



Full wwPDB X-ray Structure Validation Report ⓘ

Jan 8, 2024 – 05:41 pm GMT

PDB ID : 8B37
Title : Crystal structure of Pyrobaculum aerophilum potassium-independent proton pumping membrane integral pyrophosphatase in complex with imidodiphosphate and magnesium, and with bound sulphate
Authors : Strauss, J.; Wilkinson, C.; Vidilaseris, K.; Ribeiro, O.; Liu, J.; Hillier, J.; Malinen, A.; Gehl, B.; Jeuken, L.C.; Pearson, A.R.; Goldman, A.
Deposited on : 2022-09-16
Resolution : 3.84 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references](#) ①) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.4, CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : 2.36
buster-report : 1.1.7 (2018)
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

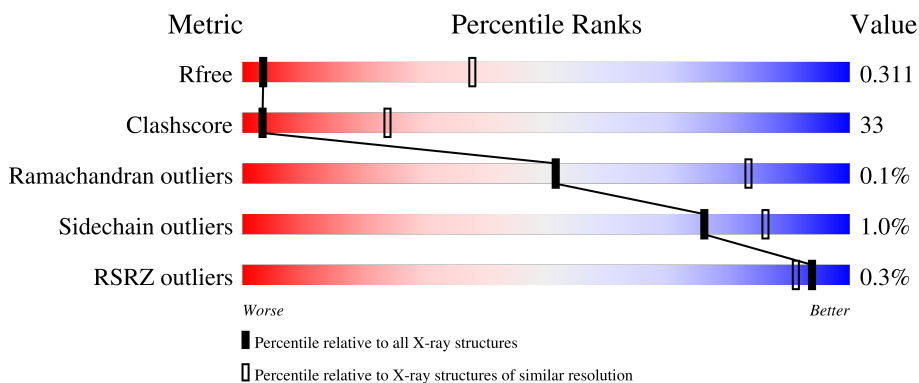
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.84 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1242 (4.08-3.60)
Clashscore	141614	1004 (4.04-3.64)
Ramachandran outliers	138981	1003 (4.06-3.62)
Sidechain outliers	138945	1266 (4.08-3.60)
RSRZ outliers	127900	1149 (4.08-3.60)

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

Mol	Chain	Length	Quality of chain
1	A	729	 50% 43% • 7%
1	B	729	 52% 41% • 7%

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 15678 atoms, of which 5949 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 K(+)-insensitive pyrophosphate-energized proton pump.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	H	N	O				S
1	A	676	7808	3159	2981	769	882	17	0	0	0
1	B	681	7830	3182	2968	774	889	17	0	0	0

There are 18 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-7	MET	-	initiating methionine	UNP Q8ZWI8
A	-6	HIS	-	expression tag	UNP Q8ZWI8
A	-5	HIS	-	expression tag	UNP Q8ZWI8
A	-4	HIS	-	expression tag	UNP Q8ZWI8
A	-3	HIS	-	expression tag	UNP Q8ZWI8
A	-2	HIS	-	expression tag	UNP Q8ZWI8
A	-1	HIS	-	expression tag	UNP Q8ZWI8
A	0	GLY	-	expression tag	UNP Q8ZWI8
A	1	GLY	-	expression tag	UNP Q8ZWI8
B	-7	MET	-	initiating methionine	UNP Q8ZWI8
B	-6	HIS	-	expression tag	UNP Q8ZWI8
B	-5	HIS	-	expression tag	UNP Q8ZWI8
B	-4	HIS	-	expression tag	UNP Q8ZWI8
B	-3	HIS	-	expression tag	UNP Q8ZWI8
B	-2	HIS	-	expression tag	UNP Q8ZWI8
B	-1	HIS	-	expression tag	UNP Q8ZWI8
B	0	GLY	-	expression tag	UNP Q8ZWI8
B	1	GLY	-	expression tag	UNP Q8ZWI8

