100.39	111.40

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	3647	0	3715	432	1
2	B	3540	0	3589	423	0
3	B	30	0	29	20	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	7217	0	7333	844	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 58.

All (844) 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)
3:B:499:TTX:H181	3:B:499:TTX:C7	1.32	1.57
1:A:274:MET:SD	1:A:274:MET:CE	2.01	1.48
1:A:131:GLU:HG2	1:A:297:ARG:NH1	1.41	1.33
1:A:131:GLU:CG	1:A:297:ARG:NH1	1.92	1.32
3:B:499:TTX:C7	3:B:499:TTX:C18	2.14	1.25
3:B:499:TTX:C18	3:B:499:TTX:H73	1.74	1.17
1:A:131:GLU:CG	1:A:297:ARG:HH12	1.56	1.15
3:B:499:TTX:C18	3:B:499:TTX:H72	1.80	1.09
3:B:499:TTX:H181	3:B:499:TTX:H73	1.14	1.08
3:B:499:TTX:H181	3:B:499:TTX:H72	1.11	1.08
1:A:131:GLU:HG3	1:A:297:ARG:CZ	1.86	1.06
1:A:131:GLU:HG3	1:A:297:ARG:NH1	1.71	1.06
2:B:275:ILE:O	2:B:278:PHE:HB3	1.56	1.03
2:B:243:PRO:HA	2:B:246:ARG:HH21	1.19	1.03
1:A:240:PRO:HB2	1:A:298:LEU:HD21	1.44	1.00
1:A:152:ILE:H	1:A:423:GLN:HE22	1.04	0.99
2:B:19:ASN:HB3	2:B:39:LYS:HD3	1.43	0.99
1:A:39:ILE:HD11	1:A:277:LEU:HB3	1.43	0.99
1:A:131:GLU:CG	1:A:297:ARG:CZ	2.40	0.97
1:A:39:ILE:CD1	1:A:277:LEU:HB3	1.97	0.94
2:B:41:PRO:HG2	2:B:74:VAL:HG11	1.51	0.92
2:B:69:LEU:HD21	2:B:75:ARG:HE	1.34	0.91
2:B:238:GLN:HE21	2:B:238:GLN:HA	1.33	0.90
2:B:46:ALA:O	2:B:94:THR:HG22	1.71	0.88
2:B:222:ILE:HG22	2:B:223:ASN:H	1.38	0.88
1:A:437:THR:HG21	1:A:462:ARG:HH21	1.40	0.87
2:B:251:LEU:HD21	2:B:309:LEU:HD22	1.56	0.86
2:B:185:LEU:HD13	2:B:324:ILE:HG21	1.56	0.86
1:A:188:GLN:O	1:A:191:ASN:HB2	1.75	0.85
1:A:240:PRO:CB	1:A:298:LEU:HD21	2.06	0.85
1:A:152:ILE:H	1:A:423:GLN:NE2	1.73	0.85
2:B:96:ALA:HB1	2:B:97:PRO:HD2	1.59	0.85
1:A:131:GLU:HG2	1:A:297:ARG:HH12	0.72	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:155:VAL:HG22	2:B:431:LEU:HD22	1.59	0.85
2:B:132:ILE:HA	2:B:255:THR:OG1	1.77	0.84
2:B:134:ARG:H	2:B:312:ARG:NH1	1.75	0.84
2:B:246:ARG:HB2	2:B:246:ARG:CZ	2.08	0.84
1:A:152:ILE:N	1:A:423:GLN:HE22	1.77	0.83
1:A:174:THR:HA	1:A:350:PHE:HZ	1.45	0.81
1:A:393:LEU:HD13	1:A:407:THR:HG23	1.60	0.81
2:B:69:LEU:HD12	2:B:73:ARG:HG2	1.62	0.81
2:B:104:GLY:N	2:B:105:PRO:HD2	1.96	0.81
2:B:122:ARG:HB3	2:B:123:PRO:HD2	1.62	0.81
2:B:30:VAL:HG21	2:B:288:LEU:HD22	1.63	0.81
1:A:440:THR:HG22	1:A:446:LEU:HG	1.62	0.80
1:A:373:ILE:HG22	1:A:374:LYS:H	1.46	0.80
1:A:232:PRO:HG2	1:A:235:LEU:HD12	1.63	0.79
1:A:381:GLY:HA2	1:A:384:LYS:HD2	1.64	0.79
2:B:152:GLY:H	2:B:157:ASN:HD21	1.29	0.79
2:B:207:ARG:HH11	2:B:207:ARG:HB3	1.47	0.79
2:B:247:MET:SD	2:B:282:GLY:HA2	2.21	0.79
2:B:390:ARG:HA	2:B:393:GLU:OE1	1.83	0.79
2:B:158:LEU:HD22	2:B:454:THR:HG22	1.65	0.78
2:B:388:ALA:O	2:B:392:LYS:HG3	1.84	0.78
1:A:174:THR:HA	1:A:350:PHE:CZ	2.18	0.78
1:A:197:VAL:HG12	1:A:199:ILE:HD11	1.63	0.78
2:B:105:PRO:HG3	2:B:126:THR:HA	1.64	0.78
2:B:147:SER:O	2:B:374:MET:HE1	1.83	0.78
1:A:53:LEU:HD11	1:A:96:ALA:HA	1.64	0.78
1:A:264:LEU:HB3	1:A:295:HIS:CE1	2.19	0.78
2:B:41:PRO:HB2	2:B:65:VAL:HG21	1.65	0.78
2:B:302:LEU:O	2:B:302:LEU:HD23	1.83	0.78
2:B:285:VAL:O	2:B:289:LEU:HD12	1.84	0.77
1:A:68:GLU:HA	2:B:25:GLN:HG2	1.67	0.77
2:B:109:ARG:NE	2:B:119:ASP:OD2	2.16	0.77
2:B:245:ALA:O	2:B:249:VAL:HG13	1.85	0.77
1:A:445:TYR:HB3	1:A:498:MET:SD	2.24	0.77
1:A:131:GLU:HB3	1:A:297:ARG:HH22	1.49	0.76
1:A:216:ARG:NH1	1:A:426:SER:HB2	2.00	0.76
2:B:389:GLN:O	2:B:393:GLU:HG3	1.84	0.76
2:B:243:PRO:HA	2:B:246:ARG:NH2	1.99	0.76
1:A:65:LEU:HD22	3:B:499:TTX:C18	2.15	0.76
2:B:387:ILE:O	2:B:391:VAL:HG23	1.85	0.76
2:B:429:ARG:HE	2:B:472:GLN:NE2	1.82	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:260:PHE:HB2	2:B:268:VAL:HG21	1.67	0.75
1:A:296:SER:HB2	2:B:239:MET:HB3	1.69	0.75
1:A:354:ILE:HG22	1:A:357:ALA:HA	1.69	0.75
2:B:276:PHE:CD2	2:B:328:TYR:HB3	2.22	0.75
2:B:429:ARG:HE	2:B:472:GLN:HE22	1.35	0.74
1:A:293:TYR:OH	2:B:246:ARG:NH2	2.20	0.74
2:B:275:ILE:HG22	2:B:327:VAL:HG22	1.69	0.74
2:B:310:GLN:HA	2:B:313:ILE:HD12	1.69	0.74
1:A:287:TYR:HB3	1:A:291:VAL:HG21	1.68	0.74
2:B:425:ARG:HD3	2:B:471:GLU:OE2	1.87	0.74
2:B:466:LEU:HB3	2:B:469:LEU:HD12	1.70	0.74
2:B:82:THR:O	2:B:85:LEU:HG	1.86	0.74
2:B:207:ARG:HB3	2:B:207:ARG:NH1	2.01	0.74
2:B:33:VAL:HG13	2:B:91:VAL:HG21	1.70	0.73
2:B:269:LEU:HD22	2:B:322:THR:HB	1.70	0.73
1:A:187:GLN:HE22	1:A:258:LEU:HD22	1.51	0.73
1:A:262:ASP:HA	1:A:319:ILE:HD12	1.69	0.73
2:B:343:PHE:HA	2:B:346:LEU:HD12	1.68	0.73
2:B:41:PRO:CG	2:B:74:VAL:HG11	2.18	0.73
1:A:413:ARG:HA	1:A:416:ARG:HD2	1.70	0.73
1:A:95:ILE:HG12	1:A:95:ILE:O	1.88	0.73
1:A:446:LEU:HA	1:A:449:LEU:HD12	1.69	0.73
1:A:66:ASN:HD22	1:A:68:GLU:CD	1.92	0.72
1:A:364:VAL:HG12	1:A:365:SER:H	1.51	0.72
2:B:160:ALA:HA	2:B:372:SER:HB3	1.71	0.72
2:B:333:ASP:OD2	2:B:335:THR:OG1	2.08	0.72
1:A:281:PRO:HB2	2:B:287:ALA:HB1	1.70	0.72
1:A:293:TYR:CD1	1:A:293:TYR:N	2.53	0.72
1:A:210:VAL:HG13	1:A:219:MET:HE1	1.72	0.72
2:B:131:PRO:HD2	2:B:134:ARG:HH21	1.55	0.72
1:A:187:GLN:OE1	1:A:192:VAL:HB	1.90	0.72
1:A:204:SER:OG	1:A:205:SER:N	2.20	0.72
1:A:49:MET:HG3	1:A:52:GLU:OE1	1.89	0.71
1:A:158:ILE:HG21	1:A:343:ILE:HG12	1.71	0.71
1:A:461:LEU:CD2	1:A:497:GLN:HB3	2.19	0.71
2:B:222:ILE:HG22	2:B:223:ASN:N	2.05	0.71
2:B:310:GLN:NE2	2:B:325:GLN:OE1	2.21	0.71
1:A:138:MET:SD	2:B:119:ASP:C	2.68	0.71
1:A:271:TYR:HD2	1:A:294:LEU:HD11	1.55	0.70
