Full wwPDB X-ray Structure Validation Report (i)

Feb 12, 2024 – 01:08 AM EST

PDB ID	:	3D31
Title	:	ModBC from Methanosarcina acetivorans
Authors	:	Gerber, S.; Comellas-Bigler, M.; Locher, K.P.
Deposited on	:	2008-05-09
Resolution	:	3.00 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:

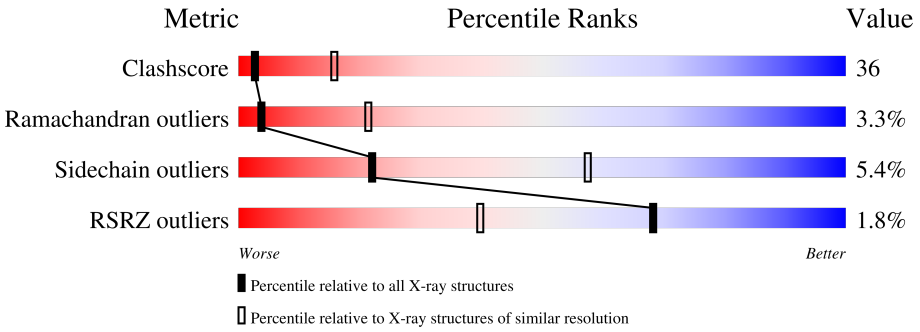
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 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 3.00 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	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)

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	348	2% 46% 47% 7%
1	B	348	3% 45% 48% 6%
2	C	295	% 39% 41% • 16%
2	D	295	% 40% 40% • 16%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	WO4	A	401	-	-	X	-
3	WO4	B	402	-	-	X	-

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 9320 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 Sulfate/molybdate ABC transporter, ATP-binding protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	348	2732	1732	486	504	10	0	0	0
1	B	348	2732	1732	486	504	10	0	0	0

- Molecule 2 is a protein called Sulfate/molybdate ABC transporter, permease protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	C	248	1923	1294	301	323	5	0	0	0
2	D	248	1923	1294	301	323	5	0	0	0

There are 46 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-22	MET	-	expression tag	UNP Q8TTZ4
C	-21	GLY	-	expression tag	UNP Q8TTZ4
C	-20	HIS	-	expression tag	UNP Q8TTZ4
C	-19	HIS	-	expression tag	UNP Q8TTZ4
C	-18	HIS	-	expression tag	UNP Q8TTZ4
C	-17	HIS	-	expression tag	UNP Q8TTZ4
C	-16	HIS	-	expression tag	UNP Q8TTZ4
C	-15	HIS	-	expression tag	UNP Q8TTZ4
C	-14	HIS	-	expression tag	UNP Q8TTZ4
C	-13	HIS	-	expression tag	UNP Q8TTZ4
C	-12	HIS	-	expression tag	UNP Q8TTZ4
C	-11	HIS	-	expression tag	UNP Q8TTZ4
C	-10	SER	-	expression tag	UNP Q8TTZ4
C	-9	SER	-	expression tag	UNP Q8TTZ4
C	-8	GLY	-	expression tag	UNP Q8TTZ4
C	-7	GLU	-	expression tag	UNP Q8TTZ4

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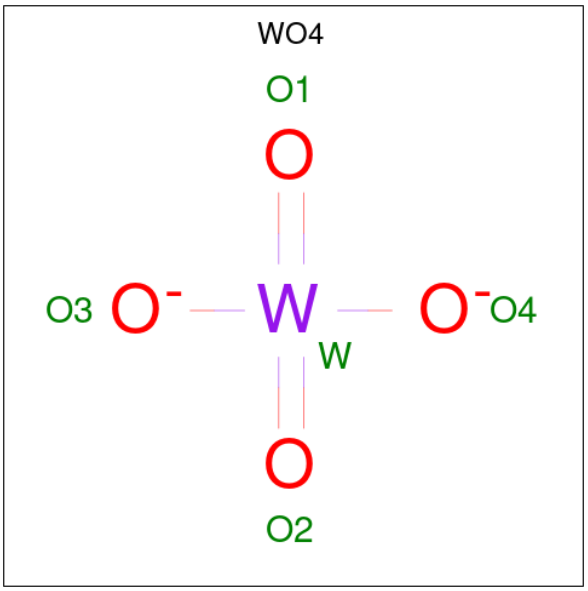
Chain	Residue	Modelled	Actual	Comment	Reference
C	-6	ASN	-	expression tag	UNP Q8TTZ4
C	-5	LEU	-	expression tag	UNP Q8TTZ4
C	-4	TYR	-	expression tag	UNP Q8TTZ4
C	-3	PHE	-	expression tag	UNP Q8TTZ4
C	-2	GLN	-	expression tag	UNP Q8TTZ4
C	-1	GLY	-	expression tag	UNP Q8TTZ4
C	0	HIS	-	expression tag	UNP Q8TTZ4
D	-22	MET	-	expression tag	UNP Q8TTZ4
D	-21	GLY	-	expression tag	UNP Q8TTZ4
D	-20	HIS	-	expression tag	UNP Q8TTZ4
D	-19	HIS	-	expression tag	UNP Q8TTZ4
D	-18	HIS	-	expression tag	UNP Q8TTZ4
D	-17	HIS	-	expression tag	UNP Q8TTZ4
D	-16	HIS	-	expression tag	UNP Q8TTZ4
D	-15	HIS	-	expression tag	UNP Q8TTZ4
D	-14	HIS	-	expression tag	UNP Q8TTZ4
D	-13	HIS	-	expression tag	UNP Q8TTZ4
D	-12	HIS	-	expression tag	UNP Q8TTZ4
D	-11	HIS	-	expression tag	UNP Q8TTZ4
D	-10	SER	-	expression tag	UNP Q8TTZ4
D	-9	SER	-	expression tag	UNP Q8TTZ4
D	-8	GLY	-	expression tag	UNP Q8TTZ4
D	-7	GLU	-	expression tag	UNP Q8TTZ4
D	-6	ASN	-	expression tag	UNP Q8TTZ4
D	-5	LEU	-	expression tag	UNP Q8TTZ4
D	-4	TYR	-	expression tag	UNP Q8TTZ4
D	-3	PHE	-	expression tag	UNP Q8TTZ4
D	-2	GLN	-	expression tag	UNP Q8TTZ4
D	-1	GLY	-	expression tag	UNP Q8TTZ4
D	0	HIS	-	expression tag	UNP Q8TTZ4

- Molecule 3 is TUNGSTATE(VI)ION (three-letter code: WO4) (formula: O_4W).



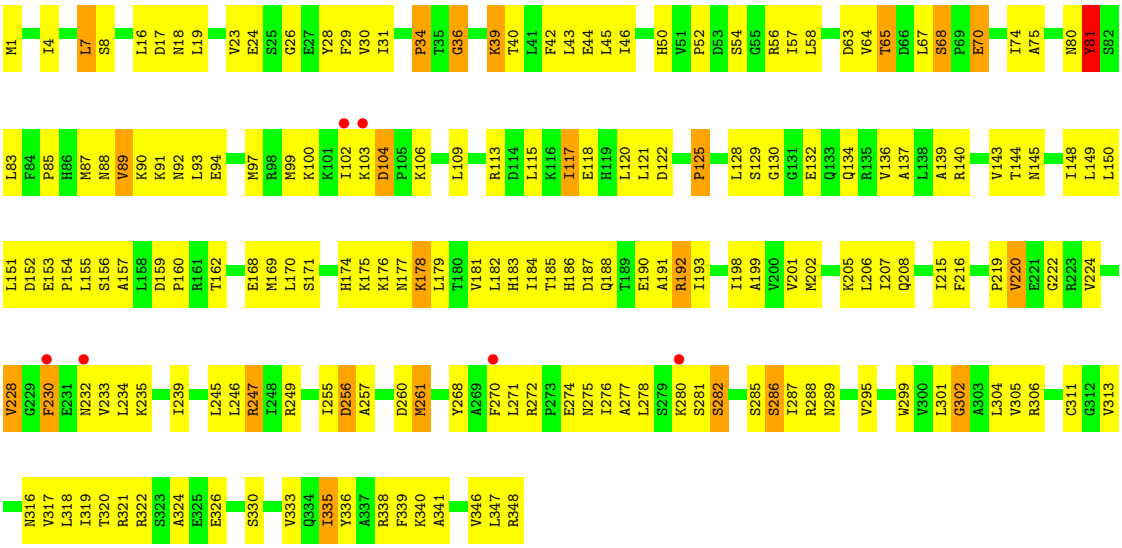
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	O	W			
3	A	1	5	4	1		0	0
			Total	O	W			
3	B	1	5	4	1		0	0

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.