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

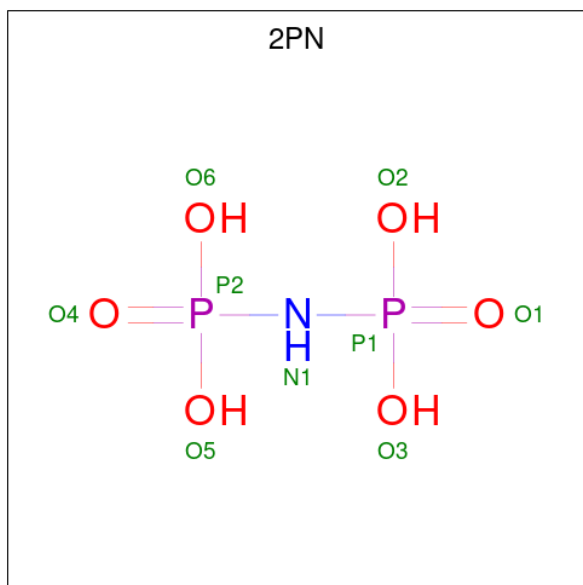
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	5	Total	Mg	0	0
			5	5		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	5	Total	Mg	0	0
			5	5		

- Molecule 3 is IMIDODIPHOSPHORIC ACID (three-letter code: 2PN) (formula: $H_5NO_6P_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	N	O	P	0	0
			9	1	6	2		
3	B	1	Total	N	O	P	0	0
			9	1	6	2		

- Molecule 4 is SULFATE ION (three-letter code: SO4) (formula: O_4S) (labeled as "Ligand of Interest" by depositor).



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

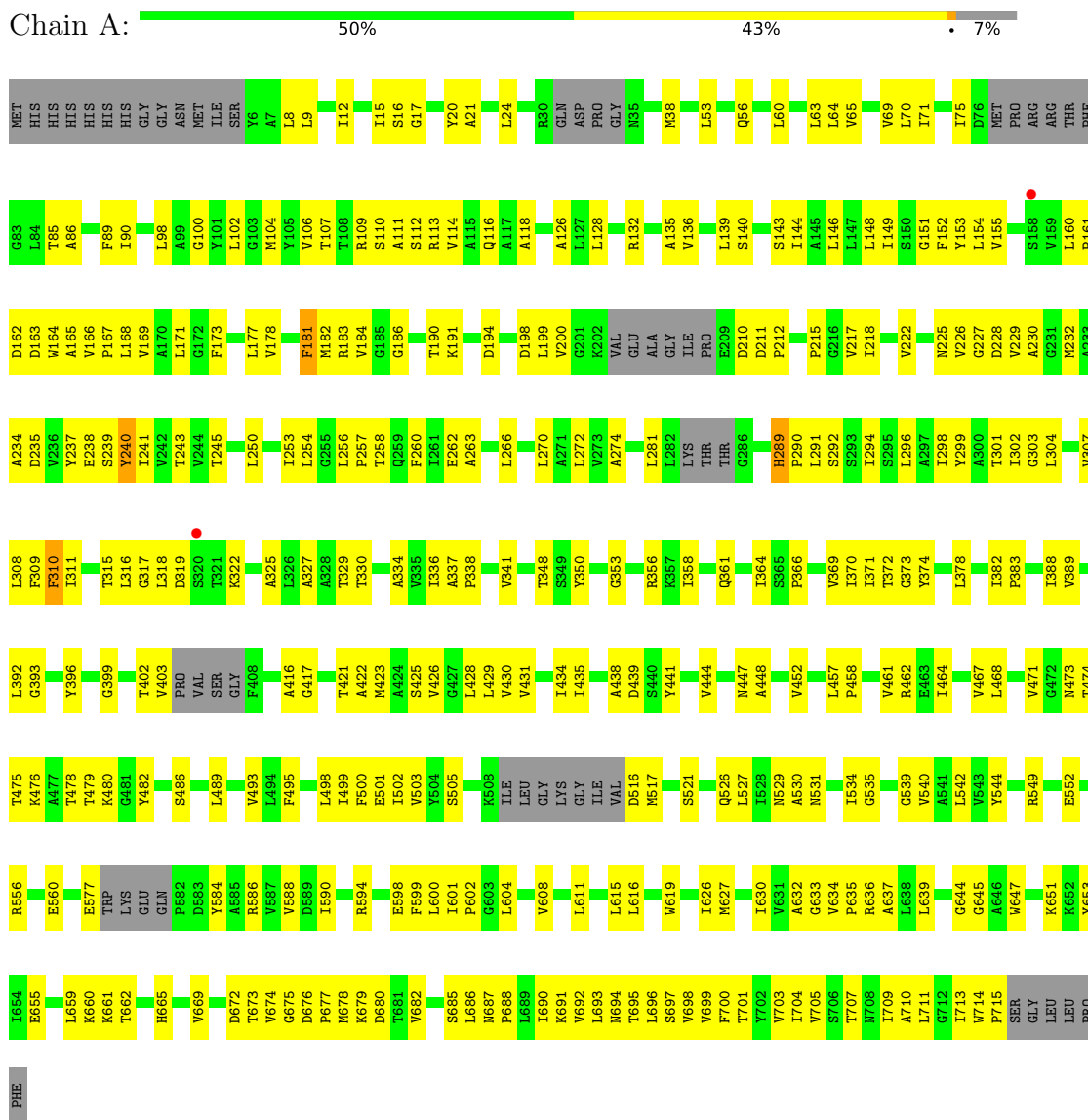
- Molecule 5 is water.