2:B:36:PRO:HD2	2:B:39:LYS:HB2	1.72	0.70
1:A:211:THR:O	1:A:213:PHE:N	2.25	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:247:ALA:HB1	1:A:257:THR:HG21	1.74	0.70
1:A:197:VAL:HG22	1:A:225:VAL:HB	1.71	0.70
2:B:286:SER:HA	2:B:291:ARG:NH1	2.07	0.70
2:B:395:LEU:HD21	2:B:428:GLU:HG2	1.73	0.70
2:B:167:LYS:HB3	2:B:325:GLN:NE2	2.05	0.70
1:A:264:LEU:HB3	1:A:295:HIS:HE1	1.54	0.69
2:B:35:PHE:HB3	2:B:36:PRO:HD2	1.73	0.69
1:A:211:THR:C	1:A:213:PHE:H	1.95	0.69
2:B:149:PHE:CD1	2:B:164:ARG:HG2	2.27	0.69
2:B:398:TYR:HA	2:B:401:LEU:HD12	1.74	0.69
1:A:131:GLU:CB	1:A:297:ARG:HH22	2.05	0.69
1:A:135:PRO:HB2	1:A:140:ARG:HH21	1.58	0.69
1:A:444:GLY:HA2	1:A:447:ASP:OD1	1.92	0.69
1:A:198:ALA:HB3	1:A:226:ALA:HB1	1.73	0.69
1:A:162:ARG:NH1	1:A:192:VAL:HG22	2.07	0.69
1:A:182:ASP:HA	1:A:185:LEU:HD12	1.75	0.69
2:B:82:THR:HB	2:B:85:LEU:HD12	1.75	0.68
1:A:131:GLU:CG	1:A:297:ARG:NH2	2.57	0.68
2:B:19:ASN:O	2:B:92:ILE:HG13	1.93	0.68
1:A:350:PHE:HB3	1:A:355:ARG:NH2	2.09	0.68
2:B:37:PRO:HA	2:B:72:ASN:OD1	1.93	0.68
2:B:118:VAL:HG12	2:B:118:VAL:O	1.92	0.68
2:B:474:PHE:O	2:B:477:VAL:HG22	1.94	0.68
2:B:264:ASN:O	2:B:266:GLN:N	2.27	0.68
2:B:423:ARG:O	2:B:427:ILE:HG13	1.94	0.68
1:A:39:ILE:HD11	1:A:277:LEU:HD13	1.74	0.68
1:A:293:TYR:OH	2:B:246:ARG:CZ	2.42	0.68
1:A:434:GLN:O	1:A:438:ILE:HG12	1.94	0.68
1:A:486:ALA:HA	1:A:489:LEU:HB2	1.76	0.68
1:A:356:PRO:HD2	1:A:423:GLN:H	1.59	0.67
1:A:126:GLU:O	1:A:127:SER:OG	2.13	0.67
1:A:198:ALA:HB3	1:A:226:ALA:CB	2.25	0.67
1:A:340:ASP:CG	2:B:207:ARG:HE	1.97	0.67
1:A:450:GLU:HB2	1:A:453:GLN:OE1	1.94	0.67
1:A:250:PHE:O	1:A:255:ARG:HB2	1.94	0.67
2:B:353:SER:HB3	2:B:356:LEU:HB2	1.76	0.66
2:B:264:ASN:HB2	2:B:266:GLN:HG3	1.75	0.66
1:A:271:TYR:CD2	1:A:294:LEU:HD11	2.30	0.66
1:A:291:VAL:HA	1:A:294:LEU:HD11	1.78	0.66
2:B:25:GLN:HB2	2:B:32:ASN:HD22	1.60	0.66
2:B:148:ILE:HD13	2:B:451:LEU:HD11	1.78	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:293:TYR:CE1	2:B:284:GLU:OE2	2.48	0.66
2:B:104:GLY:N	2:B:105:PRO:CD	2.58	0.66
1:A:39:ILE:HD11	1:A:277:LEU:CB	2.22	0.66
1:A:131:GLU:CB	1:A:297:ARG:NH2	2.59	0.66
1:A:216:ARG:HH12	1:A:426:SER:HB2	1.58	0.66
2:B:79:MET:SD	2:B:244:GLY:O	2.54	0.66
1:A:197:VAL:HG12	1:A:199:ILE:CD1	2.25	0.66
1:A:187:GLN:NE2	1:A:194:CYS:SG	2.68	0.66
1:A:187:GLN:NE2	1:A:258:LEU:HD22	2.11	0.66
1:A:381:GLY:O	1:A:384:LYS:HB2	1.95	0.66
1:A:430:THR:HG22	1:A:431:VAL:H	1.60	0.66
2:B:107:LEU:HD21	2:B:196:VAL:HG13	1.76	0.66
2:B:310:GLN:HE22	2:B:325:GLN:CD	1.98	0.66
2:B:104:GLY:O	2:B:107:LEU:HD12	1.96	0.65
2:B:435:PHE:HB2	2:B:438:ALA:HB3	1.78	0.65
1:A:295:HIS:CD2	1:A:335:VAL:HG22	2.31	0.65
1:A:33:LEU:HD21	1:A:43:HIS:HB2	1.78	0.65
1:A:42:ILE:HG21	1:A:45:LEU:HD12	1.78	0.65
1:A:293:TYR:HE1	2:B:284:GLU:OE2	1.80	0.65
1:A:356:PRO:HD2	1:A:423:GLN:N	2.10	0.65
2:B:83:ASP:OD1	3:B:499:TTX:O3	2.15	0.65
2:B:302:LEU:HD23	2:B:302:LEU:C	2.16	0.65
1:A:167:LEU:N	1:A:339:THR:HG21	2.12	0.65
2:B:171:PHE:HZ	2:B:342:THR:HB	1.63	0.64
2:B:178:LYS:O	2:B:181:LEU:HB3	1.98	0.64
2:B:149:PHE:HB2	2:B:162:TYR:O	1.96	0.64
2:B:83:ASP:OD1	3:B:499:TTX:C12	2.45	0.64
1:A:232:PRO:HG2	1:A:235:LEU:CD1	2.28	0.64
2:B:216:MET:CE	2:B:232:VAL:HG21	2.28	0.64
2:B:396:GLN:HE21	2:B:400:GLU:CD	2.00	0.64
1:A:61:ILE:HG22	1:A:77:MET:SD	2.38	0.64
1:A:160:VAL:HA	1:A:164:GLN:OE1	1.98	0.64
2:B:101:PRO:HB2	2:B:126:THR:HG21	1.80	0.64
1:A:65:LEU:HD11	1:A:75:VAL:CG2	2.28	0.63
1:A:126:GLU:OE2	1:A:253:ARG:NH2	2.31	0.63
2:B:286:SER:HA	2:B:291:ARG:HH12	1.63	0.63
1:A:135:PRO:HB2	1:A:140:ARG:HE	1.62	0.63
1:A:364:VAL:HG12	1:A:365:SER:N	2.12	0.63
1:A:376:MET:SD	1:A:435:VAL:HG22	2.38	0.63
2:B:69:LEU:HD22	2:B:75:ARG:HH21	1.63	0.63
2:B:163:ARG:HE	2:B:374:MET:CB	2.11	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:422:LYS:HD3	1:A:455:ARG:HH21	1.62	0.63
2:B:170:LEU:HD22	2:B:181:LEU:HD21	1.79	0.63
1:A:53:LEU:CD1	1:A:96:ALA:HA	2.28	0.63
1:A:138:MET:SD	2:B:120:ASN:N	2.72	0.63
2:B:167:LYS:HB3	2:B:325:GLN:HE21	1.63	0.63
2:B:296:VAL:HG12	2:B:296:VAL:O	1.98	0.63
1:A:462:ARG:HB3	1:A:466:LYS:HE3	1.80	0.63
2:B:410:LEU:O	2:B:418:ARG:CZ	2.47	0.63
1:A:461:LEU:O	1:A:465:VAL:HG23	1.99	0.62
2:B:163:ARG:HE	2:B:374:MET:CG	2.13	0.62
1:A:34:GLN:HG3	1:A:41:ARG:HB2	1.81	0.62
2:B:399:LYS:HA	2:B:402:GLN:HE21	1.65	0.62
1:A:156:ALA:O	1:A:380:ALA:HB1	2.00	0.62
1:A:461:LEU:HD22	1:A:497:GLN:HB3	1.81	0.62
2:B:219:SER:OG	2:B:221:VAL:HG23	2.00	0.62
1:A:194:CYS:O	1:A:222:THR:HA	1.99	0.62
2:B:61:VAL:HG21	2:B:85:LEU:HD21	1.81	0.62
1:A:137:ILE:HG21	2:B:110:ILE:HD13	1.82	0.62
1:A:338:ILE:HG12	2:B:239:MET:HE1	1.82	0.62
1:A:150:GLY:N	1:A:186:ASN:ND2	2.47	0.61
1:A:45:LEU:HB3	1:A:48:VAL:HG13	1.82	0.61
2:B:101:PRO:HA	2:B:129:THR:HA	1.81	0.61
2:B:136:ALA:HB1	2:B:311:GLU:O	2.01	0.61
1:A:263:ASP:H	1:A:319:ILE:HB	1.64	0.61
2:B:149:PHE:HB3	2:B:162:TYR:HB2	1.83	0.61
1:A:67:LEU:O	2:B:87:ARG:HD3	1.99	0.61
2:B:179:THR:O	2:B:182:ILE:HG22	2.01	0.61
2:B:105:PRO:CG	2:B:126:THR:HA	2.31	0.61
2:B:163:ARG:HH21	2:B:374:MET:HG3	1.66	0.61
1:A:110:ASN:HB2	1:A:114:LYS:O	2.00	0.60
2:B:245:ALA:O	2:B:249:VAL:CG1	2.49	0.60
1:A:346:SER:HB3	1:A:359:ASN:HD21	1.66	0.60
2:B:49:VAL:HG22	2:B:91:VAL:HG13	1.83	0.60
2:B:458:PHE:HA	2:B:461:ILE:HD12	1.83	0.60
1:A:359:ASN:O	1:A:361:GLY:N	2.34	0.60
2:B:378:ARG:O	2:B:379:ILE:HD13	2.01	0.60
3:B:499:TTX:C7	3:B:499:TTX:C17	2.62	0.60