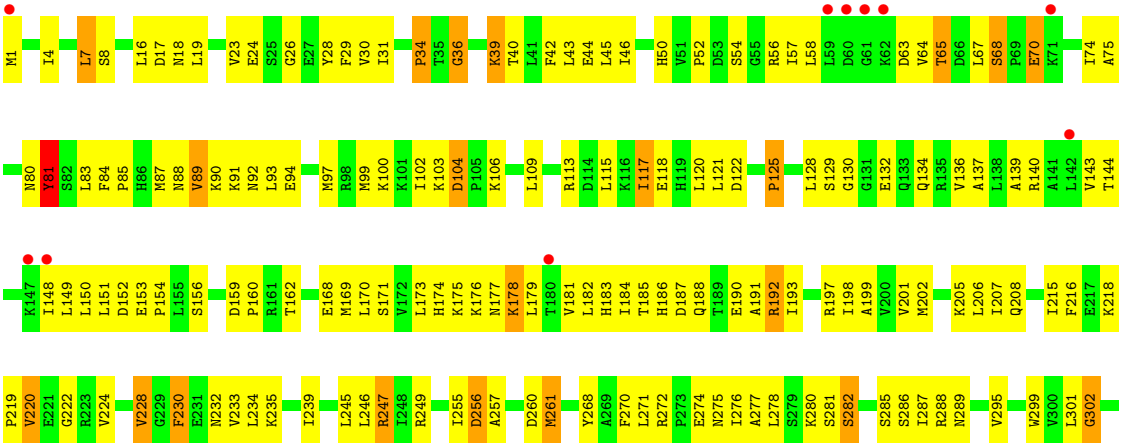
• Molecule 1: Sulfate/molybdate ABC transporter, ATP-binding protein

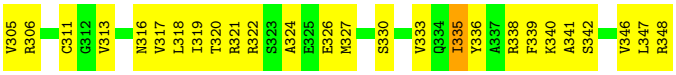
Chain A:



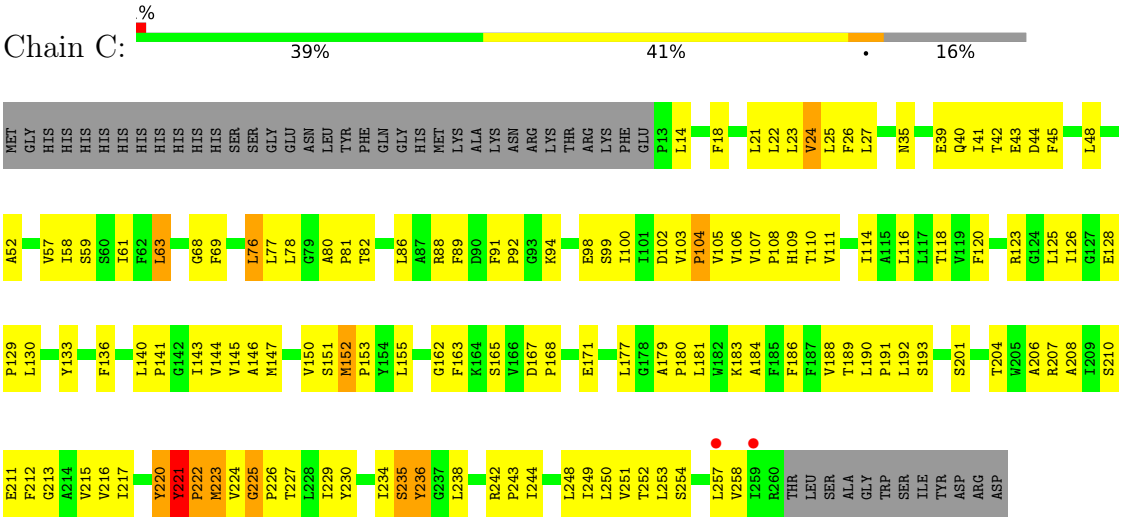
• Molecule 1: Sulfate/molybdate ABC transporter, ATP-binding protein

Chain B:

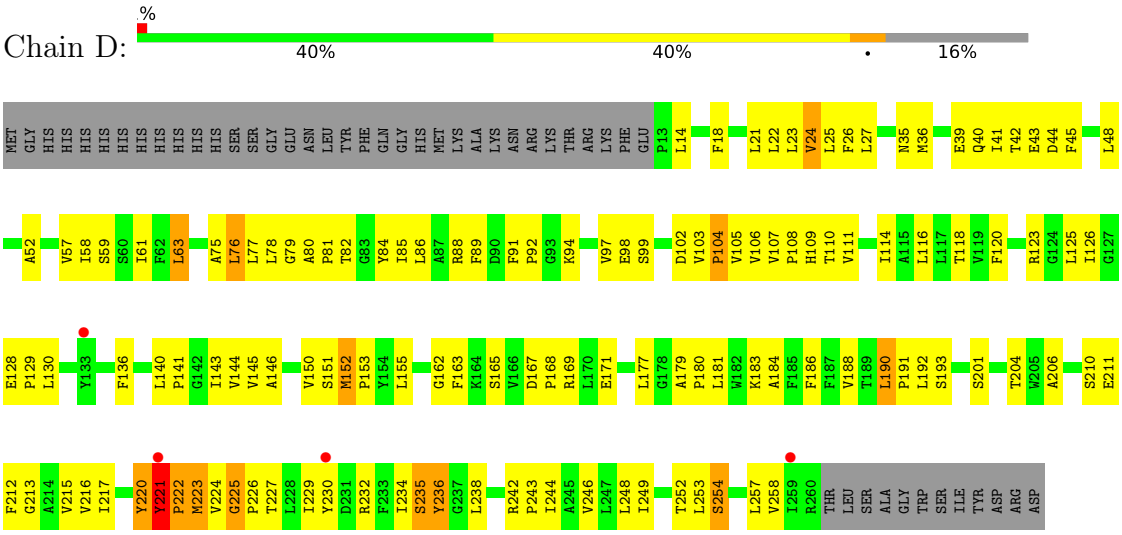




• Molecule 2: Sulfate/molybdate ABC transporter, permease protein



• Molecule 2: Sulfate/molybdate ABC transporter, permease protein



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	92.84Å 139.46Å 207.33Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.00 – 3.00 49.10 – 3.00	Depositor EDS
% Data completeness (in resolution range)	99.6 (30.00-3.00) 78.1 (49.10-3.00)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	0.14	Depositor
$< I/\sigma(I) >$ [1]	6.54 (at 3.01Å)	Xtriage
Refinement program	CNS v. 1.2	Depositor
R, R_{free}	0.251 , 0.282 0.258 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å^2)	85.8	Xtriage
Anisotropy	0.050	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.25 , 59.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.46$, $< L^2 > = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.88	EDS
Total number of atoms	9320	wwPDB-VP
Average B, all atoms (Å^2)	101.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.43% 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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: WO4

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	0.44	0/2774	0.74	3/3741 (0.1%)
1	B	0.49	0/2774	0.75	2/3741 (0.1%)
2	C	0.46	0/1972	0.69	2/2688 (0.1%)
2	D	0.43	0/1972	0.69	2/2688 (0.1%)
All	All	0.46	0/9492	0.73	9/12858 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
2	C	0	1
2	D	0	1
All	All	0	2

There are no bond length outliers.

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	D	221	TYR	N-CA-C	7.21	130.46	111.00
2	C	221	TYR	N-CA-C	7.14	130.29	111.00
2	C	221	TYR	C-N-CA	-5.61	98.43	122.00
2	D	221	TYR	C-N-CA	-5.58	98.57	122.00
1	A	220	VAL	N-CA-C	-5.45	96.28	111.00
1	B	220	VAL	N-CA-C	-5.43	96.33	111.00
1	A	104	ASP	N-CA-C	5.40	125.58	111.00
1	B	104	ASP	N-CA-C	5.33	125.38	111.00
1	A	286	SER	CB-CA-C	5.07	119.74	110.10

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	C	221	TYR	Sidechain
2	D	221	TYR	Sidechain

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	2732	0	2837	218	0
1	B	2732	0	2837	230	0
2	C	1923	0	2024	152	0
2	D	1923	0	2024	152	0
3	A	5	0	0	5	0
3	B	5	0	0	3	0
All	All	9320	0	9722	688	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 36.

All (688) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:185:THR:HG22	1:B:187:ASP:H	1.02	1.17
1:A:185:THR:HG22	1:A:187:ASP:H	1.03	1.14
1:A:74:ILE:HG22	1:A:75:ALA:H	1.15	1.08
1:B:57:ILE:H	1:B:65:THR:HG22	1.22	1.03
2:C:229:ILE:HB	2:D:110:THR:HG21	1.41	1.02
2:C:91:PHE:HB2	2:C:92:PRO:HD2	1.41	1.02
1:A:57:ILE:H	1:A:65:THR:HG22	1.21	1.02
1:B:74:ILE:HG22	1:B:75:ALA:H	1.18	1.02
2:C:108:PRO:HA	2:D:210:SER:HB2	1.42	1.00
2:D:91:PHE:HB2	2:D:92:PRO:HD2	1.42	1.00
2:C:190:LEU:HB3	2:C:191:PRO:HD3	1.44	0.99
1:A:322:ARG:HG2	1:B:288:ARG:NH2	1.79	0.98
2:D:190:LEU:HB3	2:D:191:PRO:HD3	1.44	0.97