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

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 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: K(+)-insensitive pyrophosphate-energized proton pump



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D676	D677	M678	K679	D680	I601	T681	V682	G683	P684	S685	L686	N687	P688	L689	I690	K691	V692	L693	N694	T695	L696	S697	V698	V699	F700	T701	I704	T707	I708	I709	A710	L711	G712	I713	I714	P715	SER	GLY	LEU	PRO	PHE	D163	W164	A165	V166	P167	L168	V169	A170	L171	M97	G100	M104	Y105	V106	T107	L108	R109	S110	A111	S112	R113	V114	A115	Q116	A118	M123	G124	R125	L126	L127	L128	R132	G216	V217	I218	D210	D211	L127	P212	P215	G216	V217	I218	V222	M225	V226	G227	D228	V229	M232	Y237	L154	Y240	I241	V242	T243	L250	L254	G255	P257	T258	Q259	F260	L261	A263	L266	L270	L271	L272	V273	A274	L281	LEU	LYS	THR	G286	V287	K288	H289	P290	L291	S292	S293	L294	S295	L296	A297	L298	V299	A300	T301	L302	G303	L304	V307	L308	F309	F310	L311	T315	G317	L318	D319	S320	L321	A323	L324	T330	G333	A334	V335	L336	A337	P338	V341	D345	Y352	L358	Q361	L364	S365	P366	V369	L370	L371	T372	G373	Y374	L378	L382	P383	L388	V389	L392	G393	G399	V403	PRD	VAL	SER	GLY	F408	S412	A416	T421	A422	M423	A424	S425	V426	G427	L428	L429	V430	V431	L434	L435	A438	D439	S440	Y441	G442	P443	A448	V452	E453	N454	L457	P458	V461	L464	G465	D466	V467	L468	D469	S470	V471	T475	V478	T479	K480	L484	A485	S486	A487	A488	L489	L492	V493	L494	F495	L498	L499	F500	E501	L502	V503	R508	ILE	LEU	GLY	LYS	GLY	ILE	VAL	D516	M517	S521	L525	Q526	L527	A530	M531	V532	L533	L534	G535	G539	L542	V543	S548	R549	E552	R556	T557	A558	M559	E560	E564	R567	E577	TRP	LYS	GLN	P582	D583	V584	A585	R586	D672	V673	V674	I590	G675	MET	HIS	HIS	HIS	HIS	HIS	GLY	GLY	ASN	ASN	ILE	SER	Y6	A7	L8	L9	I12	I15	S16	G17	I18	I19	I20	A21	L24	R30	GLN	ASP	PRD	GLY	N35	M38	S42	A46	L53	Q56	L60	V65	V69	L70	D76	MET	PRO	ARG	ARG	THR	PHE	G83	A86	F89	I90	Y91	G92	G100	M104	Y105	V106	T107	L108	R109	S110	A111	S112	R113	V114	A115	Q116	A118	M123	G124	R125	L126	L127	L128	R132	G216	V217	I218	D210	D211	L127	P212	P215	G216	V217	I218	V222	M225	V226	G227	D228	V229	M232	Y237	L154	Y240	I241	V242	T243	L250	L254	G255	P257	T258	Q259	F260	L261	A263	L266	L270	L271	L272	V273	A274	L281	LEU	LYS	THR	G286	V287	K288	H289	P290	L291	S292	S293	L294	S295	L296	A297	L298	V299	A300	T301	L302	G303	L304	V307	L308	F309	F310	L311	T315	G317	L318	D319	S320	L321	A323	L324	T330	G333	A334	V335	L336	A337	P338	V341	D345	Y352	L358	Q361	L364	S365	P366	V369	L370	L371	T372	G373	Y374	L378	L382	P383	L388	V389	L392	G393	G399	V403	PRD	VAL	SER	GLY	F408	S412	A416	T421	A422	M423	A424	S425	V426	G427	L428	L429	V430	V431	L434	L435	A438	D439	S440	Y441	G442	P443	A448	V452	E453	N454	L457	P458	V461	L464	G465	D466	V467	L468	D469	S470	V471	T475	V478	T479	K480	L484	A485	S486	A487	A488	L489	L492	V493	L494	F495	L498	L499	F500	E501	L502	V503	R508	ILE	LEU	GLY	LYS	GLY	ILE	VAL	D516	M517	S521	L525	Q526	L527	A530	M531	V532	L533	L534	G535	G539	L542	