2:B:167:LYS:HE2	2:B:325:GLN:HE22	1.67	0.60
1:A:100:VAL:HG23	1:A:246:LEU:HD23	1.83	0.60
2:B:42:ASN:HB2	2:B:45:ASN:OD1	2.01	0.60
2:B:81:ALA:HB1	3:B:499:TTX:H111	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:66:ASN:HD22	1:A:68:GLU:CG	2.15	0.60
1:A:181:THR:HG23	1:A:213:PHE:CE1	2.36	0.60
2:B:203:GLY:HA3	2:B:277:ARG:HB3	1.84	0.60
1:A:130:ILE:HG23	1:A:241:TYR:HB3	1.84	0.60
2:B:422:ALA:HB1	2:B:426:LYS:NZ	2.17	0.59
2:B:471:GLU:C	2:B:473:ALA:H	2.03	0.59
1:A:225:VAL:HG21	1:A:243:GLY:HA2	1.83	0.59
2:B:319:GLY:O	2:B:320:SER:HB2	2.02	0.59
2:B:308:SER:O	2:B:309:LEU:HD23	2.02	0.59
2:B:46:ALA:O	2:B:94:THR:CG2	2.46	0.59
1:A:386:GLU:C	1:A:388:ALA:H	2.06	0.59
2:B:163:ARG:HE	2:B:374:MET:HB2	1.67	0.59
1:A:128:ARG:HH12	1:A:252:TYR:HE1	1.51	0.59
2:B:38:GLY:O	2:B:40:MET:HG3	2.02	0.59
2:B:121:LEU:O	2:B:122:ARG:HB2	2.03	0.59
3:B:499:TTX:H73	3:B:499:TTX:C17	2.28	0.59
1:A:65:LEU:HD22	3:B:499:TTX:C19	2.33	0.59
2:B:397:ARG:O	2:B:401:LEU:HG	2.02	0.59
1:A:351:ASN:C	1:A:353:GLY:H	2.05	0.58
1:A:104:TYR:O	1:A:105:LEU:C	2.41	0.58
1:A:181:THR:HG23	1:A:213:PHE:HE1	1.67	0.58
1:A:258:LEU:C	1:A:259:ILE:HD12	2.24	0.58
1:A:239:ALA:HB3	1:A:240:PRO:CD	2.33	0.58
1:A:296:SER:N	1:A:338:ILE:HD13	2.17	0.58
2:B:156:VAL:O	2:B:158:LEU:N	2.36	0.58
1:A:237:TYR:O	1:A:240:PRO:HD2	2.02	0.58
1:A:293:TYR:OH	2:B:246:ARG:NH1	2.37	0.58
1:A:145:GLU:OE1	1:A:304:LYS:NZ	2.31	0.58
1:A:138:MET:SD	2:B:119:ASP:CA	2.92	0.58
1:A:158:ILE:HD11	1:A:360:VAL:HG13	1.84	0.58
1:A:249:TYR:O	1:A:253:ARG:HG3	2.04	0.58
1:A:346:SER:OG	1:A:349:LEU:HB2	2.03	0.58
2:B:69:LEU:HD21	2:B:75:ARG:HB2	1.85	0.58
1:A:233:ALA:C	1:A:235:LEU:H	2.08	0.57
1:A:274:MET:CE	1:A:274:MET:CG	2.81	0.57
2:B:141:GLN:O	2:B:316:THR:HB	2.05	0.57
1:A:210:VAL:HG13	1:A:219:MET:CE	2.34	0.57
2:B:240:ASN:HD22	2:B:240:ASN:N	2.02	0.57
2:B:398:TYR:O	2:B:402:GLN:HG3	2.04	0.57
2:B:48:ILE:HG22	2:B:92:ILE:CG2	2.35	0.57
2:B:463:SER:OG	2:B:465:GLU:HG3	2.04	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:336:ILE:HG23	1:A:342:GLN:HE22	1.69	0.57
2:B:64:GLU:CD	2:B:248:ARG:HE	2.08	0.57
2:B:275:ILE:N	2:B:326:ALA:O	2.30	0.57
2:B:471:GLU:O	2:B:473:ALA:N	2.37	0.57
1:A:375:ALA:HB2	1:A:480:LYS:O	2.04	0.57
1:A:108:VAL:HA	1:A:224:VAL:HB	1.87	0.57
1:A:111:ALA:C	1:A:112:LEU:HD23	2.25	0.57
1:A:495:GLN:HA	1:A:498:MET:HE2	1.87	0.57
2:B:278:PHE:CZ	2:B:309:LEU:HD12	2.40	0.57
2:B:196:VAL:HG11	2:B:260:PHE:CE2	2.40	0.57
2:B:285:VAL:O	2:B:289:LEU:CD1	2.52	0.57
2:B:53:ASP:OD1	2:B:58:PRO:HG3	2.04	0.56
1:A:56:PHE:CD1	1:A:89:VAL:CG1	2.88	0.56
1:A:167:LEU:H	1:A:339:THR:HG21	1.68	0.56
1:A:167:LEU:HG	1:A:169:ILE:HG13	1.87	0.56
1:A:233:ALA:O	1:A:235:LEU:N	2.37	0.56
1:A:300:GLU:C	1:A:302:ALA:H	2.08	0.56
1:A:433:GLU:OE2	1:A:466:LYS:HE2	2.05	0.56
2:B:85:LEU:HD22	2:B:89:MET:HE1	1.87	0.56
2:B:222:ILE:CG2	2:B:223:ASN:H	2.12	0.56
1:A:266:LYS:NZ	1:A:321:GLU:OE1	2.38	0.56
2:B:204:GLU:C	2:B:239:MET:HG3	2.26	0.56
2:B:310:GLN:HE22	2:B:325:GLN:NE2	2.03	0.56
1:A:254:GLU:HG2	1:A:310:GLY:CA	2.35	0.56
1:A:437:THR:HG23	1:A:458:LEU:HD22	1.88	0.56
1:A:446:LEU:HA	1:A:449:LEU:CD1	2.36	0.56
2:B:111:PHE:HB2	2:B:235:VAL:HG22	1.86	0.56
1:A:162:ARG:HA	1:A:315:THR:OG1	2.06	0.56
1:A:239:ALA:HB3	1:A:240:PRO:HD3	1.86	0.56
1:A:259:ILE:HD13	1:A:314:MET:HG3	1.87	0.56
1:A:451:LEU:O	1:A:453:GLN:N	2.39	0.56
1:A:148:GLN:HE21	1:A:431:VAL:HG21	1.70	0.56
1:A:472:PHE:O	1:A:476:ILE:HG12	2.06	0.56
1:A:236:GLN:O	1:A:267:GLN:HG3	2.05	0.56
1:A:431:VAL:O	1:A:434:GLN:HB2	2.06	0.56
2:B:83:ASP:CG	3:B:499:TTX:O3	2.44	0.56
2:B:186:ILE:HG23	2:B:190:ALA:HB3	1.88	0.56
2:B:35:PHE:HB3	2:B:36:PRO:CD	2.36	0.56
2:B:134:ARG:O	2:B:312:ARG:HD2	2.06	0.56
2:B:195:GLY:O	2:B:231:LYS:HE2	2.06	0.56
1:A:287:TYR:CZ	1:A:331:ILE:HD13	2.41	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:68:LEU:O	2:B:69:LEU:C	2.44	0.55
1:A:419:GLU:HA	1:A:422:LYS:HG3	1.87	0.55
1:A:227:GLU:OE2	1:A:239:ALA:HA	2.06	0.55
2:B:167:LYS:CE	2:B:310:GLN:NE2	2.69	0.55
2:B:237:GLY:HA3	2:B:249:VAL:HG11	1.88	0.55
2:B:280:GLN:O	2:B:284:GLU:HG3	2.06	0.55
1:A:37:ASP:O	1:A:277:LEU:HD13	2.07	0.55
2:B:96:ALA:HB1	2:B:97:PRO:CD	2.34	0.55
1:A:211:THR:C	1:A:213:PHE:N	2.60	0.55
2:B:148:ILE:HG12	2:B:149:PHE:H	1.71	0.55
1:A:197:VAL:HA	1:A:225:VAL:O	2.07	0.55
2:B:240:ASN:N	2:B:240:ASN:ND2	2.55	0.55
2:B:274:ASN:HA	2:B:326:ALA:O	2.07	0.55
2:B:299:GLN:H	2:B:299:GLN:NE2	2.04	0.55
1:A:138:MET:SD	2:B:119:ASP:HA	2.47	0.55
1:A:196:TYR:CZ	1:A:262:ASP:OD2	2.60	0.55
1:A:340:ASP:OD1	2:B:207:ARG:NE	2.31	0.55
1:A:493:ALA:HB1	1:A:497:GLN:NE2	2.21	0.55
1:A:101:SER:OG	1:A:102:GLU:N	2.39	0.54
2:B:299:GLN:H	2:B:299:GLN:HE21	1.54	0.54
2:B:327:VAL:HG21	2:B:342:THR:HG21	1.89	0.54
1:A:47:GLU:O	1:A:48:VAL:C	2.44	0.54
1:A:241:TYR:HE1	1:A:267:GLN:HE22	1.55	0.54
1:A:387:LEU:HD13	1:A:421:LEU:HD11	1.90	0.54
2:B:103:GLY:C	2:B:105:PRO:HD2	2.27	0.54
2:B:146:LEU:HD13	2:B:163:ARG:NH2	2.21	0.54
2:B:158:LEU:HD22	2:B:454:THR:CG2	2.36	0.54
2:B:269:LEU:HD12	2:B:271:PHE:CZ	2.41	0.54
1:A:193:ILE:N	1:A:193:ILE:HD12	2.23	0.54
1:A:210:VAL:O	1:A:214:GLN:HG3	2.06	0.54
1:A:216:ARG:CZ	1:A:426:SER:HB2	2.37	0.54
2:B:270:LEU:HD22	2:B:313:ILE:HG23	1.89	0.54
1:A:387:LEU:HD21	1:A:417:LEU:HB2	1.89	0.54
1:A:496:GLU:O	1:A:499:GLU:HB2	2.08	0.54
1:A:111:ALA:HB2	1:A:227:GLU:CG	2.38	0.54
1:A:39:ILE:HD11	1:A:277:LEU:CD1	2.38	0.54