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:239:ILE:HD11	1:A:249:ARG:HB2	1.48	0.96
1:B:83:LEU:HA	1:B:140:ARG:HH12	1.31	0.95
1:B:57:ILE:H	1:B:65:THR:CG2	1.81	0.94
1:A:57:ILE:H	1:A:65:THR:CG2	1.80	0.93
1:A:83:LEU:HA	1:A:140:ARG:HH12	1.32	0.92
1:B:185:THR:HG22	1:B:187:ASP:N	1.84	0.91
1:B:239:ILE:HD11	1:B:249:ARG:HB2	1.50	0.91
1:B:40:THR:O	1:B:44:GLU:HG3	1.72	0.90
1:A:185:THR:HG22	1:A:187:ASP:N	1.85	0.90
2:C:210:SER:HB2	2:D:108:PRO:HA	1.52	0.90
2:C:110:THR:HG21	2:D:229:ILE:HB	1.53	0.89
1:A:40:THR:O	1:A:44:GLU:HG3	1.73	0.88
1:B:246:LEU:HD11	1:B:261:MET:HG3	1.55	0.88
1:B:295:VAL:HG22	1:B:335:ILE:HD12	1.58	0.86
1:A:74:ILE:HG22	1:A:75:ALA:N	1.91	0.85
1:A:246:LEU:HD11	1:A:261:MET:HG3	1.56	0.85
2:C:22:LEU:HD13	2:D:82:THR:HG23	1.58	0.85
1:A:57:ILE:N	1:A:65:THR:HG22	1.91	0.84
1:A:295:VAL:HG22	1:A:335:ILE:HD12	1.57	0.84
1:B:185:THR:CG2	1:B:187:ASP:H	1.88	0.83
1:B:29:PHE:CZ	1:B:199:ALA:HB2	2.14	0.83
1:B:74:ILE:HG22	1:B:75:ALA:N	1.93	0.83
2:D:224:VAL:HG12	2:D:226:PRO:HD2	1.60	0.82
1:B:57:ILE:N	1:B:65:THR:HG22	1.92	0.82
1:A:185:THR:CG2	1:A:187:ASP:H	1.89	0.82
2:C:224:VAL:HG12	2:C:226:PRO:HD2	1.61	0.82
1:B:58:LEU:HD23	1:B:63:ASP:HA	1.59	0.82
1:B:232:ASN:HB2	1:B:271:LEU:O	1.79	0.81
2:D:221:TYR:C	2:D:223:MET:H	1.84	0.81
1:A:58:LEU:HD23	1:A:63:ASP:HA	1.61	0.81
1:B:56:ARG:HD3	1:B:65:THR:HG21	1.63	0.81
2:C:221:TYR:C	2:C:223:MET:H	1.85	0.80
1:A:29:PHE:CZ	1:A:199:ALA:HB2	2.17	0.80
1:B:4:ILE:HD11	1:B:46:ILE:HD11	1.61	0.80
1:A:232:ASN:HB2	1:A:271:LEU:O	1.82	0.79
1:A:340:LYS:HE2	1:B:276:ILE:O	1.82	0.79
1:B:74:ILE:CG2	1:B:75:ALA:H	1.95	0.79
2:C:230:TYR:CZ	2:C:234:ILE:HD11	2.18	0.79
2:D:230:TYR:CZ	2:D:234:ILE:HD11	2.18	0.79
1:A:4:ILE:HD11	1:A:46:ILE:HD11	1.63	0.79
1:A:330:SER:O	1:A:333:VAL:HG23	1.83	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:56:ARG:HD3	1:A:65:THR:HG21	1.64	0.78
2:C:140:LEU:HD12	2:C:143:ILE:HD11	1.66	0.78
2:C:140:LEU:O	2:C:143:ILE:HG12	1.83	0.78
1:A:322:ARG:CG	1:B:288:ARG:NH2	2.47	0.78
1:A:74:ILE:CG2	1:A:75:ALA:H	1.94	0.78
2:C:40:GLN:OE1	2:C:242:ARG:HD2	1.84	0.77
2:D:40:GLN:OE1	2:D:242:ARG:HD2	1.84	0.77
1:A:245:LEU:HD12	1:A:257:ALA:O	1.84	0.77
1:B:330:SER:O	1:B:333:VAL:HG23	1.85	0.77
1:B:104:ASP:OD1	1:B:106:LYS:HB2	1.85	0.76
1:B:245:LEU:HD12	1:B:257:ALA:O	1.85	0.76
2:D:140:LEU:HD12	2:D:143:ILE:HD11	1.68	0.76
1:B:43:LEU:HG	1:B:184:ILE:HD12	1.68	0.76
2:D:140:LEU:O	2:D:143:ILE:HG12	1.85	0.76
1:A:43:LEU:HG	1:A:184:ILE:HD12	1.67	0.75
1:A:104:ASP:OD1	1:A:106:LYS:HB2	1.85	0.75
1:A:56:ARG:HA	1:A:65:THR:HG21	1.69	0.75
1:A:30:VAL:HG22	1:A:183:HIS:HB3	1.70	0.74
2:C:114:ILE:HD13	2:C:217:ILE:HG21	1.70	0.74
2:D:114:ILE:HD13	2:D:217:ILE:HG21	1.70	0.74
2:C:82:THR:HG23	2:D:22:LEU:HD13	1.67	0.74
1:B:56:ARG:HA	1:B:65:THR:HG21	1.70	0.73
1:A:140:ARG:HE	2:C:177:LEU:HD11	1.54	0.72
1:A:68:SER:HB3	1:A:70:GLU:OE1	1.90	0.71
2:C:152:MET:HE2	2:C:153:PRO:HD3	1.72	0.71
1:B:30:VAL:HG22	1:B:183:HIS:HB3	1.71	0.71
1:A:305:VAL:HG23	1:A:321:ARG:HA	1.71	0.71
2:D:91:PHE:HB2	2:D:92:PRO:CD	2.21	0.71
1:A:216:PHE:CE2	1:A:228:VAL:HG11	2.26	0.70
2:C:118:THR:HG22	2:D:35:ASN:HD21	1.56	0.70
1:A:282:SER:HB3	1:A:336:TYR:CD2	2.26	0.70
1:A:282:SER:HB3	1:A:336:TYR:CE2	2.27	0.70
2:D:152:MET:HE2	2:D:153:PRO:HD3	1.73	0.70
1:A:299:TRP:HB2	1:A:306:ARG:HB2	1.73	0.70
1:B:100:LYS:NZ	1:B:144:THR:HG21	2.06	0.70
2:C:21:LEU:O	2:C:24:VAL:HB	1.91	0.70
1:B:68:SER:HB3	1:B:70:GLU:OE1	1.91	0.70
1:B:282:SER:HB3	1:B:336:TYR:CD2	2.27	0.70
1:A:100:LYS:NZ	1:A:144:THR:HG21	2.06	0.70
1:A:322:ARG:CG	1:B:288:ARG:HH21	2.05	0.70
1:B:305:VAL:HG23	1:B:321:ARG:HA	1.74	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:330:SER:HB2	1:A:333:VAL:CG2	2.22	0.70
2:D:21:LEU:O	2:D:24:VAL:HB	1.91	0.69
1:B:216:PHE:CE2	1:B:228:VAL:HG11	2.27	0.69
1:B:282:SER:HB3	1:B:336:TYR:CE2	2.27	0.69
1:B:319:ILE:HG22	1:B:320:THR:O	1.93	0.69
1:A:85:PRO:HG2	2:C:192:LEU:HD21	1.75	0.69
2:C:162:GLY:O	2:C:165:SER:HB3	1.93	0.69
1:B:299:TRP:HB2	1:B:306:ARG:HB2	1.74	0.68
1:B:26:GLY:O	1:B:174:HIS:NE2	2.26	0.68
2:C:91:PHE:HB2	2:C:92:PRO:CD	2.20	0.68
1:B:330:SER:HB2	1:B:333:VAL:CG2	2.23	0.68
2:D:162:GLY:O	2:D:165:SER:HB3	1.93	0.68
1:A:192:ARG:NH1	1:A:233:VAL:HB	2.08	0.68
1:A:247:ARG:HG3	1:A:247:ARG:NH1	2.08	0.68
1:B:247:ARG:NH1	1:B:247:ARG:HG3	2.08	0.67
1:B:192:ARG:NH1	1:B:233:VAL:HB	2.08	0.67
2:D:103:VAL:O	2:D:105:VAL:N	2.28	0.67
2:D:190:LEU:HB3	2:D:191:PRO:CD	2.23	0.67
2:C:190:LEU:HB3	2:C:191:PRO:CD	2.22	0.67
1:A:319:ILE:HG22	1:A:320:THR:O	1.93	0.67
2:D:108:PRO:HG2	2:D:111:VAL:HG21	1.77	0.67
2:C:221:TYR:C	2:C:223:MET:N	2.45	0.66
1:A:276:ILE:O	1:B:340:LYS:HE2	1.95	0.66
2:D:221:TYR:C	2:D:223:MET:N	2.45	0.66
2:C:103:VAL:O	2:C:105:VAL:N	2.29	0.66
1:B:16:LEU:HD22	1:B:19:LEU:HD11	1.78	0.65
1:B:150:LEU:HD23	1:B:182:LEU:HB3	1.78	0.65
1:A:4:ILE:HG23	1:A:7:LEU:HD12	1.77	0.65
1:A:216:PHE:CD2	1:A:228:VAL:HG11	2.31	0.65
2:D:40:GLN:HE21	2:D:48:LEU:HG	1.61	0.65
1:B:4:ILE:HG23	1:B:7:LEU:HD12	1.78	0.65
2:C:108:PRO:CA	2:D:210:SER:HB2	2.22	0.65
1:A:17:ASP:OD1	1:A:205:LYS:HD3	1.97	0.65
1:A:288:ARG:HB2	1:A:341:ALA:HB2	1.79	0.65
1:B:288:ARG:HB2	1:B:341:ALA:HB2	1.79	0.65
2:D:221:TYR:O	2:D:223:MET:N	2.29	0.65
1:A:305:VAL:CG2	1:A:321:ARG:HA	2.25	0.65
2:C:221:TYR:O	2:C:223:MET:N	2.29	0.65
1:B:80:ASN:HD22	2:D:169:ARG:HH12	1.46	0.64
1:B:216:PHE:CD2	1:B:228:VAL:HG11	2.32	0.64
1:A:26:GLY:O	1:A:174:HIS:NE2	2.29	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:43:LEU:HG	1:B:184:ILE:CD1	2.28	0.64
2:C:40:GLN:HE21	2:C:48:LEU:HG	1.62	0.64
2:C:42:THR:HG22	2:C:43:GLU:N	2.12	0.64
1:A:43:LEU:HG	1:A:184:ILE:CD1	2.27	0.64
1:B:17:ASP:OD1	1:B:205:LYS:HD3	1.97	0.63
1:B:63:ASP:OD1	1:B:65:THR:HG23	1.98	0.63
1:B:305:VAL:CG2	1:B:321:ARG:HA	2.28	0.63
1:A:150:LEU:HD23	1:A:182:LEU:HB3	1.80	0.63
2:C:108:PRO:HG2	2:C:111:VAL:HG21	1.78	0.63
1:B:43:LEU:HD21	1:B:150:LEU:HD22	1.80	0.62
2:D:120:PHE:HB3	2:D:136:PHE:CD1	2.34	0.62
1:A:63:ASP:OD1	1:A:65:THR:HG23	1.99	0.62
2:D:42:THR:HG22	2:D:43:GLU:N	2.13	0.62
1:A:16:LEU:HD22	1:A:19:LEU:HD11	1.81	0.62
1:B:36:GLY:H	1:B:39:LYS:HD2	1.64	0.62
2:C:57:VAL:HG12	2:C:58:ILE:N	2.15	0.62
2:C:242:ARG:N	2:C:243:PRO:HD2	2.15	0.62
2:D:57:VAL:HG12	2:D:58:ILE:N	2.14	0.62
2:D:41:ILE:O	2:D:41:ILE:HG22	2.01	0.61
1:A:56:ARG:HD2	1:A:63:ASP:OD1	2.01	0.61
1:B:247:ARG:HH11	1:B:247:ARG:CG	2.13	0.61
2:C:41:ILE:HG22	2:C:41:ILE:O	2.00	0.61
2:C:206:ALA:HB1	2:D:106:VAL:HG13	1.82	0.61
1:A:43:LEU:HD21	1:A:150:LEU:HD22	1.83	0.61
1:B:80:ASN:HD22	2:D:169:ARG:NH1	1.99	0.61
1:A:340:LYS:HG3	3:A:401:WO4:O3	2.00	0.61
1:B:1:MET:HB3	1:B:148:ILE:HD11	1.82	0.61
1:A:36:GLY:H	1:A:39:LYS:HD2	1.64	0.60
2:C:106:VAL:HG13	2:D:206:ALA:HB1	1.83	0.60
1:A:247:ARG:HH11	1:A:247:ARG:CG	2.14	0.60
1:B:70:GLU:OE2	2:D:180:PRO:HA	2.00	0.60
2:C:251:VAL:HA	2:C:254:SER:OG	2.01	0.60
2:D:242:ARG:N	2:D:243:PRO:HD2	2.15	0.60
1:B:56:ARG:HD2	1:B:63:ASP:OD1	2.00	0.60
1:B:120:LEU:HD13	1:B:128:LEU:HD22	1.84	0.60
2:D:236:TYR:N	2:D:236:TYR:CD1	2.69	0.60
1:A:1:MET:HB3	1:A:148:ILE:HD11	1.84	0.60
1:B:185:THR:HG22	1:B:186:HIS:N	2.17	0.60
1:A:57:ILE:HG22	1:A:64:VAL:CG2	2.32	0.60
1:A:120:LEU:HD13	1:A:128:LEU:HD22	1.84	0.60
2:D:82:THR:O	2:D:86:LEU:HG	2.02	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:29:PHE:HZ	1:B:199:ALA:HB2	1.67	0.60
1:B:57:ILE:HG22	1:B:64:VAL:CG2	2.31	0.60
2:C:236:TYR:N	2:C:236:TYR:CD1	2.69	0.59
1:A:301:LEU:HG	1:A:302:GLY:H	1.66	0.59
1:A:278:LEU:HD12	1:A:319:ILE:HD11	1.84	0.59
2:C:120:PHE:HB3	2:C:136:PHE:CD1	2.37	0.59
1:B:277:ALA:O	1:B:278:LEU:HD23	2.03	0.59
2:C:82:THR:O	2:C:86:LEU:HG	2.03	0.59
1:B:93:LEU:HD21	1:B:139:ALA:HB1	1.84	0.59
1:A:177:ASN:C	1:A:178:LYS:HG2	2.22	0.59
1:B:311:CYS:C	1:B:313:VAL:H	2.07	0.59
1:B:177:ASN:C	1:B:178:LYS:HG2	2.22	0.58
1:B:246:LEU:CD1	1:B:261:MET:HG3	2.31	0.58
1:A:185:THR:HG22	1:A:186:HIS:N	2.17	0.58
1:B:57:ILE:N	1:B:65:THR:CG2	2.57	0.58
1:B:278:LEU:HD12	1:B:319:ILE:HD11	1.85	0.58
2:C:99:SER:O	2:C:103:VAL:HG23	2.03	0.58
2:D:99:SER:O	2:D:103:VAL:HG23	2.03	0.58
2:D:108:PRO:HG2	2:D:111:VAL:CG2	2.33	0.58
1:A:260:ASP:C	1:A:261:MET:HG2	2.23	0.58
1:B:301:LEU:HG	1:B:302:GLY:H	1.67	0.58
1:A:93:LEU:HD21	1:A:139:ALA:HB1	1.86	0.58
1:A:286:SER:HB3	1:B:327:MET:SD	2.43	0.58
1:B:99:MET:SD	2:D:179:ALA:HB2	2.43	0.58
1:A:134:GLN:O	1:A:137:ALA:HB3	2.04	0.57
2:C:39:GLU:HG3	2:D:118:THR:CG2	2.33	0.57
1:B:46:ILE:HA	1:B:57:ILE:HD13	1.87	0.57
1:B:57:ILE:HG22	1:B:64:VAL:HG23	1.84	0.57
1:B:134:GLN:O	1:B:137:ALA:HB3	2.03	0.57
1:B:219:PRO:HB3	1:B:224:VAL:HG12	1.87	0.57
1:A:330:SER:HB2	1:A:333:VAL:HG22	1.86	0.57
1:B:144:THR:HG22	1:B:144:THR:O	2.04	0.57
1:A:311:CYS:C	1:A:313:VAL:H	2.07	0.57
1:B:23:VAL:HG13	1:B:29:PHE:HB2	1.87	0.57
1:B:202:MET:HB2	1:B:207:ILE:HD11	1.86	0.57
2:C:108:PRO:HG2	2:C:111:VAL:CG2	2.33	0.57
2:C:210:SER:HB2	2:D:108:PRO:CA	2.30	0.57
2:C:80:ALA:HB3	2:C:81:PRO:CD	2.35	0.57
2:D:123:ARG:O	2:D:123:ARG:HD3	2.04	0.57
3:A:401:WO4:O4	1:B:320:THR:HG23	2.05	0.57
1:B:91:LYS:HA	1:B:94:GLU:HG3	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:260:ASP:C	1:B:261:MET:HG2	2.25	0.56
2:C:118:THR:HG22	2:D:35:ASN:ND2	2.21	0.56
2:D:80:ALA:HB3	2:D:81:PRO:CD	2.34	0.56
1:A:144:THR:O	1:A:144:THR:HG22	2.05	0.56
2:C:152:MET:HE2	2:C:153:PRO:CD	2.34	0.56
1:A:57:ILE:N	1:A:65:THR:CG2	2.56	0.56
1:B:58:LEU:HD23	1:B:63:ASP:CA	2.34	0.56
2:C:123:ARG:O	2:C:123:ARG:HD3	2.04	0.56
2:D:258:VAL:HG12	2:D:258:VAL:O	2.05	0.56
1:B:7:LEU:HD23	1:B:8:SER:H	1.71	0.56
1:A:57:ILE:HG22	1:A:64:VAL:HG23	1.87	0.56
1:A:277:ALA:O	1:A:278:LEU:HD23	2.06	0.56
1:B:16:LEU:HD22	1:B:19:LEU:CD1	2.34	0.56
2:C:140:LEU:N	2:C:141:PRO:HD2	2.21	0.56
2:D:236:TYR:HD1	2:D:236:TYR:H	1.52	0.56
1:A:29:PHE:HZ	1:A:199:ALA:HB2	1.70	0.56
1:A:140:ARG:NE	2:C:177:LEU:HD11	2.21	0.56
1:B:330:SER:HB2	1:B:333:VAL:HG22	1.88	0.56
2:D:212:PHE:CE1	2:D:227:THR:HA	2.40	0.56
1:A:23:VAL:HG13	1:A:29:PHE:HB2	1.87	0.56
1:A:247:ARG:HG3	1:A:247:ARG:HH11	1.69	0.56