V543	S548	R549	E552	R556	T557	A558	M559	E560	E564	R567	E577	TRP	LYS	GLN	P582	D583	V584	A585	R586	D672	V673	V674	I590	G675	MET	HIS	HIS	HIS	HIS	HIS	GLY	GLY	ASN	ASN	ILE	SER	Y6	A7	L8	L9	I12	I15	S16	G17	I18	I19	I20	A21	L24	R30	GLN	ASP	PRD	GLY	N35	M38	S42	A46	L53	Q56	L60	V65	V69	L70	D76	MET	PRO	ARG	ARG	THR	PHE	G83	A86	F89	I90	Y91	G92	G100	M104	Y105	V106	T107	L108	R109	S110	A111	S112	R113	V114	A115	Q116	A118	M123	G124	R125	L126	L127	L128	R132	G216	V217	I218	D210	D211	L127	P212	P215	G216	V217	I218	V222	M225	V226	G227	D228	V229	M232	Y237	L154	Y240	I241	V242	T243	L250	L254	G255	P257	T258	Q259	F260	L261	A263	L266	L270	L271	L272	V273	A274	L281	LEU	LYS	THR	G286	V287	K288	H289	P290	L291	S292	S293	L294	S295	L296	A297	L298	V299	A300	T301	L302	G303	L304	V307	L308	F309	F310	L311	T315	G317	L318	D319	S320	L321	A323	L324	T330	G333	A334	V335	L336	A337	P338	V341	D345	Y352	L358	Q361	L364	S365	P366	V369	L370	L371	T372	G373	Y374	L378	L382	P383	L388	V389	L392	G393	G399	V403	PRD	VAL	SER	GLY	F408	S412	A416	T421	A422	M423	A424	S425	V426	G427	L428	L429	V430	V431	L434	L435	A438	D439	S440	Y441	G442	P443	A448	V452	E453	N454	L457	P458	V461	L464	G465	D466	V467	L468	D469	S470	V471	T475	V478	T479	K480	L484	A485	S486	A487	A488	L489	L492	V493	L494	F495	L498	L499	F500	E501	L502	V503	R508	ILE	LEU	GLY	LYS	GLY	ILE	VAL	D516	M517	S521	L525	Q526	L527	A530	M531	V532	L533	L534	G535	G539	L542	V543	S548	R549	E552	R556	T557	A558	M559	E560	E564	R567	E577	TRP	LYS	GLN	P582	D583	V584	A585	R586	D672	V673	V674	I590	G675	MET	HIS	HIS	HIS	HIS	HIS	GLY	GLY	ASN	ASN	ILE	SER	Y6	A7	L8	L9	I12	I15	S16	G17	I18	I19	I20	A21	L24	R30	GLN	ASP	PRD	GLY	N35	M38	S42	A46	L53	Q56	L60	V65	V69	L70	D76	MET	PRO	ARG	ARG	THR	PHE	G83	A86	F89	I90	Y91	G92	G100	M104	Y105	V106	T107	L108	R109	S110	A111	S112	R113	V114	A115	Q116	A118	M123	G124	R125	L126	L127	L128	R132	G216	V217	I218	D210	D211	L127	P212	P215	G216	V217	I218	V222	M225	V226	G227	D228	V229	M232	Y237	L154	Y240	I241	V242	T243	L250	L254	G255	P257	T258	Q259	F260	L261	A263	L266	L270	L271	L272	V273	A274	L281	LEU	LYS	THR	G286	V287	K288	H289	P290	L291	S292	S293	L294	S295	L296	A297	L298	V299	A300	T301	L302	G303	L304	V307	L308	F309	F310	L311	T315	G317	L318	D319	S320	L321	A323	L324	T330	G333	A334	V335	L336	A337	P338	V341	D345	Y352	L358	Q361	L364	S365	P366	V369	L370	L371	T372	G373	Y374	L378	L382	P383	L388	V389	L392	G393	G399	V403	PRD	VAL	SER	GLY	F408	S412	A416	T421	A422	M423	A424	S425	V426	G427	L428	L429	V430	V431	L434	L435	A438	D439	S440	Y441	G442	P443	A448	V452	E453	N454	L457	P458	V461	L464	G465	D466	V467	L468	D469	S470	V471	T475	V478	T479	K480	L484	A485	S486	A487	A488	L489	L492	V493	L494	F495	L498	L499	F500	E501	L502	V503	R508	ILE	LEU	GLY	LYS	GLY	ILE	VAL	D516	M517	S521	L525	Q526	L527	A530	M531	V532	L533	L534	G535	G539	L542	V543	S548	R549	E552	R556	T557	A558	M559	E560	E564	R567	E577	TRP	LYS	GLN	P582	D583	V584	A585	R586	D672	V673	V674	I590	G675	MET	HIS	HIS	HIS	HIS	HIS	GLY	GLY	ASN	ASN	ILE	SER	Y6	A7	L8	L9	I12	I15	S16	G17	I18	