1:A:244:ALA:O	1:A:248:GLU:HG3	2.08	0.54
2:B:255:THR:HA	2:B:258:GLU:HG2	1.88	0.54
1:A:375:ALA:HB2	1:A:481:THR:HA	1.88	0.54
1:A:152:ILE:HG22	1:A:421:LEU:HD23	1.90	0.54
1:A:196:TYR:CE1	1:A:262:ASP:OD2	2.61	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:199:ILE:N	1:A:199:ILE:HD12	2.22	0.54
1:A:210:VAL:HG22	1:A:224:VAL:HG21	1.89	0.54
2:B:182:ILE:O	2:B:186:ILE:HG13	2.07	0.54
2:B:52:ARG:HD2	2:B:61:VAL:HG23	1.89	0.53
2:B:275:ILE:O	2:B:275:ILE:HG13	2.08	0.53
1:A:111:ALA:HB2	1:A:227:GLU:CD	2.28	0.53
2:B:368:LEU:HD12	2:B:399:LYS:HD3	1.91	0.53
2:B:171:PHE:CZ	2:B:342:THR:HB	2.43	0.53
2:B:183:MET:CE	2:B:212:LEU:HB2	2.38	0.53
2:B:300:PRO:HG2	2:B:301:THR:HG23	1.90	0.53
2:B:470:PRO:HG2	2:B:473:ALA:HB2	1.90	0.53
2:B:45:ASN:O	2:B:65:VAL:HG23	2.08	0.53
2:B:351:VAL:HB	2:B:369:ASP:O	2.09	0.53
2:B:362:TYR:HA	2:B:363:PRO:C	2.29	0.53
1:A:430:THR:HG22	1:A:431:VAL:N	2.24	0.53
1:A:115:PRO:HG3	1:A:120:GLY:O	2.09	0.53
1:A:131:GLU:HG2	1:A:297:ARG:CZ	2.21	0.53
1:A:451:LEU:C	1:A:453:GLN:H	2.11	0.53
1:A:182:ASP:O	1:A:185:LEU:HB2	2.08	0.53
1:A:302:ALA:HA	1:A:314:MET:HE2	1.90	0.53
2:B:278:PHE:HZ	2:B:309:LEU:HD12	1.74	0.53
1:A:65:LEU:HB2	1:A:280:ARG:HH22	1.74	0.53
1:A:390:PHE:O	1:A:394:GLU:HG3	2.08	0.53
1:A:412:ALA:HB1	1:A:416:ARG:NH2	2.24	0.53
1:A:457:TYR:O	1:A:461:LEU:HG	2.09	0.53
2:B:106:THR:O	2:B:111:PHE:HE1	1.92	0.53
2:B:183:MET:HE1	2:B:212:LEU:HB2	1.90	0.53
2:B:201:GLY:O	2:B:249:VAL:HG21	2.08	0.53
2:B:429:ARG:HD2	2:B:471:GLU:HB3	1.90	0.53
2:B:171:PHE:HZ	2:B:342:THR:CB	2.22	0.52
2:B:361:ILE:N	2:B:361:ILE:HD12	2.24	0.52
2:B:396:GLN:NE2	2:B:400:GLU:CD	2.62	0.52
1:A:122:ILE:HD13	1:A:122:ILE:H	1.73	0.52
1:A:359:ASN:C	1:A:361:GLY:H	2.12	0.52
2:B:260:PHE:HB2	2:B:268:VAL:CG2	2.38	0.52
1:A:350:PHE:HB3	1:A:355:ARG:CZ	2.39	0.52
1:A:386:GLU:O	1:A:388:ALA:N	2.42	0.52
1:A:387:LEU:CD1	1:A:421:LEU:HD11	2.39	0.52
2:B:209:GLY:HA2	2:B:236:TYR:OH	2.09	0.52
2:B:264:ASN:O	2:B:265:GLU:C	2.46	0.52
2:B:473:ALA:O	2:B:483:ALA:HA	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:66:ASN:HB2	1:A:73:GLY:HA3	1.92	0.52
1:A:195:VAL:HG12	1:A:197:VAL:HG23	1.91	0.52
2:B:107:LEU:HA	2:B:232:VAL:O	2.09	0.52
1:A:259:ILE:HD12	1:A:259:ILE:N	2.24	0.52
1:A:291:VAL:HA	1:A:294:LEU:CD1	2.40	0.52
1:A:419:GLU:OE1	1:A:451:LEU:HA	2.10	0.52
1:A:422:LYS:C	1:A:423:GLN:HG3	2.30	0.52
2:B:19:ASN:O	2:B:92:ILE:HA	2.09	0.52
2:B:270:LEU:CD2	2:B:313:ILE:HG23	2.40	0.52
1:A:57:GLU:C	1:A:59:GLY:H	2.13	0.52
1:A:164:GLN:O	1:A:315:THR:HG23	2.10	0.52
2:B:113:VAL:HG22	2:B:249:VAL:HG12	1.90	0.52
2:B:122:ARG:HB3	2:B:123:PRO:CD	2.37	0.52
2:B:246:ARG:HB2	2:B:246:ARG:NH1	2.25	0.52
2:B:274:ASN:H	2:B:326:ALA:HB3	1.73	0.52
1:A:466:LYS:HA	1:A:473:GLN:OE1	2.10	0.52
2:B:52:ARG:HD2	2:B:61:VAL:CG2	2.40	0.52
2:B:198:VAL:HG22	2:B:233:ALA:HB3	1.91	0.52
1:A:262:ASP:O	1:A:263:ASP:HB2	2.09	0.52
1:A:141:ARG:HG3	1:A:306:SER:HA	1.92	0.52
1:A:431:VAL:O	1:A:435:VAL:HG23	2.09	0.52
2:B:144:THR:O	2:B:146:LEU:HG	2.09	0.52
2:B:189:ILE:O	2:B:193:HIS:HB2	2.10	0.52
1:A:258:LEU:HA	1:A:315:THR:O	2.11	0.51
1:A:338:ILE:HA	2:B:239:MET:HE1	1.91	0.51
1:A:331:ILE:HG22	1:A:332:PRO:N	2.23	0.51
2:B:165:GLY:CA	2:B:315:SER:HB3	2.41	0.51
1:A:52:GLU:OE2	1:A:91:ALA:HB1	2.10	0.51
1:A:288:PRO:HG2	1:A:291:VAL:HG22	1.90	0.51
1:A:359:ASN:C	1:A:361:GLY:N	2.64	0.51
2:B:19:ASN:O	2:B:20:LEU:HD23	2.09	0.51
2:B:109:ARG:HE	2:B:119:ASP:CG	2.11	0.51
2:B:184:GLU:OE2	2:B:435:PHE:HA	2.11	0.51
2:B:202:VAL:HB	2:B:274:ASN:O	2.10	0.51
1:A:158:ILE:N	1:A:158:ILE:HD12	2.25	0.51
1:A:237:TYR:O	1:A:267:GLN:NE2	2.43	0.51
1:A:498:MET:HA	1:A:501:PHE:HD1	1.74	0.51
2:B:63:CYS:SG	2:B:78:ALA:HA	2.50	0.51
2:B:299:GLN:HB2	2:B:300:PRO:HD2	1.91	0.51
2:B:255:THR:HA	2:B:258:GLU:OE2	2.10	0.51
1:A:187:GLN:OE1	1:A:194:CYS:SG	2.69	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:167:LYS:HE2	2:B:325:GLN:NE2	2.26	0.51
2:B:167:LYS:HG2	2:B:323:SER:OG	2.10	0.51
1:A:273:GLN:O	1:A:277:LEU:HG	2.10	0.51
1:A:440:THR:CG2	1:A:446:LEU:HG	2.37	0.51
2:B:207:ARG:O	2:B:209:GLY:N	2.44	0.51
2:B:429:ARG:C	2:B:431:LEU:N	2.63	0.51
1:A:36:GLY:O	1:A:37:ASP:CB	2.58	0.51
1:A:193:ILE:HD11	1:A:255:ARG:HH11	1.76	0.51
1:A:219:MET:O	1:A:219:MET:HG2	2.11	0.51
1:A:272:ARG:HG3	1:A:286:ALA:O	2.11	0.51
1:A:76:LEU:HD11	1:A:83:ILE:HG13	1.92	0.51
1:A:109:ILE:HG23	1:A:225:VAL:HA	1.92	0.51
1:A:248:GLU:OE2	1:A:301:ARG:HB3	2.11	0.51
1:A:419:GLU:HG2	1:A:422:LYS:HE3	1.93	0.51
2:B:163:ARG:NE	2:B:374:MET:HB2	2.25	0.51
2:B:176:VAL:HG23	2:B:352:LEU:HD23	1.92	0.51
1:A:254:GLU:HG2	1:A:310:GLY:HA3	1.94	0.50
2:B:112:ASN:HB3	2:B:114:LEU:H	1.76	0.50
1:A:166:GLU:O	1:A:317:LEU:HA	2.12	0.50
1:A:471:GLU:O	1:A:475:ILE:HG12	2.11	0.50
2:B:106:THR:HA	2:B:111:PHE:HZ	1.76	0.50
2:B:276:PHE:CG	2:B:328:TYR:HB3	2.46	0.50
2:B:302:LEU:C	2:B:302:LEU:CD2	2.79	0.50
2:B:377:PRO:HD3	2:B:385:TYR:CE2	2.45	0.50
1:A:152:ILE:HG23	1:A:438:ILE:HD11	1.92	0.50
1:A:300:GLU:C	1:A:302:ALA:N	2.65	0.50
1:A:197:VAL:CG1	1:A:199:ILE:HD11	2.36	0.50
2:B:134:ARG:H	2:B:312:ARG:HH12	1.53	0.50
1:A:259:ILE:HD13	1:A:314:MET:CG	2.41	0.50
1:A:278:LEU:O	1:A:279:ARG:HB2	2.11	0.50
1:A:493:ALA:HB1	1:A:497:GLN:HE22	1.76	0.50
2:B:203:GLY:O	2:B:277:ARG:HG3	2.12	0.50
2:B:243:PRO:HB3	2:B:284:GLU:OE1	2.12	0.50
1:A:165:ARG:HG2	1:A:299:LEU:O	2.12	0.50
1:A:166:GLU:HA	1:A:166:GLU:OE1	2.11	0.50