2:C:236:TYR:HD1	2:C:236:TYR:H	1.53	0.56
2:C:258:VAL:HG12	2:C:258:VAL:O	2.04	0.56
1:A:246:LEU:CD1	1:A:261:MET:HG3	2.33	0.56
2:C:212:PHE:CE1	2:C:227:THR:HA	2.41	0.56
1:A:191:ALA:HB1	1:A:198:ILE:HD12	1.88	0.56
2:D:140:LEU:N	2:D:141:PRO:HD2	2.21	0.56
1:A:230:PHE:CZ	1:A:306:ARG:HB3	2.41	0.55
1:A:7:LEU:HD23	1:A:8:SER:H	1.71	0.55
1:B:230:PHE:CZ	1:B:306:ARG:HB3	2.41	0.55
1:B:274:GLU:HG3	1:B:318:LEU:HD23	1.88	0.55
2:D:216:VAL:HG13	2:D:220:TYR:CD1	2.42	0.55
1:A:202:MET:HB2	1:A:207:ILE:HD11	1.87	0.55
1:A:100:LYS:HZ3	1:A:144:THR:HG21	1.71	0.55
2:D:212:PHE:HE1	2:D:227:THR:HA	1.71	0.55
1:A:256:ASP:OD2	1:A:288:ARG:HD2	2.07	0.55
2:C:63:LEU:CD1	2:C:224:VAL:HG22	2.37	0.55
2:C:108:PRO:HA	2:D:210:SER:CB	2.28	0.55
1:A:91:LYS:HA	1:A:94:GLU:HG3	1.87	0.55
1:B:19:LEU:HD13	1:B:42:PHE:CE1	2.41	0.55
2:C:39:GLU:HG3	2:D:118:THR:HG21	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:219:PRO:HB3	1:A:224:VAL:HG12	1.87	0.55
1:B:29:PHE:CE2	1:B:199:ALA:HB2	2.40	0.55
1:B:100:LYS:HZ2	1:B:144:THR:HG21	1.72	0.55
2:C:212:PHE:HE1	2:C:227:THR:HA	1.72	0.55
2:C:216:VAL:HG13	2:C:220:TYR:CD1	2.40	0.55
2:D:63:LEU:CD1	2:D:224:VAL:HG22	2.37	0.55
1:A:16:LEU:HD22	1:A:19:LEU:CD1	2.36	0.55
1:A:19:LEU:HD23	1:A:206:LEU:HB2	1.88	0.55
1:A:260:ASP:O	1:A:261:MET:CE	2.55	0.55
2:D:238:LEU:HD12	2:D:238:LEU:O	2.07	0.55
1:A:117:ILE:HD11	1:A:139:ALA:HB2	1.89	0.55
1:B:7:LEU:HD21	1:B:52:PRO:HB3	1.87	0.55
1:B:56:ARG:CA	1:B:65:THR:HG21	2.37	0.55
1:B:191:ALA:HB1	1:B:198:ILE:HD12	1.88	0.55
2:D:40:GLN:HE22	2:D:243:PRO:HB3	1.72	0.55
2:C:206:ALA:HB1	2:D:106:VAL:CG1	2.36	0.55
2:C:152:MET:N	2:C:153:PRO:HD2	2.21	0.54
1:A:7:LEU:HD21	1:A:52:PRO:HB3	1.88	0.54
1:B:139:ALA:O	1:B:143:VAL:HG23	2.08	0.54
1:B:230:PHE:CE1	1:B:306:ARG:HD3	2.42	0.54
2:C:77:LEU:O	2:C:78:LEU:HD23	2.07	0.54
1:A:319:ILE:HG23	3:B:402:WO4:O3	2.07	0.54
2:D:77:LEU:O	2:D:78:LEU:HD23	2.06	0.54
1:A:29:PHE:CE2	1:A:199:ALA:HB2	2.43	0.54
1:A:115:LEU:HD12	1:A:139:ALA:HB2	1.89	0.54
2:D:155:LEU:HD13	2:D:201:SER:N	2.21	0.54
2:D:258:VAL:O	2:D:258:VAL:CG1	2.56	0.54
1:A:19:LEU:HD13	1:A:42:PHE:CE1	2.42	0.54
1:A:56:ARG:CA	1:A:65:THR:HG21	2.37	0.54
1:A:274:GLU:HG3	1:A:318:LEU:HD23	1.88	0.54
1:B:109:LEU:O	1:B:113:ARG:HG3	2.07	0.54
1:A:46:ILE:HA	1:A:57:ILE:HD13	1.89	0.54
1:B:19:LEU:HD23	1:B:206:LEU:HB2	1.88	0.54
1:B:319:ILE:CG2	1:B:320:THR:N	2.70	0.54
2:D:152:MET:HE2	2:D:153:PRO:CD	2.37	0.54
1:B:117:ILE:HD11	1:B:139:ALA:HB2	1.88	0.54
2:D:59:SER:O	2:D:63:LEU:HB2	2.09	0.53
1:A:305:VAL:N	1:A:319:ILE:O	2.41	0.53
1:A:208:GLN:NE2	1:A:215:ILE:HD13	2.24	0.53
1:A:276:ILE:O	1:B:340:LYS:CE	2.57	0.53
2:C:106:VAL:CG1	2:D:206:ALA:HB1	2.38	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:151:SER:HB2	2:D:204:THR:HG23	1.89	0.53
2:D:91:PHE:CE1	2:D:94:LYS:HA	2.43	0.53
1:B:93:LEU:HD21	1:B:139:ALA:CB	2.39	0.53
1:B:150:LEU:CD2	1:B:182:LEU:HB3	2.39	0.53
2:C:258:VAL:O	2:C:258:VAL:CG1	2.55	0.53
1:A:234:LEU:HD12	1:A:255:ILE:CD1	2.38	0.53
1:B:208:GLN:OE1	1:B:220:VAL:HG23	2.09	0.53
2:D:235:SER:HB2	2:D:236:TYR:HD1	1.73	0.53
2:C:155:LEU:HD13	2:C:201:SER:N	2.23	0.53
2:D:152:MET:N	2:D:153:PRO:HD2	2.23	0.53
1:A:185:THR:CG2	1:A:186:HIS:N	2.72	0.53
1:B:115:LEU:HD12	1:B:139:ALA:HB2	1.91	0.53
2:C:118:THR:CG2	2:D:35:ASN:ND2	2.72	0.53
1:A:230:PHE:CE1	1:A:306:ARG:HD3	2.44	0.53
1:A:285:SER:C	1:A:287:ILE:H	2.12	0.53
1:A:286:SER:O	3:A:401:WO4:O2	2.27	0.53
1:B:260:ASP:O	1:B:261:MET:CE	2.56	0.53
1:A:99:MET:SD	2:C:179:ALA:HB2	2.49	0.52
1:B:256:ASP:OD2	1:B:288:ARG:HD2	2.08	0.52
2:C:238:LEU:O	2:C:238:LEU:HD12	2.09	0.52
1:B:247:ARG:HG3	1:B:247:ARG:HH11	1.68	0.52
2:C:235:SER:HB2	2:C:236:TYR:HD1	1.73	0.52
1:A:320:THR:CG2	1:B:341:ALA:HB3	2.40	0.52
1:B:185:THR:CG2	1:B:186:HIS:N	2.72	0.52
2:C:25:LEU:HG	2:D:78:LEU:HB3	1.91	0.52
2:C:91:PHE:CE1	2:C:94:LYS:HA	2.44	0.52
2:C:94:LYS:O	2:C:98:GLU:HB2	2.10	0.52
1:B:45:LEU:HD13	1:B:50:HIS:O	2.09	0.52
1:A:301:LEU:CG	1:A:302:GLY:H	2.21	0.52
2:D:94:LYS:O	2:D:98:GLU:HB2	2.10	0.52
2:D:152:MET:HE3	2:D:153:PRO:HA	1.91	0.52
1:B:234:LEU:HD12	1:B:255:ILE:CD1	2.40	0.52
1:B:285:SER:C	1:B:287:ILE:H	2.13	0.52
2:C:212:PHE:H	2:D:109:HIS:HD2	1.58	0.52
2:C:151:SER:HB2	2:C:204:THR:HG23	1.91	0.52
1:A:109:LEU:O	1:A:113:ARG:HG3	2.10	0.52
1:B:89:VAL:O	1:B:92:ASN:HB2	2.09	0.52
1:A:89:VAL:O	1:A:92:ASN:HB2	2.10	0.51
1:B:319:ILE:HG22	1:B:320:THR:N	2.24	0.51
1:B:301:LEU:CG	1:B:302:GLY:H	2.21	0.51
1:B:31:ILE:HB	1:B:184:ILE:HG12	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:59:SER:O	2:C:63:LEU:HB2	2.10	0.51
2:D:40:GLN:NE2	2:D:243:PRO:HB3	2.25	0.51
2:D:254:SER:O	2:D:258:VAL:HG23	2.10	0.51
1:A:319:ILE:CG2	1:A:320:THR:N	2.73	0.51
1:B:28:TYR:HE1	1:B:183:HIS:HB2	1.76	0.51
2:C:201:SER:O	2:C:204:THR:HB	2.11	0.51
1:A:45:LEU:HD13	1:A:50:HIS:O	2.09	0.51
1:B:93:LEU:CD2	1:B:139:ALA:HB1	2.41	0.51
1:B:208:GLN:NE2	1:B:215:ILE:HD13	2.24	0.51
2:C:224:VAL:O	2:C:225:GLY:C	2.49	0.51
2:C:35:ASN:HD21	2:D:118:THR:HG22	1.75	0.51
1:A:322:ARG:HG2	1:B:288:ARG:HH22	1.71	0.51
2:C:40:GLN:HB2	2:C:242:ARG:HD3	1.92	0.51
1:B:286:SER:O	3:B:402:WO4:O3	2.29	0.51
2:D:180:PRO:HD2	2:D:183:LYS:HD2	1.92	0.51
2:D:224:VAL:O	2:D:225:GLY:C	2.49	0.51
1:B:177:ASN:HB2	1:B:179:LEU:HG	1.92	0.50
2:D:40:GLN:HB2	2:D:242:ARG:HD3	1.92	0.50
1:A:208:GLN:OE1	1:A:220:VAL:HG23	2.10	0.50
2:C:229:ILE:HB	2:D:110:THR:CG2	2.29	0.50
1:B:153:GLU:N	1:B:154:PRO:HD3	2.25	0.50
1:B:224:VAL:O	1:B:228:VAL:HG23	2.11	0.50
1:B:230:PHE:CZ	1:B:306:ARG:HD3	2.47	0.50
1:B:4:ILE:HD11	1:B:46:ILE:CD1	2.39	0.50
2:D:220:TYR:C	2:D:220:TYR:CD2	2.85	0.50
1:A:150:LEU:CD2	1:A:182:LEU:HB3	2.42	0.50
2:C:40:GLN:HE22	2:C:243:PRO:HB3	1.75	0.50
1:A:322:ARG:O	1:A:326:GLU:HG3	2.12	0.50
1:A:45:LEU:CD1	1:A:50:HIS:O	2.60	0.50
1:A:93:LEU:CD2	1:A:139:ALA:HB1	2.42	0.50
1:A:224:VAL:O	1:A:228:VAL:HG23	2.12	0.50
1:B:140:ARG:HE	2:D:177:LEU:HD11	1.76	0.50
1:A:31:ILE:HB	1:A:184:ILE:HG12	1.93	0.50
1:A:102:ILE:HG22	1:A:103:LYS:N	2.27	0.50
1:B:19:LEU:CD2	1:B:206:LEU:HB2	2.41	0.50
1:B:198:ILE:HB	1:B:215:ILE:HG13	1.94	0.50
1:A:90:LYS:O	1:A:94:GLU:HG2	2.12	0.49
1:B:19:LEU:HD13	1:B:42:PHE:HE1	1.77	0.49
1:B:149:LEU:HD11	1:B:151:LEU:HD21	1.93	0.49
2:C:118:THR:CG2	2:D:39:GLU:HG3	2.42	0.49
2:D:201:SER:O	2:D:204:THR:HB	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:7:LEU:HD11	1:B:57:ILE:HD11	1.95	0.49
1:A:19:LEU:HD13	1:A:42:PHE:HE1	1.77	0.49
1:A:93:LEU:HD21	1:A:139:ALA:CB	2.42	0.49
1:B:4:ILE:CG2	1:B:7:LEU:HB2	2.42	0.49
1:A:139:ALA:O	1:A:143:VAL:HG23	2.12	0.49
1:A:177:ASN:HB2	1:A:179:LEU:HG	1.95	0.49
1:B:45:LEU:CD1	1:B:50:HIS:O	2.60	0.49
1:B:175:LYS:O	1:B:178:LYS:N	2.42	0.49
1:B:175:LYS:O	1:B:177:ASN:N	2.45	0.49
2:C:168:PRO:O	2:C:171:GLU:N	2.45	0.49
2:C:180:PRO:HD2	2:C:183:LYS:HD2	1.93	0.49
1:A:187:ASP:CG	1:A:190:GLU:HG2	2.33	0.49
1:A:288:ARG:NH2	1:B:322:ARG:HG2	2.28	0.49
1:B:187:ASP:CG	1:B:190:GLU:HG2	2.32	0.49
1:B:90:LYS:O	1:B:94:GLU:HG2	2.12	0.49
2:C:40:GLN:NE2	2:C:243:PRO:HB3	2.27	0.49
1:A:301:LEU:HG	1:A:302:GLY:N	2.28	0.49
1:A:319:ILE:HG22	1:A:320:THR:N	2.27	0.49
1:B:136:VAL:O	1:B:139:ALA:HB3	2.13	0.49
1:B:301:LEU:HG	1:B:302:GLY:N	2.28	0.49
2:C:216:VAL:HG22	2:C:227:THR:HG22	1.94	0.49
1:A:136:VAL:O	1:A:139:ALA:HB3	2.13	0.49
1:A:153:GLU:N	1:A:154:PRO:HD3	2.28	0.49
1:B:169:MET:HE2	1:B:170:LEU:HG	1.94	0.49
1:B:305:VAL:N	1:B:319:ILE:O	2.42	0.49
1:A:4:ILE:CG2	1:A:7:LEU:HB2	2.43	0.49
1:B:4:ILE:HG22	1:B:19:LEU:O	2.12	0.49
1:B:171:SER:O	1:B:174:HIS:HB3	2.12	0.49
2:C:78:LEU:HB3	2:D:25:LEU:HG	1.95	0.49
2:C:108:PRO:HB3	2:D:210:SER:HA	1.94	0.49
1:A:28:TYR:HE1	1:A:183:HIS:HB2	1.78	0.48
1:A:80:ASN:O	1:A:81:TYR:C	2.51	0.48
1:A:149:LEU:HD11	1:A:151:LEU:HD21	1.95	0.48
1:B:102:ILE:HG22	1:B:103:LYS:N	2.28	0.48
1:B:132:GLU:O	1:B:136:VAL:HG23	2.13	0.48
1:A:87:MET:HB3	1:A:91:LYS:HB2	1.95	0.48
1:A:216:PHE:CD1	1:A:216:PHE:N	2.82	0.48
1:B:117:ILE:HG22	1:B:120:LEU:HB2	1.95	0.48
1:B:322:ARG:O	1:B:326:GLU:HG3	2.14	0.48
1:A:58:LEU:HD23	1:A:63:ASP:CA	2.37	0.48
1:A:132:GLU:O	1:A:136:VAL:HG23	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:171:SER:O	1:A:174:HIS:HB3	2.13	0.48
1:A:289:ASN:HB2	1:A:339:PHE:O	2.13	0.48
2:D:253:LEU:O	2:D:257:LEU:HB2	2.13	0.48
1:A:97:MET:CE	1:A:143:VAL:HG12	2.43	0.48
1:A:198:ILE:HB	1:A:215:ILE:HG13	1.95	0.48
2:C:220:TYR:C	2:C:220:TYR:CD2	2.86	0.48
2:C:146:ALA:HB3	2:C:215:VAL:HG22	1.95	0.48
2:D:61:ILE:CD1	2:D:248:LEU:HD13	2.43	0.48
1:A:7:LEU:HD11	1:A:57:ILE:HD11	1.96	0.48
1:A:117:ILE:HG22	1:A:120:LEU:HB2	1.95	0.48
1:A:260:ASP:O	1:A:261:MET:HE2	2.14	0.48
1:B:216:PHE:CD1	1:B:216:PHE:N	2.82	0.48
1:A:28:TYR:CE1	1:A:183:HIS:HB2	2.49	0.48
1:B:28:TYR:CE1	1:B:183:HIS:HB2	2.47	0.48
2:C:216:VAL:HG13	2:C:220:TYR:HD1	1.78	0.48
1:A:19:LEU:CD2	1:A:206:LEU:HB2	2.43	0.48
1:A:230:PHE:CZ	1:A:306:ARG:HD3	2.49	0.48
1:B:87:MET:HB3	1:B:91:LYS:HB2	1.95	0.48
2:C:61:ILE:CD1	2:C:248:LEU:HD13	2.44	0.48
2:D:168:PRO:O	2:D:171:GLU:N	2.45	0.48
2:D:216:VAL:HG22	2:D:227:THR:HG22	1.94	0.48
1:A:169:MET:HE2	1:A:170:LEU:HG	1.96	0.47
1:A:295:VAL:CG2	1:A:335:ILE:HD12	2.38	0.47
1:B:16:LEU:HD11	1:B:42:PHE:HD1	1.79	0.47
1:B:289:ASN:HB2	1:B:339:PHE:O	2.14	0.47
1:A:268:TYR:O	1:A:346:VAL:HA	2.14	0.47
2:C:76:LEU:N	2:C:155:LEU:HD23	2.29	0.47
2:C:89:PHE:CD1	2:C:89:PHE:N	2.81	0.47
2:D:89:PHE:CD1	2:D:89:PHE:N	2.81	0.47
2:D:144:VAL:HG12	2:D:145:VAL:N	2.28	0.47
2:C:144:VAL:HG12	2:C:145:VAL:N	2.28	0.47
1:A:341:ALA:N	3:A:401:WO4:O3	2.43	0.47
1:B:276:ILE:HG21	1:B:317:VAL:HG22	1.97	0.47
2:D:146:ALA:HB3	2:D:215:VAL:HG22	1.96	0.47
2:D:216:VAL:HG13	2:D:220:TYR:HD1	1.80	0.47
1:A:175:LYS:O	1:A:177:ASN:N	2.48	0.47
1:A:288:ARG:HH21	1:B:322:ARG:HG2	1.80	0.47
1:A:348:ARG:O	1:A:348:ARG:HG2	2.15	0.47
2:D:163:PHE:HE2	2:D:193:SER:HG	1.62	0.47
1:A:94:GLU:O	1:A:97:MET:HB2	2.15	0.47
1:A:322:ARG:CB	1:B:288:ARG:HH21	2.26	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:348:ARG:O	1:B:348:ARG:HG2	2.14	0.47
2:D:106:VAL:HG12	2:D:106:VAL:O	2.15	0.47