I19	I20	A21	L24	R30	GLN	ASP	PRD	GLY	N35	M38	S42	A46	L53	Q56	L60	V65	V69	L70	D76	MET	PRO	ARG	ARG	THR	PHE	G83	A86	F89	I90	Y91	G92	G100	M104	Y105	V106	T107	L108	R109	S110	A111	S112	R113	V114	A115	Q116	A118	M123	G124	R125	L126	L127	L128	R132	G216	V217	I218	D210	D211	L127	P212	P215	G216	V217	I218	V222	M225	V226	G227	D228	V229	M232	Y237	L154	Y240	I241	V242	T243	L250	L254	G255	P257	T258	Q259	F260	L261	A263	L266	L270	L271	L272	V273	A274	L281	LEU	LYS	THR	G286	V287	K288	H289	P290	L291	S292	S293	L294	S295	L296	A297	L298	V299	A300	T301	L302	G303	L304	V307	L308	F309	F310	L311	T315	G317	L318	D319	S320	L321	A323	L324	T330	G333	A334	V335	L336	A337	P338	V341	D345	Y352	L358	Q361	L364	S365	P366	V369	L370	L371	T372	G373	Y374	L378	L382	P383	L388	V389	L392	G393	G399	V403	PRD	VAL	SER	GLY	F408	S412	A416	T421	A422	M423	A424	S425	V426	G427	L428	L429	V430	V431	L434	L435	A438	D439	S440	Y441	G442	P443	A448	V452	E453	N454	L457	P458	V461	L464	G465	D466	V467	L468	D469	S470	V471	T475	V478	T479	K480	L484	A485	S486	A487	A488	L489	L492	V493	L494	F495	L498	L499	F500	E501	L502	V503	R508	ILE	LEU	GLY	LYS	GLY	ILE	VAL	D516	M517	S521	L525	Q526	L527	A530	M531	V532	L533	L534	G535	G539	L542	V543	S548	R549	E552	R556	T557	A558	M559	E560	E564	R567	E577	TRP	LYS	GLN	P582	D583	V584	A585	R586	D672	V673	V674	I590	G675	MET	HIS	HIS	HIS	HIS	HIS	GLY	GLY	ASN	ASN	ILE	SER	Y6	A7	L8	L9	I12	I15	S16	G17	I18	I19	I20	A21	L24	R30	GLN	ASP	PRD	GLY	N35	M38	S42	A46	L53	Q56	L60	V65	V69	L70	D76	MET	PRO	ARG	ARG	THR	PHE	G83	A86	F89	I90	Y91	G92	G100	M104	Y105	V106	T107	L108	R109	S110	A111	S112	R113	V114	A115	Q116	A118	M123	G124	R125	L126	L127	L128	R132	G216	V217	I218	D210	D211	L127	P212	P215	G216	V217	I218	V222	M225	V226	G227	D228	V229	M232	Y237	L154	Y240	I241	V242	T243	L250	L254	G255	P257	T258	Q259	F260	L261	A263	L266	L270	L271	L272	V273	A274	L281	LEU	LYS	THR	G286	V287	K288	H289	P290	L291	S292	S293	L294	S295	L296	A297	L298	V299	A300	T301	L302	G303	L304	V307	L308	F309	F310	L311	T315	G317	L
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4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	107.19Å 88.02Å 116.75Å 90.00° 106.95° 90.00°	Depositor
Resolution (Å)	19.97 – 3.84 19.97 – 3.84	Depositor EDS
% Data completeness (in resolution range)	65.3 (19.97-3.84) 65.3 (19.97-3.84)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.27 (at 3.82Å)	Xtrriage
Refinement program	PHENIX 1.17.1_3660	Depositor
R, R_{free}	0.289 , 0.311 0.289 , 0.311	Depositor DCC
R_{free} test set	667 reflections (5.11%)	wwPDB-VP
Wilson B-factor (Å ²)	112.2	Xtrriage
Anisotropy	0.076	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.21 , 56.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.44$, $\langle L^2 \rangle = 0.26$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.89	EDS
Total number of atoms	15678	wwPDB-VP
Average B, all atoms (Å ²)	100.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.37% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: MG, 2PN, SO4