2:B:251:LEU:HD21	2:B:309:LEU:HD13	1.93	0.50
2:B:410:LEU:O	2:B:418:ARG:NH2	2.45	0.50
2:B:423:ARG:HA	2:B:426:LYS:HD2	1.93	0.50
1:A:65:LEU:CD1	1:A:278:LEU:CD1	2.90	0.50
1:A:166:GLU:O	1:A:318:PRO:HD2	2.12	0.50
1:A:157:MET:SD	1:A:360:VAL:HG11	2.51	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:210:VAL:O	1:A:219:MET:HE3	2.12	0.50
1:A:436:MET:O	1:A:439:TYR:HB3	2.11	0.50
1:A:100:VAL:O	1:A:101:SER:HB3	2.10	0.50
1:A:351:ASN:O	1:A:353:GLY:N	2.45	0.50
2:B:148:ILE:HA	2:B:374:MET:CE	2.42	0.50
2:B:238:GLN:HE21	2:B:238:GLN:CA	2.08	0.50
2:B:255:THR:O	2:B:258:GLU:HG2	2.12	0.50
1:A:39:ILE:HD13	1:A:277:LEU:HB3	1.89	0.49
2:B:110:ILE:HB	2:B:119:ASP:HB3	1.94	0.49
1:A:345:LEU:CD2	1:A:358:ILE:HD13	2.42	0.49
1:A:131:GLU:CD	3:B:499:TTX:H42	2.33	0.49
1:A:210:VAL:O	1:A:210:VAL:CG1	2.60	0.49
2:B:275:ILE:CG2	2:B:327:VAL:HG22	2.41	0.49
1:A:339:THR:HG22	1:A:340:ASP:N	2.26	0.49
2:B:235:VAL:HG11	2:B:252:THR:CG2	2.43	0.49
1:A:33:LEU:CD2	1:A:43:HIS:HB2	2.43	0.49
1:A:47:GLU:O	1:A:48:VAL:O	2.30	0.49
1:A:57:GLU:OE2	1:A:88:SER:N	2.33	0.49
2:B:48:ILE:O	2:B:92:ILE:HG22	2.13	0.49
1:A:260:ILE:HA	1:A:317:LEU:O	2.13	0.49
2:B:279:VAL:O	2:B:282:GLY:N	2.42	0.49
1:A:56:PHE:CE1	1:A:89:VAL:HG11	2.48	0.49
1:A:263:ASP:HA	1:A:319:ILE:O	2.13	0.49
2:B:197:SER:O	2:B:232:VAL:HA	2.12	0.49
1:A:240:PRO:HB2	1:A:298:LEU:CD2	2.29	0.48
2:B:94:THR:HG23	2:B:96:ALA:H	1.78	0.48
1:A:35:VAL:HG11	1:A:83:ILE:HB	1.94	0.48
2:B:251:LEU:CD2	2:B:309:LEU:HD22	2.37	0.48
1:A:386:GLU:OE2	1:A:442:THR:HG23	2.14	0.48
2:B:475:TYR:CE1	2:B:476:LEU:HG	2.48	0.48
1:A:95:ILE:O	1:A:95:ILE:HG23	2.12	0.48
1:A:440:THR:HG23	1:A:494:ILE:HG21	1.96	0.48
2:B:75:ARG:CG	2:B:76:ALA:N	2.76	0.48
2:B:196:VAL:HG11	2:B:260:PHE:CD2	2.49	0.48
2:B:216:MET:HE1	2:B:232:VAL:HG21	1.94	0.48
1:A:498:MET:HA	1:A:501:PHE:CD1	2.48	0.48
2:B:69:LEU:CD2	2:B:75:ARG:HH21	2.26	0.48
2:B:139:PHE:O	2:B:142:LEU:HD12	2.14	0.48
2:B:391:VAL:HG13	2:B:427:ILE:CG2	2.44	0.48
1:A:295:HIS:C	1:A:297:ARG:N	2.67	0.48
2:B:186:ILE:HA	2:B:190:ALA:HB3	1.96	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:422:ALA:HB1	2:B:426:LYS:HZ1	1.79	0.48
1:A:69:SER:HB3	2:B:25:GLN:HE21	1.79	0.48
1:A:295:HIS:C	1:A:297:ARG:H	2.17	0.48
2:B:286:SER:HB2	2:B:299:GLN:HB3	1.95	0.48
1:A:405:LYS:HA	1:A:408:GLN:HG3	1.96	0.48
2:B:85:LEU:CD2	2:B:89:MET:HE1	2.43	0.48
2:B:207:ARG:NH1	2:B:207:ARG:CB	2.75	0.48
2:B:31:LEU:O	2:B:76:ALA:N	2.47	0.47
2:B:42:ASN:ND2	2:B:45:ASN:ND2	2.62	0.47
2:B:247:MET:O	2:B:248:ARG:HG2	2.14	0.47
2:B:251:LEU:HD21	2:B:309:LEU:CD2	2.34	0.47
2:B:276:PHE:C	2:B:278:PHE:H	2.18	0.47
2:B:411:ASP:C	2:B:418:ARG:HH22	2.17	0.47
1:A:36:GLY:O	1:A:37:ASP:HB2	2.14	0.47
1:A:396:PHE:CD1	1:A:396:PHE:N	2.82	0.47
2:B:149:PHE:HB3	2:B:162:TYR:CB	2.44	0.47
1:A:218:ALA:HA	1:A:221:TYR:CE2	2.49	0.47
2:B:413:LEU:HD22	2:B:417:ASP:HB3	1.96	0.47
1:A:80:GLY:C	1:A:82:MET:N	2.68	0.47
2:B:381:GLY:O	2:B:385:TYR:HB2	2.15	0.47
1:A:383:LEU:HD12	1:A:417:LEU:HD13	1.96	0.47
1:A:463:THR:HA	1:A:466:LYS:HD2	1.96	0.47
2:B:47:LEU:HD23	2:B:93:ASP:HA	1.97	0.47
2:B:168:ILE:O	2:B:325:GLN:HG3	2.14	0.47
2:B:207:ARG:O	2:B:208:GLU:C	2.52	0.47
2:B:333:ASP:OD1	2:B:335:THR:OG1	2.33	0.47
3:B:499:TTX:H71	3:B:499:TTX:H21	1.96	0.47
1:A:33:LEU:HB2	1:A:41:ARG:O	2.14	0.47
1:A:223:ILE:HD12	1:A:223:ILE:N	2.30	0.47
1:A:439:TYR:CD1	1:A:490:LEU:HD13	2.49	0.47
2:B:26:ILE:HD12	2:B:26:ILE:N	2.30	0.47
1:A:432:GLU:OE2	1:A:473:GLN:O	2.32	0.47
2:B:19:ASN:CB	2:B:39:LYS:HD3	2.31	0.47
2:B:62:THR:O	2:B:79:MET:HG2	2.15	0.47
2:B:163:ARG:HG2	2:B:374:MET:SD	2.54	0.47
2:B:386:GLU:OE1	2:B:390:ARG:NH2	2.48	0.47
2:B:264:ASN:C	2:B:266:GLN:N	2.68	0.47
2:B:391:VAL:HG13	2:B:427:ILE:HG21	1.96	0.47
1:A:65:LEU:CD1	1:A:278:LEU:HD11	2.45	0.47
1:A:135:PRO:HB2	1:A:140:ARG:NH2	2.28	0.47
2:B:184:GLU:HB2	2:B:435:PHE:CD2	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:238:LEU:O	1:A:239:ALA:C	2.51	0.46
1:A:242:THR:O	1:A:244:ALA:N	2.48	0.46
1:A:430:THR:O	1:A:434:GLN:HG3	2.14	0.46
1:A:349:LEU:O	1:A:354:ILE:HB	2.15	0.46
1:A:469:LYS:N	1:A:470:PRO:CD	2.78	0.46
2:B:361:ILE:HD12	2:B:361:ILE:H	1.80	0.46
3:B:499:TTX:H72	3:B:499:TTX:C17	2.35	0.46
1:A:27:VAL:HG13	1:A:47:GLU:HG3	1.96	0.46
1:A:33:LEU:CG	1:A:43:HIS:HB2	2.45	0.46
1:A:176:LYS:HG2	1:A:345:LEU:HD12	1.97	0.46
1:A:197:VAL:HG21	1:A:243:GLY:HA3	1.98	0.46
2:B:86:THR:HG22	2:B:87:ARG:N	2.30	0.46
2:B:466:LEU:HD13	2:B:480:ILE:HD11	1.97	0.46
1:A:233:ALA:C	1:A:235:LEU:N	2.69	0.46
3:B:499:TTX:C6	3:B:499:TTX:HN41	2.28	0.46
1:A:165:ARG:NH2	2:B:205:ARG:HD3	2.30	0.46
1:A:323:GLN:O	1:A:324:ALA:HB3	2.16	0.46
1:A:454:VAL:O	1:A:457:TYR:HB2	2.15	0.46
1:A:151:LEU:HA	1:A:423:GLN:HE22	1.81	0.46
1:A:199:ILE:HG13	1:A:239:ALA:CB	2.46	0.46
1:A:272:ARG:HD2	1:A:286:ALA:HB3	1.97	0.46
1:A:356:PRO:CD	1:A:423:GLN:H	2.25	0.46
1:A:417:LEU:O	1:A:421:LEU:HG	2.16	0.46
1:A:457:TYR:HA	1:A:501:PHE:CZ	2.51	0.46
2:B:148:ILE:HG12	2:B:149:PHE:N	2.30	0.46
1:A:91:ALA:O	1:A:93:GLY:N	2.49	0.46
1:A:264:LEU:HD11	1:A:318:PRO:HB2	1.96	0.46
1:A:351:ASN:C	1:A:353:GLY:N	2.69	0.46
2:B:298:TYR:CE1	2:B:338:ALA:HB2	2.51	0.46
2:B:429:ARG:C	2:B:431:LEU:H	2.17	0.46
1:A:65:LEU:HD11	1:A:278:LEU:HD11	1.98	0.46
1:A:128:ARG:HH11	1:A:248:GLU:HB2	1.81	0.46
1:A:158:ILE:HG21	1:A:343:ILE:CG1	2.44	0.46
2:B:227:ILE:O	2:B:227:ILE:HG22	2.16	0.46
1:A:167:LEU:HD12	1:A:168:ILE:H	1.81	0.45