1:A:81:TYR:CE2	1:A:134:GLN:HB2	2.50	0.47
1:A:335:ILE:HG23	1:A:336:TYR:N	2.29	0.47
1:B:97:MET:CE	1:B:143:VAL:HG12	2.44	0.47
2:C:26:PHE:CE1	2:D:97:VAL:HA	2.50	0.47
2:C:152:MET:HE3	2:C:153:PRO:HA	1.96	0.47
1:A:70:GLU:OE2	2:C:180:PRO:HA	2.15	0.47
2:C:106:VAL:HG12	2:C:106:VAL:O	2.14	0.47
2:C:126:ILE:HG22	2:C:130:LEU:HD12	1.96	0.46
2:C:254:SER:O	2:C:258:VAL:HG23	2.15	0.46
1:A:175:LYS:O	1:A:178:LYS:N	2.43	0.46
2:D:88:ARG:HB2	2:D:89:PHE:CD1	2.50	0.46
2:D:126:ILE:HG22	2:D:130:LEU:HD12	1.97	0.46
1:B:80:ASN:O	1:B:81:TYR:C	2.53	0.46
1:B:80:ASN:ND2	2:D:169:ARG:HH12	2.12	0.46
2:C:76:LEU:HA	2:C:155:LEU:HD21	1.96	0.46
2:C:210:SER:HA	2:D:108:PRO:HB3	1.98	0.46
1:B:81:TYR:CE2	1:B:134:GLN:HB2	2.51	0.46
1:B:268:TYR:O	1:B:346:VAL:HA	2.15	0.46
1:B:335:ILE:HG23	1:B:336:TYR:N	2.30	0.46
1:A:16:LEU:HD11	1:A:42:PHE:HD1	1.81	0.46
2:C:249:ILE:O	2:C:250:LEU:C	2.53	0.46
2:D:24:VAL:O	2:D:25:LEU:C	2.54	0.46
2:D:76:LEU:N	2:D:155:LEU:HD23	2.30	0.46
1:A:8:SER:HA	1:A:16:LEU:O	2.16	0.46
1:B:256:ASP:HB2	1:B:288:ARG:HB3	1.98	0.46
2:C:128:GLU:HB3	2:C:129:PRO:HD3	1.98	0.46
2:D:123:ARG:O	2:D:123:ARG:CG	2.64	0.46
2:D:221:TYR:O	2:D:222:PRO:C	2.48	0.46
1:A:113:ARG:HG2	1:A:118:GLU:OE2	2.16	0.45
1:A:322:ARG:HB3	1:B:288:ARG:HH21	1.81	0.45
1:B:94:GLU:O	1:B:97:MET:HB2	2.16	0.45
2:C:94:LYS:HE2	2:C:98:GLU:OE1	2.16	0.45
2:C:123:ARG:O	2:C:123:ARG:CG	2.64	0.45
1:A:318:LEU:O	1:B:340:LYS:NZ	2.43	0.45
2:C:78:LEU:CD2	2:D:21:LEU:HD22	2.46	0.45
2:D:76:LEU:HA	2:D:155:LEU:HD21	1.97	0.45
1:A:149:LEU:CG	1:A:151:LEU:HD21	2.46	0.45
1:B:230:PHE:HB2	1:B:306:ARG:NH2	2.32	0.45
1:A:4:ILE:HG22	1:A:19:LEU:O	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:253:LEU:O	2:C:257:LEU:HB2	2.16	0.45
1:A:235:LYS:O	1:A:235:LYS:HG3	2.16	0.45
1:A:270:PHE:CE1	1:A:347:LEU:HD12	2.51	0.45
1:B:83:LEU:HD23	1:B:140:ARG:NH1	2.32	0.45
2:D:22:LEU:O	2:D:23:LEU:C	2.55	0.45
2:D:116:LEU:HD13	2:D:146:ALA:HA	1.99	0.45
2:D:216:VAL:CG2	2:D:227:THR:HG22	2.47	0.45
1:B:88:ASN:O	1:B:89:VAL:C	2.55	0.45
1:B:113:ARG:HG2	1:B:118:GLU:OE2	2.16	0.45
2:C:88:ARG:HB2	2:C:89:PHE:CD1	2.51	0.45
1:B:8:SER:HA	1:B:16:LEU:O	2.16	0.45
1:B:340:LYS:HG3	3:B:402:WO4:O1	2.16	0.45
1:B:42:PHE:O	1:B:46:ILE:HG12	2.17	0.45
2:C:57:VAL:HG22	2:C:244:ILE:HG23	1.99	0.45
1:A:88:ASN:O	1:A:89:VAL:C	2.56	0.45
1:B:235:LYS:HG3	1:B:235:LYS:O	2.16	0.45
1:A:256:ASP:HB2	1:A:288:ARG:HB3	1.98	0.44
1:A:275:ASN:ND2	1:B:275:ASN:OD1	2.49	0.44
1:A:276:ILE:HG21	1:A:317:VAL:HG22	1.98	0.44
1:A:340:LYS:NZ	3:A:401:WO4:O2	2.47	0.44
1:B:28:TYR:HB2	1:B:174:HIS:CE1	2.53	0.44
1:B:159:ASP:O	1:B:160:PRO:C	2.56	0.44
2:C:116:LEU:HD13	2:C:146:ALA:HA	1.99	0.44
2:C:147:MET:HE1	2:C:208:ALA:HB1	1.99	0.44
2:C:221:TYR:O	2:C:222:PRO:C	2.48	0.44
2:D:128:GLU:HB3	2:D:129:PRO:HD3	1.98	0.44
2:D:232:ARG:HD3	2:D:232:ARG:HA	1.80	0.44
1:A:230:PHE:CE2	1:A:306:ARG:HB3	2.52	0.44
2:D:128:GLU:HB3	2:D:129:PRO:CD	2.47	0.44
1:A:83:LEU:HD23	1:A:140:ARG:NH1	2.32	0.44
1:B:230:PHE:CE2	1:B:306:ARG:HB3	2.52	0.44
1:B:260:ASP:O	1:B:261:MET:HE3	2.17	0.44
2:C:179:ALA:HA	2:C:180:PRO:HD3	1.85	0.44
1:B:64:VAL:HG12	1:B:67:LEU:HD12	1.99	0.44
1:B:270:PHE:CE1	1:B:347:LEU:HD12	2.51	0.44
2:C:24:VAL:O	2:C:25:LEU:C	2.54	0.44
2:C:216:VAL:CG2	2:C:227:THR:HG22	2.47	0.44
1:B:45:LEU:HD12	1:B:45:LEU:O	2.18	0.44
2:D:80:ALA:HB3	2:D:81:PRO:HD3	2.00	0.44
1:B:100:LYS:HZ3	1:B:144:THR:HG21	1.78	0.44
1:B:149:LEU:CG	1:B:151:LEU:HD21	2.48	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:249:ILE:O	2:C:252:THR:N	2.50	0.44
2:D:94:LYS:HE2	2:D:98:GLU:OE1	2.17	0.44
1:B:140:ARG:NE	2:D:177:LEU:HD11	2.32	0.44
2:C:44:ASP:CG	2:C:44:ASP:O	2.56	0.44
2:C:128:GLU:HB3	2:C:129:PRO:CD	2.48	0.44
1:A:320:THR:HG21	1:B:288:ARG:HG3	1.99	0.44
1:B:87:MET:HB3	1:B:91:LYS:CB	2.48	0.44
1:B:295:VAL:CG2	1:B:335:ILE:HD12	2.38	0.44
2:D:36:MET:HE3	2:D:246:VAL:HG23	1.99	0.44
2:C:100:ILE:HG13	2:D:26:PHE:CE1	2.53	0.43
2:C:212:PHE:H	2:D:109:HIS:CD2	2.35	0.43
2:D:57:VAL:HG22	2:D:244:ILE:HG23	2.00	0.43
1:A:75:ALA:HB3	1:A:149:LEU:HA	2.00	0.43
1:A:230:PHE:HB2	1:A:306:ARG:NH2	2.33	0.43
1:B:272:ARG:HB3	1:B:274:GLU:OE1	2.18	0.43
1:B:287:ILE:HD12	1:B:338:ARG:NH2	2.33	0.43
1:A:57:ILE:H	1:A:65:THR:HG21	1.76	0.43
2:C:22:LEU:O	2:C:23:LEU:C	2.55	0.43
1:A:149:LEU:HB3	1:A:181:VAL:HG22	1.99	0.43
1:A:230:PHE:CD2	1:A:316:ASN:HB3	2.53	0.43
2:D:181:LEU:O	2:D:184:ALA:HB3	2.18	0.43
1:B:8:SER:HB2	1:B:54:SER:OG	2.19	0.43
1:B:43:LEU:HD22	1:B:150:LEU:HD13	2.00	0.43
1:B:89:VAL:HG13	1:B:136:VAL:HG13	2.01	0.43
1:A:4:ILE:HD11	1:A:46:ILE:CD1	2.41	0.43
1:A:89:VAL:HG13	1:A:136:VAL:HG13	2.01	0.43
1:A:120:LEU:O	1:A:122:ASP:N	2.52	0.43
2:C:155:LEU:HB2	2:C:204:THR:OG1	2.18	0.43
2:D:220:TYR:C	2:D:220:TYR:HD2	2.21	0.43
1:B:30:VAL:HB	1:B:198:ILE:HD13	2.01	0.43
1:B:299:TRP:CD1	1:B:299:TRP:N	2.86	0.43
2:C:103:VAL:N	2:C:104:PRO:HD2	2.34	0.43
1:A:100:LYS:HZ2	1:A:144:THR:HG21	1.79	0.43
1:A:129:SER:O	1:A:130:GLY:C	2.57	0.43
1:A:274:GLU:O	1:B:340:LYS:HD3	2.19	0.43
1:B:75:ALA:HB3	1:B:149:LEU:HA	2.00	0.43
1:A:272:ARG:HB3	1:A:274:GLU:OE1	2.19	0.43
1:B:85:PRO:HG2	2:D:192:LEU:HD21	2.00	0.43
2:C:109:HIS:HD2	2:D:212:PHE:H	1.66	0.43
2:C:210:SER:CB	2:D:108:PRO:HA	2.36	0.43
1:A:45:LEU:O	1:A:45:LEU:HD12	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:84:PHE:HA	1:B:85:PRO:HD2	1.92	0.42
2:C:41:ILE:HG23	2:C:45:PHE:CD1	2.54	0.42
2:C:80:ALA:HB3	2:C:81:PRO:HD3	2.00	0.42
2:C:163:PHE:HE2	2:C:193:SER:HG	1.63	0.42
2:D:155:LEU:HB2	2:D:204:THR:OG1	2.18	0.42
2:D:212:PHE:O	2:D:213:GLY:C	2.57	0.42
1:A:43:LEU:HD22	1:A:150:LEU:HD13	2.02	0.42
1:A:64:VAL:HG12	1:A:67:LEU:HD12	2.01	0.42
1:B:31:ILE:HD13	1:B:42:PHE:CE2	2.54	0.42
1:B:56:ARG:HD3	1:B:65:THR:CG2	2.43	0.42
2:C:118:THR:HG21	2:D:39:GLU:HG3	2.02	0.42
2:C:235:SER:HB2	2:C:236:TYR:CD1	2.54	0.42
2:D:52:ALA:O	2:D:58:ILE:HD11	2.19	0.42
2:D:188:VAL:HG12	2:D:192:LEU:HD12	2.01	0.42
1:B:169:MET:HE2	1:B:170:LEU:CD2	2.49	0.42
1:A:87:MET:HB3	1:A:91:LYS:CB	2.49	0.42
1:B:120:LEU:O	1:B:122:ASP:N	2.52	0.42
2:D:14:LEU:HD11	2:D:18:PHE:CE1	2.54	0.42
2:D:77:LEU:O	2:D:77:LEU:HG	2.19	0.42
1:A:42:PHE:O	1:A:46:ILE:HG12	2.19	0.42
1:A:280:LYS:O	1:A:281:SER:HB3	2.20	0.42
1:A:299:TRP:CD1	1:A:299:TRP:N	2.87	0.42
1:B:149:LEU:HB3	1:B:181:VAL:HG22	2.00	0.42
2:C:14:LEU:HD11	2:C:18:PHE:CE1	2.55	0.42
1:A:168:GLU:O	1:A:169:MET:C	2.58	0.42
1:B:318:LEU:HD12	1:B:318:LEU:HA	1.81	0.42
2:C:107:VAL:O	2:C:108:PRO:C	2.56	0.42
1:A:8:SER:HB2	1:A:54:SER:OG	2.19	0.42
1:A:159:ASP:O	1:A:160:PRO:C	2.55	0.42
1:B:43:LEU:CD2	1:B:150:LEU:HD22	2.49	0.42
1:B:57:ILE:H	1:B:65:THR:HG21	1.76	0.42
1:B:129:SER:O	1:B:130:GLY:C	2.57	0.42
1:B:260:ASP:O	1:B:261:MET:HE2	2.20	0.42
1:A:30:VAL:HB	1:A:198:ILE:HD13	2.01	0.42
1:A:321:ARG:O	1:A:324:ALA:HB3	2.20	0.42
1:B:34:PRO:HD3	1:B:201:VAL:O	2.20	0.42
2:C:146:ALA:CB	2:C:215:VAL:HG22	2.50	0.42
2:C:188:VAL:O	2:C:189:THR:C	2.58	0.42
2:C:212:PHE:O	2:C:213:GLY:C	2.57	0.42
1:A:34:PRO:HD3	1:A:201:VAL:O	2.20	0.42
2:C:125:LEU:HD23	2:C:125:LEU:HA	1.82	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:186:PHE:O	2:C:191:PRO:HD3	2.20	0.42
2:D:23:LEU:O	2:D:27:LEU:HG	2.20	0.42
2:D:103:VAL:C	2:D:105:VAL:H	2.24	0.42
2:D:107:VAL:O	2:D:108:PRO:C	2.57	0.42
1:B:39:LYS:HB3	1:B:184:ILE:HG21	2.02	0.41
1:B:230:PHE:CD2	1:B:316:ASN:HB3	2.54	0.41
1:B:288:ARG:HA	1:B:288:ARG:HD3	1.94	0.41
2:C:181:LEU:O	2:C:184:ALA:HB3	2.20	0.41
2:D:41:ILE:HG23	2:D:45:PHE:CD1	2.55	0.41
2:D:44:ASP:CG	2:D:44:ASP:O	2.56	0.41
2:C:207:ARG:HD2	2:C:207:ARG:O	2.20	0.41
2:D:186:PHE:O	2:D:191:PRO:HD3	2.19	0.41
1:B:29:PHE:CE1	1:B:197:ARG:HB3	2.56	0.41
1:B:43:LEU:HA	1:B:43:LEU:HD23	1.74	0.41
2:C:77:LEU:O	2:C:77:LEU:HG	2.19	0.41
2:D:75:ALA:O	2:D:79:GLY:N	2.44	0.41
2:D:150:VAL:HG11	2:D:211:GLU:OE1	2.20	0.41
1:B:168:GLU:O	1:B:169:MET:C	2.59	0.41
1:A:304:LEU:HD22	1:B:342:SER:HB3	2.02	0.41
2:C:68:GLY:O	2:C:69:PHE:C	2.59	0.41
2:C:188:VAL:HG12	2:C:192:LEU:HD12	2.02	0.41
2:D:94:LYS:O	2:D:98:GLU:CB	2.69	0.41
2:D:116:LEU:CD1	2:D:146:ALA:HA	2.50	0.41
1:A:28:TYR:HB2	1:A:174:HIS:CE1	2.55	0.41
1:A:39:LYS:HB3	1:A:184:ILE:HG21	2.03	0.41
1:B:28:TYR:HE1	1:B:183:HIS:CB	2.33	0.41
1:B:218:LYS:N	1:B:219:PRO:HD3	2.36	0.41
2:D:125:LEU:HA	2:D:125:LEU:HD23	1.83	0.41
1:A:143:VAL:C	1:A:145:ASN:H	2.23	0.41
1:B:287:ILE:HG22	1:B:289:ASN:O	2.21	0.41
2:C:52:ALA:O	2:C:58:ILE:HD11	2.20	0.41
2:C:94:LYS:O	2:C:98:GLU:CB	2.69	0.41
2:C:150:VAL:HG11	2:C:211:GLU:OE1	2.20	0.41
2:D:146:ALA:CB	2:D:215:VAL:HG22	2.50	0.41
2:D:249:ILE:O	2:D:252:THR:N	2.54	0.41
1:A:26:GLY:HA2	1:A:179:LEU:O	2.21	0.41
1:B:272:ARG:HB2	1:B:275:ASN:ND2	2.36	0.41
1:B:280:LYS:O	1:B:281:SER:HB3	2.20	0.41
2:C:116:LEU:CD1	2:C:146:ALA:HA	2.50	0.41
2:C:133:TYR:CD1	2:C:133:TYR:N	2.89	0.41
2:C:220:TYR:C	2:C:220:TYR:HD2	2.23	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:103:VAL:N	2:D:104:PRO:HD2	2.36	0.41
1:A:31:ILE:HD13	1:A:42:PHE:CE2	2.55	0.41
2:C:41:ILE:HG23	2:C:45:PHE:HD1	1.86	0.41
1:A:169:MET:HE2	1:A:170:LEU:CD2	2.52	0.40
1:A:43:LEU:CD2	1:A:150:LEU:HD22	2.49	0.40
2:C:23:LEU:O	2:C:27:LEU:HG	2.21	0.40
2:C:40:GLN:HB2	2:C:242:ARG:CD	2.52	0.40
2:C:103:VAL:C	2:C:105:VAL:H	2.24	0.40
1:B:115:LEU:HD21	1:B:173:LEU:HD11	2.03	0.40
2:D:84:TYR:N	2:D:163:PHE:HD1	2.19	0.40
2:D:85:ILE:HD13	2:D:85:ILE:HA	1.93	0.40
1:A:155:LEU:O	1:A:157:ALA:N	2.54	0.40
1:B:4:ILE:CD1	1:B:46:ILE:HD11	2.43	0.40
1:B:201:VAL:HA	1:B:205:LYS:O	2.21	0.40
1:B:321:ARG:O	1:B:324:ALA:HB3	2.21	0.40
2:D:235:SER:HB2	2:D:236:TYR:CD1	2.54	0.40
1:A:287:ILE:HD12	1:A:338:ARG:NH2	2.36	0.40
2:D:84:TYR:CA	2:D:163:PHE:CD1	3.05	0.40
2:D:152:MET:HE3	2:D:153:PRO:CA	2.51	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	346/348 (99%)	287 (83%)	45 (13%)	14 (4%)	3 17
1	B	346/348 (99%)	287 (83%)	45 (13%)	14 (4%)	3 17
2	C	246/295 (83%)	184 (75%)	57 (23%)	5 (2%)	7 34
2	D	246/295 (83%)	185 (75%)	55 (22%)	6 (2%)	6 29
All	All	1184/1286 (92%)	943 (80%)	202 (17%)	39 (3%)	4 21