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.26	1/4903 (0.0%)	0.40	0/6699
1	B	0.26	1/4940 (0.0%)	0.39	0/6752
All	All	0.26	2/9843 (0.0%)	0.39	0/13451

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	577	GLU	CD-OE2	6.88	1.33	1.25
1	B	577	GLU	CD-OE2	6.84	1.33	1.25

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4827	2981	4935	330	0
1	B	4862	2968	4975	326	0
2	A	5	0	0	0	0
2	B	5	0	0	0	0
3	A	9	0	1	0	0
3	B	9	0	0	0	0
4	B	5	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	A	4	0	0	0	0
5	B	3	0	0	0	0
All	All	9729	5949	9911	645	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 33.

All (645) 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:A:118:ALA:HB2	1:A:126:ALA:HB2	1.38	1.05
1:B:466:ASP:HB3	1:B:652:LYS:HE3	1.43	0.99
1:A:630:ILE:HG22	1:A:690:ILE:HG23	1.45	0.98
1:B:118:ALA:HB2	1:B:126:ALA:HB2	1.47	0.96
1:B:403:VAL:HG13	1:B:416:ALA:HB1	1.47	0.96
1:A:60:LEU:HD11	1:A:178:VAL:HG23	1.50	0.93
1:A:240:TYR:HA	1:A:429:LEU:HD13	1.51	0.93
1:A:601:ILE:HB	1:A:602:PRO:HD3	1.50	0.92
1:B:601:ILE:HB	1:B:602:PRO:HD3	1.52	0.91
1:B:466:ASP:HB3	1:B:652:LYS:CE	2.01	0.90
1:B:53:LEU:HD11	1:B:104:MET:HG3	1.54	0.88
1:A:676:ASP:HB3	1:A:677:PRO:HD3	1.55	0.86
1:B:270:LEU:HD21	1:B:311:ILE:HG13	1.57	0.85
1:B:713:ILE:HB	1:B:715:PRO:HD2	1.58	0.84
1:B:676:ASP:HB3	1:B:677:PRO:HD3	1.59	0.83
1:A:626:ILE:HG22	1:A:693:LEU:HG	1.61	0.81
1:B:240:TYR:HA	1:B:429:LEU:HD13	1.62	0.81
1:B:700:PHE:HB3	1:B:704:ILE:HG12	1.59	0.81
1:B:171:LEU:HD22	1:B:241:ILE:HD11	1.62	0.81
1:A:270:LEU:HD23	1:A:307:VAL:HG12	1.63	0.81
1:B:243:THR:HG21	1:B:429:LEU:HD21	1.64	0.80