2:B:163:ARG:HG2	2:B:374:MET:HB2	1.99	0.45
2:B:186:ILE:CG2	2:B:190:ALA:HB3	2.46	0.45
1:A:281:PRO:CB	2:B:287:ALA:HB1	2.41	0.45
2:B:19:ASN:ND2	2:B:93:ASP:OD2	2.49	0.45
1:A:486:ALA:O	1:A:490:LEU:HB2	2.16	0.45
2:B:66:GLN:O	2:B:67:GLN:HG2	2.15	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:161:PRO:HD2	2:B:375:LEU:HG	1.97	0.45
2:B:238:GLN:HA	2:B:238:GLN:NE2	2.16	0.45
2:B:247:MET:C	2:B:248:ARG:HG2	2.36	0.45
1:A:259:ILE:HD13	1:A:314:MET:SD	2.56	0.45
2:B:148:ILE:HA	2:B:374:MET:HE1	1.97	0.45
2:B:402:GLN:O	2:B:404:ILE:N	2.49	0.45
1:A:211:THR:O	1:A:214:GLN:N	2.45	0.45
1:A:240:PRO:CG	1:A:298:LEU:HD21	2.47	0.45
2:B:222:ILE:CG2	2:B:223:ASN:N	2.74	0.45
1:A:25:LYS:C	1:A:27:VAL:H	2.20	0.45
1:A:154:ILE:O	1:A:158:ILE:O	2.35	0.45
2:B:107:LEU:HD23	2:B:232:VAL:N	2.32	0.45
2:B:413:LEU:O	2:B:418:ARG:NE	2.42	0.45
1:A:128:ARG:HH11	1:A:248:GLU:CB	2.29	0.45
2:B:160:ALA:CA	2:B:372:SER:HB3	2.43	0.45
2:B:223:ASN:OD1	2:B:228:ALA:HA	2.16	0.45
2:B:310:GLN:HE22	2:B:325:GLN:HE22	1.65	0.45
2:B:329:VAL:HG11	2:B:334:LEU:HD23	1.99	0.45
2:B:434:PRO:HD3	2:B:476:LEU:HD22	1.99	0.45
1:A:111:ALA:O	1:A:112:LEU:HD23	2.17	0.45
1:A:418:ARG:O	1:A:422:LYS:HG3	2.17	0.45
2:B:33:VAL:CG1	2:B:91:VAL:HG21	2.43	0.45
2:B:261:ARG:HD3	2:B:321:ILE:HG12	1.99	0.45
2:B:315:SER:HA	2:B:320:SER:HA	1.97	0.45
2:B:430:PHE:HD1	2:B:474:PHE:HB3	1.82	0.45
1:A:29:THR:HA	1:A:89:VAL:O	2.16	0.45
1:A:165:ARG:NH2	1:A:338:ILE:O	2.49	0.45
1:A:167:LEU:HD21	1:A:169:ILE:HD11	1.97	0.45
1:A:415:GLN:O	1:A:451:LEU:HD22	2.17	0.45
2:B:83:ASP:CG	3:B:499:TTX:C12	2.85	0.45
2:B:204:GLU:O	2:B:238:GLN:NE2	2.50	0.45
2:B:480:ILE:O	2:B:483:ALA:HB3	2.17	0.45
1:A:418:ARG:O	1:A:421:LEU:HB2	2.17	0.45
2:B:350:THR:O	2:B:352:LEU:HD13	2.17	0.45
1:A:387:LEU:HA	1:A:390:PHE:CD1	2.52	0.44
1:A:65:LEU:CD2	3:B:499:TTX:C19	2.95	0.44
1:A:130:ILE:HD13	1:A:238:LEU:HD13	1.98	0.44
2:B:98:LEU:O	2:B:132:ILE:HG12	2.18	0.44
1:A:26:VAL:HG12	1:A:26:VAL:O	2.17	0.44
1:A:151:LEU:HB3	1:A:154:ILE:HD13	1.99	0.44
1:A:490:LEU:O	1:A:493:ALA:HB3	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:107:LEU:HD23	2:B:232:VAL:C	2.37	0.44
2:B:377:PRO:HD3	2:B:385:TYR:CD2	2.53	0.44
1:A:56:PHE:CG	1:A:83:ILE:HD12	2.52	0.44
1:A:78:GLY:HA2	1:A:232:PRO:HG3	1.98	0.44
1:A:202:LYS:O	1:A:203:ALA:C	2.54	0.44
1:A:394:GLU:CD	1:A:418:ARG:HH21	2.21	0.44
2:B:66:GLN:O	2:B:67:GLN:CG	2.65	0.44
2:B:216:MET:HE3	2:B:232:VAL:HG21	1.96	0.44
1:A:56:PHE:HD2	1:A:60:THR:O	2.01	0.44
1:A:210:VAL:O	1:A:210:VAL:HG12	2.17	0.44
2:B:199:PHE:CZ	2:B:273:ASP:HB2	2.53	0.44
2:B:204:GLU:O	2:B:239:MET:HG3	2.17	0.44
2:B:271:PHE:HE1	2:B:324:ILE:HD12	1.82	0.44
1:A:38:GLY:O	1:A:76:LEU:HB2	2.17	0.44
1:A:264:LEU:HD11	1:A:318:PRO:CB	2.48	0.44
2:B:203:GLY:HA3	2:B:277:ARG:CB	2.46	0.44
2:B:241:GLU:HB2	2:B:246:ARG:HD3	2.00	0.44
1:A:27:VAL:CG1	1:A:47:GLU:HG3	2.48	0.44
1:A:494:ILE:O	1:A:498:MET:HG3	2.17	0.44
2:B:112:ASN:ND2	2:B:116:GLU:OE1	2.50	0.44
2:B:401:LEU:O	2:B:404:ILE:HB	2.18	0.44
1:A:56:PHE:CD1	1:A:89:VAL:HG13	2.53	0.44
1:A:174:THR:HG23	1:A:350:PHE:CZ	2.53	0.44
1:A:241:TYR:HE1	1:A:267:GLN:NE2	2.14	0.44
1:A:310:GLY:O	1:A:311:GLU:HB2	2.18	0.44
1:A:310:GLY:C	1:A:312:GLY:H	2.20	0.44
2:B:167:LYS:HZ1	2:B:310:GLN:CD	2.20	0.44
1:A:99:PRO:HD2	1:A:113:ALA:HB3	2.00	0.43
1:A:486:ALA:O	1:A:490:LEU:N	2.51	0.43
2:B:23:ILE:HG21	2:B:26:ILE:HD11	1.99	0.43
2:B:132:ILE:HG22	2:B:251:LEU:O	2.17	0.43
2:B:153:ILE:HA	2:B:433:GLN:OE1	2.18	0.43
2:B:168:ILE:HB	2:B:324:ILE:HA	2.00	0.43
2:B:235:VAL:HG11	2:B:252:THR:HG21	2.00	0.43
2:B:341:THR:O	2:B:342:THR:C	2.55	0.43
1:A:30:GLY:O	1:A:88:SER:HA	2.17	0.43
1:A:39:ILE:HG21	1:A:278:LEU:HD23	2.00	0.43
1:A:76:LEU:O	1:A:234:THR:CB	2.66	0.43
1:A:176:LYS:CG	1:A:345:LEU:HD12	2.48	0.43
2:B:43:ILE:HG22	2:B:44:TYR:CD1	2.53	0.43
2:B:299:GLN:HG3	2:B:301:THR:OG1	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:460:LEU:HD12	2:B:480:ILE:HG12	1.99	0.43
2:B:73:ARG:HE	2:B:73:ARG:HB2	1.43	0.43
2:B:106:THR:HA	2:B:111:PHE:CZ	2.53	0.43
2:B:156:VAL:C	2:B:158:LEU:H	2.20	0.43
2:B:167:LYS:CE	2:B:325:GLN:HE22	2.31	0.43
1:A:112:LEU:HD23	1:A:112:LEU:N	2.32	0.43
2:B:135:SER:O	2:B:136:ALA:O	2.36	0.43
2:B:203:GLY:CA	2:B:246:ARG:HG2	2.49	0.43
2:B:410:LEU:HA	2:B:413:LEU:HD12	2.00	0.43
1:A:134:ALA:HB1	1:A:301:ARG:HA	2.00	0.43
1:A:136:GLY:O	1:A:140:ARG:HG3	2.18	0.43
1:A:264:LEU:CD1	1:A:318:PRO:HB2	2.49	0.43
1:A:97:GLN:O	1:A:98:ILE:HD12	2.19	0.43
1:A:98:ILE:HA	1:A:99:PRO:HD3	1.86	0.43
1:A:107:ARG:NH2	1:A:115:PRO:HB3	2.34	0.43
2:B:167:LYS:HD2	2:B:313:ILE:O	2.19	0.43
2:B:414:SER:O	2:B:418:ARG:HG3	2.19	0.43
1:A:76:LEU:O	1:A:234:THR:HB	2.19	0.43
1:A:404:ASP:O	1:A:408:GLN:HG3	2.19	0.43
2:B:128:THR:HG22	2:B:129:THR:N	2.33	0.43
2:B:186:ILE:HA	2:B:190:ALA:CB	2.48	0.43
2:B:206:THR:O	2:B:209:GLY:N	2.47	0.43
1:A:438:ILE:HG22	1:A:442:THR:OG1	2.19	0.43
2:B:42:ASN:ND2	2:B:45:ASN:HD21	2.17	0.43
2:B:43:ILE:O	2:B:44:TYR:HB2	2.18	0.43
2:B:367:PRO:HB3	2:B:431:LEU:HD13	2.00	0.43
2:B:374:MET:C	2:B:376:GLN:H	2.22	0.43
2:B:430:PHE:CD2	2:B:461:ILE:HD11	2.53	0.43
1:A:91:ALA:O	1:A:92:THR:C	2.57	0.43
2:B:30:VAL:CG2	2:B:288:LEU:HD22	2.39	0.43
2:B:121:LEU:O	2:B:122:ARG:CB	2.65	0.43
2:B:271:PHE:CE1	2:B:324:ILE:HD12	2.53	0.43
2:B:276:PHE:C	2:B:278:PHE:N	2.72	0.43
1:A:174:THR:HG22	1:A:174:THR:O	2.18	0.43
1:A:175:GLY:O	1:A:178:ALA:HB3	2.19	0.43