All (39) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	125	PRO
1	B	125	PRO
2	C	104	PRO
2	D	104	PRO
1	A	36	GLY
1	A	81	TYR
1	A	89	VAL
1	A	121	LEU
1	A	156	SER
1	A	176	LYS
1	A	222	GLY
1	B	36	GLY
1	B	81	TYR
1	B	89	VAL
1	B	121	LEU
1	B	156	SER
1	B	176	LYS
1	B	222	GLY
1	B	230	PHE
2	C	223	MET
2	C	225	GLY
2	C	235	SER
2	D	223	MET
2	D	225	GLY
2	D	235	SER
1	A	18	ASN
1	A	230	PHE
1	B	18	ASN
1	A	193	ILE
1	B	193	ILE
1	A	34	PRO
1	A	192	ARG
1	B	34	PRO
1	B	192	ARG
2	C	24	VAL
2	D	24	VAL
1	A	302	GLY
1	B	302	GLY
2	D	190	LEU

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	302/302 (100%)	283 (94%)	19 (6%)	18	51
1	B	302/302 (100%)	283 (94%)	19 (6%)	18	51
2	C	207/248 (84%)	199 (96%)	8 (4%)	32	69
2	D	207/248 (84%)	198 (96%)	9 (4%)	29	66
All	All	1018/1100 (92%)	963 (95%)	55 (5%)	22	57

All (55) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	7	LEU
1	A	24	GLU
1	A	39	LYS
1	A	65	THR
1	A	68	SER
1	A	70	GLU
1	A	81	TYR
1	A	117	ILE
1	A	125	PRO
1	A	152	ASP
1	A	162	THR
1	A	178	LYS
1	A	188	GLN
1	A	228	VAL
1	A	247	ARG
1	A	256	ASP
1	A	261	MET
1	A	282	SER
1	A	335	ILE
1	B	7	LEU
1	B	24	GLU
1	B	39	LYS
1	B	65	THR
1	B	68	SER

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Mol	Chain	Res	Type
1	B	70	GLU
1	B	81	TYR
1	B	117	ILE
1	B	125	PRO
1	B	152	ASP
1	B	162	THR
1	B	178	LYS
1	B	188	GLN
1	B	228	VAL
1	B	247	ARG
1	B	256	ASP
1	B	261	MET
1	B	282	SER
1	B	335	ILE
2	C	63	LEU
2	C	76	LEU
2	C	102	ASP
2	C	152	MET
2	C	167	ASP
2	C	220	TYR
2	C	222	PRO
2	C	236	TYR
2	D	63	LEU
2	D	76	LEU
2	D	102	ASP
2	D	152	MET
2	D	167	ASP
2	D	220	TYR
2	D	222	PRO
2	D	236	TYR
2	D	254	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	13	ASN
1	A	79	GLN
1	A	119	HIS
1	A	275	ASN
1	B	13	ASN
1	B	79	GLN
1	B	80	ASN