2:B:35:PHE:CE1	2:B:41:PRO:HG3	2.54	0.43
2:B:269:LEU:HD22	2:B:322:THR:CB	2.46	0.43
2:B:387:ILE:HG23	2:B:462:LEU:HD11	2.01	0.43
1:A:109:ILE:CG2	1:A:225:VAL:HA	2.49	0.42
1:A:128:ARG:NH1	1:A:248:GLU:HB3	2.34	0.42
1:A:162:ARG:CZ	1:A:192:VAL:HG22	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:300:GLU:O	1:A:302:ALA:N	2.51	0.42
1:A:369:SER:HB2	1:A:372:GLN:OE1	2.19	0.42
1:A:382:LYS:O	1:A:386:GLU:HG3	2.19	0.42
1:A:481:THR:HG22	1:A:482:PHE:N	2.34	0.42
2:B:86:THR:CG2	2:B:87:ARG:N	2.82	0.42
2:B:186:ILE:HG23	2:B:190:ALA:CB	2.49	0.42
1:A:440:THR:HA	1:A:494:ILE:HD13	2.00	0.42
2:B:23:ILE:HD11	2:B:49:VAL:HG11	2.02	0.42
1:A:268:ALA:O	1:A:271:TYR:HB3	2.19	0.42
1:A:403:LEU:HD13	1:A:407:THR:HG21	2.01	0.42
1:A:419:GLU:HA	1:A:422:LYS:CD	2.48	0.42
2:B:22:ARG:HB3	2:B:88:GLY:HA2	2.01	0.42
2:B:156:VAL:HG12	2:B:157:ASN:N	2.33	0.42
2:B:423:ARG:NH2	2:B:464:GLY:HA3	2.34	0.42
2:B:138:ALA:N	2:B:141:GLN:OE1	2.40	0.42
1:A:176:LYS:O	1:A:177:THR:C	2.58	0.42
1:A:272:ARG:HA	1:A:288:PRO:HD3	2.00	0.42
1:A:339:THR:CG2	1:A:340:ASP:N	2.82	0.42
1:A:104:TYR:CE2	1:A:109:ILE:HD12	2.54	0.42
1:A:130:ILE:CG2	1:A:241:TYR:HB3	2.49	0.42
2:B:430:PHE:CD1	2:B:474:PHE:HB3	2.54	0.42
1:A:122:ILE:HD13	1:A:122:ILE:N	2.35	0.42
1:A:157:MET:SD	1:A:387:LEU:HD12	2.60	0.42
1:A:173:GLN:OE1	1:A:173:GLN:HA	2.19	0.42
2:B:69:LEU:HD21	2:B:75:ARG:NE	2.16	0.42
2:B:180:VAL:HG11	2:B:438:ALA:HB2	2.01	0.42
2:B:333:ASP:CG	2:B:335:THR:OG1	2.58	0.42
1:A:227:GLU:OE1	1:A:235:LEU:O	2.38	0.42
1:A:386:GLU:C	1:A:388:ALA:N	2.73	0.42
1:A:419:GLU:HA	1:A:422:LYS:CG	2.49	0.42
2:B:109:ARG:CD	2:B:119:ASP:OD2	2.67	0.42
2:B:156:VAL:C	2:B:158:LEU:N	2.73	0.42
2:B:458:PHE:HA	2:B:461:ILE:CD1	2.47	0.42
1:A:100:VAL:HA	1:A:104:TYR:HE1	1.85	0.42
1:A:172:ARG:H	1:A:172:ARG:HG2	1.72	0.42
1:A:260:ILE:CD1	1:A:317:LEU:HB2	2.49	0.42
1:A:330:TYR:O	1:A:333:THR:HB	2.20	0.42
1:A:373:ILE:HG22	1:A:374:LYS:N	2.23	0.42
2:B:70:GLY:O	2:B:71:ASN:CB	2.67	0.42
1:A:53:LEU:HB2	1:A:92:THR:OG1	2.19	0.41
1:A:65:LEU:CD1	1:A:278:LEU:HD13	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:293:TYR:N	1:A:293:TYR:HD1	2.08	0.41
1:A:433:GLU:HA	1:A:436:MET:HE2	2.02	0.41
2:B:36:PRO:CD	2:B:39:LYS:HD2	2.50	0.41
2:B:131:PRO:C	2:B:133:HIS:H	2.22	0.41
2:B:254:LEU:HD22	2:B:313:ILE:HG12	2.01	0.41
1:A:373:ILE:O	1:A:377:LYS:HG3	2.20	0.41
2:B:102:VAL:HG12	2:B:256:MET:HG3	2.01	0.41
2:B:367:PRO:HB2	2:B:395:LEU:HD13	2.02	0.41
1:A:45:LEU:HD23	1:A:45:LEU:HA	1.84	0.41
1:A:167:LEU:HD12	1:A:318:PRO:O	2.20	0.41
2:B:48:ILE:HG22	2:B:92:ILE:HG22	2.00	0.41
2:B:431:LEU:HD23	2:B:431:LEU:HA	1.91	0.41
2:B:169:GLY:HA3	2:B:346:LEU:HD13	2.02	0.41
2:B:170:LEU:HD13	2:B:181:LEU:CD2	2.50	0.41
2:B:261:ARG:HG2	2:B:262:ASP:OD1	2.20	0.41
1:A:295:HIS:HB2	1:A:338:ILE:CD1	2.50	0.41
1:A:457:TYR:HA	1:A:501:PHE:CE2	2.55	0.41
1:A:490:LEU:HD22	1:A:494:ILE:HD11	2.02	0.41
2:B:65:VAL:HG13	2:B:74:VAL:HB	2.03	0.41
1:A:154:ILE:HD12	1:A:154:ILE:N	2.36	0.41
2:B:52:ARG:HG2	2:B:53:ASP:N	2.35	0.41
2:B:72:ASN:O	2:B:73:ARG:HB2	2.20	0.41
2:B:212:LEU:O	2:B:212:LEU:HG	2.21	0.41
1:A:46:ASP:OD1	1:A:46:ASP:N	2.53	0.41
1:A:187:GLN:CD	1:A:194:CYS:SG	2.99	0.41
1:A:470:PRO:O	1:A:474:GLU:HG3	2.20	0.41
2:B:42:ASN:O	2:B:45:ASN:HB2	2.21	0.41
2:B:105:PRO:HG2	2:B:126:THR:HG22	2.03	0.41
2:B:165:GLY:HA2	2:B:315:SER:HB3	2.02	0.41
2:B:471:GLU:C	2:B:473:ALA:N	2.68	0.41
1:A:216:ARG:NH2	1:A:426:SER:HB2	2.36	0.41
1:A:271:TYR:OH	1:A:290:ASP:HB2	2.21	0.41
1:A:310:GLY:C	1:A:312:GLY:N	2.74	0.41
1:A:454:VAL:HA	1:A:457:TYR:CD1	2.56	0.41
2:B:163:ARG:NE	2:B:374:MET:CB	2.81	0.41
2:B:251:LEU:CG	2:B:309:LEU:HD13	2.50	0.41
2:B:387:ILE:CD1	2:B:459:GLN:HB2	2.51	0.41
1:A:67:LEU:HB3	2:B:87:ARG:HE	1.86	0.41
1:A:134:ALA:CB	1:A:301:ARG:HA	2.51	0.41
1:A:148:GLN:HE21	1:A:431:VAL:CG2	2.34	0.41
2:B:40:MET:O	2:B:41:PRO:C	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:259:TYR:HE2	2:B:264:ASN:HD21	1.69	0.41
2:B:423:ARG:O	2:B:426:LYS:HB2	2.21	0.41
1:A:409:ASN:O	1:A:413:ARG:HG3	2.21	0.41
1:A:417:LEU:HA	1:A:420:LEU:HG	2.03	0.41
2:B:68:LEU:O	2:B:70:GLY:N	2.53	0.41
2:B:402:GLN:C	2:B:404:ILE:N	2.75	0.41
2:B:405:ILE:HG13	2:B:406:ALA:N	2.35	0.41
2:B:419:LEU:HD11	2:B:423:ARG:HE	1.85	0.41
1:A:214:GLN:C	1:A:216:ARG:N	2.74	0.40
2:B:143:ASP:OD2	2:B:316:THR:C	2.59	0.40
2:B:276:PHE:CZ	2:B:280:GLN:HB2	2.56	0.40
2:B:298:TYR:CZ	2:B:338:ALA:HB2	2.55	0.40
1:A:135:PRO:O	1:A:140:ARG:NH2	2.54	0.40
2:B:353:SER:HB3	2:B:356:LEU:HD12	2.02	0.40
2:B:387:ILE:HA	2:B:390:ARG:HD2	2.02	0.40
2:B:50:LYS:HG2	2:B:59:MET:CE	2.51	0.40
2:B:131:PRO:C	2:B:133:HIS:N	2.73	0.40
1:A:56:PHE:CE2	1:A:76:LEU:HD22	2.56	0.40
1:A:108:VAL:HG12	1:A:116:ILE:HD11	2.03	0.40
1:A:302:ALA:O	1:A:303:ALA:HB2	2.22	0.40
1:A:414:GLY:C	1:A:416:ARG:H	2.25	0.40
2:B:161:PRO:HD2	2:B:372:SER:HB3	2.04	0.40
2:B:167:LYS:HE3	2:B:310:GLN:O	2.21	0.40
2:B:196:VAL:HG12	2:B:197:SER:N	2.36	0.40
2:B:399:LYS:HA	2:B:402:GLN:NE2	2.35	0.40
1:A:181:THR:O	1:A:185:LEU:HD12	2.21	0.40
1:A:422:LYS:O	1:A:423:GLN:HG3	2.21	0.40
1:A:461:LEU:O	1:A:464:TYR:HB2	2.22	0.40
2:B:269:LEU:HD12	2:B:271:PHE:HZ	1.85	0.40
2:B:357:ALA:HB2	2:B:364:ALA:CB	2.52	0.40
2:B:404:ILE:O	2:B:408:LEU:HB2	2.22	0.40
2:B:417:ASP:HA	2:B:420:THR:HG23	2.04	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:499:GLU:OE1	1:A:499:GLU:OE1[4_555]	1.69	0.51

## 5.3 Torsion angles ⓘ

### 5.3.1 Protein backbone ⓘ

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	475/507 (94%)	362 (76%)	86 (18%)	27 (6%)	1	9
2	B	465/498 (93%)	365 (78%)	76 (16%)	24 (5%)	1	10
All	All	940/1005 (94%)	727 (77%)	162 (17%)	51 (5%)	1	10

All (51) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	101	SER
1	A	212	ASN
1	A	447	ASP
2	B	265	GLU
2	B	343	PHE
1	A	48	VAL
1	A	85	GLU
1	A	92	THR
1	A	110	ASN
1	A	171	ASP
1	A	330	TYR
1	A	352	ALA
1	A	354	ILE
1	A	360	VAL
1	A	387	LEU
1	A	448	SER
2	B	55	ALA
2	B	157	ASN
2	B	208	GLU
2	B	286	SER
2	B	472	GLN
1	A	37	ASP
1	A	105	LEU
1	A	186	ASN
1	A	234	THR

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Mol	Chain	Res	Type
1	A	262	ASP
1	A	296	SER
1	A	351	ASN
1	A	452	ASP
2	B	54	THR
2	B	69	LEU
2	B	239	MET
2	B	402	GLN
2	B	403	ASP
2	B	451	LEU
1	A	26	VAL
1	A	288	PRO
2	B	122	ARG
2	B	154	LYS
2	B	156	VAL
2	B	240	ASN
1	A	328	SER
1	A	402	ASP
2	B	52	ARG
2	B	345	HIS
1	A	373	ILE
2	B	136	ALA
2	B	296	VAL
2	B	175	GLY
2	B	61	VAL
2	B	455	ILE

### 5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	388/414 (94%)	367 (95%)	21 (5%)	18	44
2	B	381/410 (93%)	356 (93%)	25 (7%)	14	39
All	All	769/824 (93%)	723 (94%)	46 (6%)	16	41

All (46) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	34	GLN
1	A	35	VAL
1	A	41	ARG
1	A	46	ASP
1	A	49	MET
1	A	65	LEU
1	A	89	VAL
1	A	122	ILE
1	A	128	ARG
1	A	131	GLU
1	A	135	PRO
1	A	147	LEU
1	A	177	THR
1	A	191	ASN
1	A	228	THR
1	A	230	ASP
1	A	249	TYR
1	A	257	THR
1	A	342	GLN
1	A	426	SER
1	A	490	LEU
2	B	42	ASN
2	B	57	GLN
2	B	58	PRO
2	B	98	LEU
2	B	129	THR
2	B	140	THR
2	B	149	PHE
2	B	187	ASN
2	B	238	GLN
2	B	240	ASN
2	B	246	ARG
2	B	248	ARG
2	B	249	VAL
2	B	269	LEU
2	B	274	ASN
2	B	288	LEU
2	B	299	GLN
2	B	308	SER
2	B	310	GLN
2	B	316	THR
2	B	325	GLN
2	B	352	LEU

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Mol	Chain	Res	Type
2	B	395	LEU
2	B	417	ASP
2	B	481	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (24) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	66	ASN
1	A	70	ASN
1	A	148	GLN
1	A	186	ASN
1	A	295	HIS
1	A	359	ASN
1	A	409	ASN
1	A	423	GLN
1	A	497	GLN
2	B	19	ASN
2	B	25	GLN
2	B	42	ASN
2	B	60	ASN
2	B	187	ASN
2	B	238	GLN
2	B	240	ASN
2	B	264	ASN
2	B	299	GLN
2	B	310	GLN
2	B	325	GLN
2	B	396	GLN
2	B	402	GLN
2	B	459	GLN
2	B	472	GLN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

## 5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

1 ligand is 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	$\# Z  > 2$
3	TTX	B	499	-	31,31,31	3.42	9 (29%)	38,43,43	4.58	12 (31%)

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 Torsions and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	TTX	B	499	-	-	17/45/45/45	0/1/2/2

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	499	TTX	O1-C6	11.78	1.43	1.22
3	B	499	TTX	C15-C14	-7.80	1.33	1.49
3	B	499	TTX	C6-N1	6.65	1.45	1.35
3	B	499	TTX	C5-C6	5.74	1.64	1.53
3	B	499	TTX	C7-N1	-4.58	1.38	1.47
3	B	499	TTX	C12-N3	-3.94	1.29	1.35
3	B	499	TTX	C15-N1	-3.32	1.34	1.42
3	B	499	TTX	C9-N3	-3.09	1.42	1.47
3	B	499	TTX	C5-N2	2.07	1.50	1.45

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	499	TTX	C5-C6-N1	-18.03	91.91	118.61
3	B	499	TTX	C7-N1-C6	-17.42	95.53	118.87
3	B	499	TTX	C4-C5-C6	6.41	121.72	109.28
3	B	499	TTX	C13-N4-C14	5.72	130.12	121.29
3	B	499	TTX	C11-N3-C12	-3.37	114.64	122.16
3	B	499	TTX	C9-C8-N2	3.32	122.07	115.64
3	B	499	TTX	C6-C5-N2	-2.81	101.68	108.97
3	B	499	TTX	C18-C17-C16	2.78	130.78	121.22
3	B	499	TTX	C15-C14-N4	2.41	121.72	117.20
3	B	499	TTX	C21-C22-C17	2.22	123.24	120.64
3	B	499	TTX	C2-C4-C5	2.10	121.05	115.40
3	B	499	TTX	C18-C17-C22	-2.06	114.60	117.65

There are no chirality outliers.

All (17) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	499	TTX	C14-C15-N1-C6
3	B	499	TTX	O1-C6-N1-C7
3	B	499	TTX	C5-C6-N1-C7
3	B	499	TTX	C5-C6-N1-C15
3	B	499	TTX	O2-C8-N2-C5
3	B	499	TTX	C9-C8-N2-C5
3	B	499	TTX	O3-C12-C13-N4
3	B	499	TTX	C4-C5-C6-O1
3	B	499	TTX	N3-C12-C13-N4
3	B	499	TTX	N2-C5-C6-O1
3	B	499	TTX	C13-C12-N3-C9
3	B	499	TTX	C13-C12-N3-C11
3	B	499	TTX	C1-C2-C4-C5
3	B	499	TTX	N2-C8-C9-N3
3	B	499	TTX	C12-C13-N4-C14
3	B	499	TTX	C16-C15-N1-C6
3	B	499	TTX	O2-C8-C9-N3

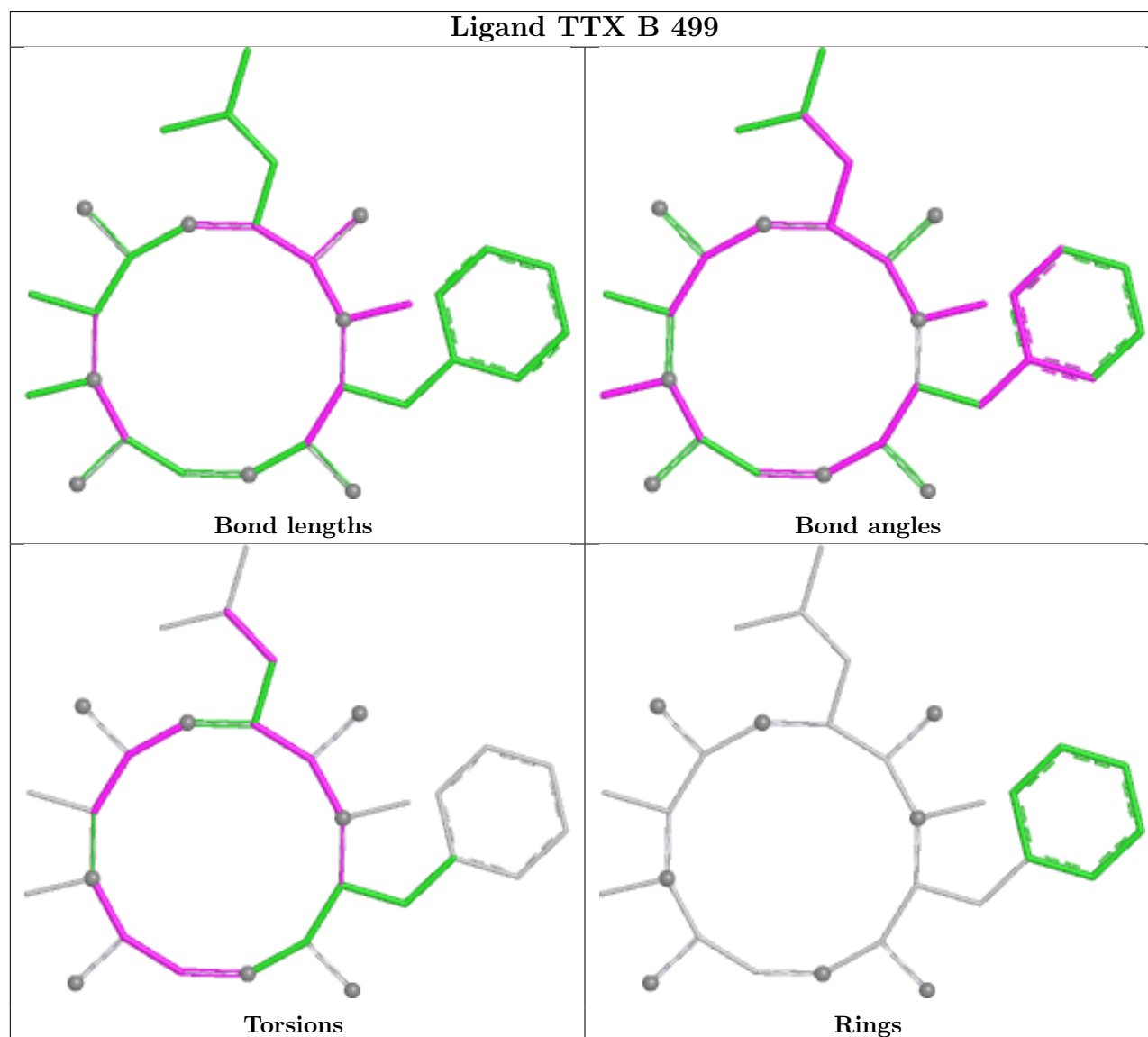
There are no ring outliers.

1 monomer is involved in 20 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	499	TTX	20	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 ⓘ

There are no such residues in this entry.

## 5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

### 6.2 Non-standard residues in protein, DNA, RNA chains

EDS was not executed - this section is therefore empty.

### 6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

### 6.4 Ligands

EDS was not executed - this section is therefore empty.

### 6.5 Other polymers

EDS was not executed - this section is therefore empty.