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Mol	Chain	Res	Type
1	B	119	HIS
2	C	35	ASN
2	C	109	HIS
2	D	35	ASN
2	D	109	HIS

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

2 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	WO4	A	401	-	2,4,4	1.97	0	-		
3	WO4	B	402	-	2,4,4	1.79	0	-		

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	401	WO4	5	0
3	B	402	WO4	3	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data (i)

6.1 Protein, DNA and RNA chains (i)

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	348/348 (100%)	-0.31	6 (1%)	70	41	43, 90, 146, 200	0
1	B	348/348 (100%)	-0.17	10 (2%)	51	23	42, 107, 160, 188	0
2	C	248/295 (84%)	-0.40	2 (0%)	86	65	48, 86, 148, 172	0
2	D	248/295 (84%)	-0.30	4 (1%)	72	44	60, 100, 157, 200	0
All	All	1192/1286 (92%)	-0.29	22 (1%)	68	40	42, 97, 155, 200	0

All (22) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	C	259	ILE	6.7
1	B	147	LYS	4.5
1	B	62	LYS	4.4
1	B	60	ASP	3.9
1	B	59	LEU	3.9
1	B	1	MET	3.8
1	B	148	ILE	3.8
1	A	103	LYS	3.0
1	A	230	PHE	2.9
1	A	270	PHE	2.8
2	C	257	LEU	2.8
2	D	259	ILE	2.7
1	B	142	LEU	2.6
1	A	232	ASN	2.5
1	B	61	GLY	2.4
2	D	221	TYR	2.4
1	A	280	LYS	2.3
1	B	71	LYS	2.3
2	D	133	TYR	2.2
1	B	180	THR	2.1
1	A	102	ILE	2.0
2	D	230	TYR	2.0

6.2 Non-standard residues in protein, DNA, RNA chains (i)

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	WO4	A	401	5/5	1.00	0.19	69,69,69,69	0
3	WO4	B	402	5/5	1.00	0.21	83,83,83,83	0

6.5 Other polymers (i)

There are no such residues in this entry.