1:B:183:ARG:NH1	1:B:680:ASP:O	2.15	0.79
1:B:289:HIS:CG	1:B:290:PRO:HD2	2.17	0.79
1:B:259:GLN:HB3	1:B:316:LEU:HD11	1.65	0.79
1:A:270:LEU:HD21	1:A:311:ILE:HB	1.64	0.78
1:A:502:ILE:HD13	1:A:517:MET:HE3	1.66	0.78
1:A:630:ILE:HG22	1:A:690:ILE:CG2	2.12	0.78
1:A:637:ALA:HB2	1:A:686:LEU:HD22	1.66	0.77
1:B:501:GLU:HG3	1:B:698:VAL:CG2	2.15	0.77
1:A:714:TRP:H	1:A:715:PRO:HD2	1.47	0.77
1:B:270:LEU:HD11	1:B:311:ILE:HB	1.67	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:110:SER:O	1:B:114:VAL:HG12	1.84	0.76
1:B:428:LEU:HD22	1:B:486:SER:HB3	1.65	0.76
1:B:452:VAL:HG12	1:B:457:LEU:HD12	1.67	0.76
1:B:207:ILE:HD13	1:B:211:ASP:HB3	1.67	0.75
1:A:110:SER:O	1:A:114:VAL:HG12	1.86	0.75
1:A:452:VAL:HG12	1:A:457:LEU:HD12	1.66	0.75
1:B:201:GLY:O	1:B:206:GLY:N	2.20	0.74
1:A:633:GLY:HA2	1:A:686:LEU:HD23	1.68	0.74
1:A:243:THR:HG21	1:A:429:LEU:HD21	1.67	0.73
1:B:183:ARG:HG2	1:B:688:PRO:HG2	1.70	0.73
1:A:118:ALA:CB	1:A:126:ALA:HB2	2.18	0.73
1:B:183:ARG:O	1:B:183:ARG:HD3	1.89	0.73
1:B:290:PRO:HB3	1:B:471:VAL:HG21	1.71	0.73
1:A:104:MET:SD	1:A:230:ALA:HB2	2.29	0.73
1:B:358:ILE:HG21	1:B:373:GLY:HA2	1.71	0.72
1:B:165:ALA:O	1:B:169:VAL:HG23	1.88	0.72
1:B:713:ILE:HB	1:B:715:PRO:CD	2.19	0.72
1:A:696:LEU:O	1:A:699:VAL:HG12	1.89	0.71
1:B:281:LEU:HA	1:B:296:LEU:HD21	1.70	0.71
1:A:289:HIS:CG	1:A:290:PRO:HD2	2.25	0.71
1:A:191:LYS:HA	1:A:191:LYS:HE2	1.73	0.71
1:B:184:VAL:HB	1:B:599:PHE:CE2	2.25	0.71
1:B:118:ALA:CB	1:B:126:ALA:HB2	2.22	0.70
1:A:183:ARG:O	1:A:183:ARG:HD3	1.91	0.70
1:A:502:ILE:HD13	1:A:517:MET:CE	2.19	0.70
1:A:626:ILE:O	1:A:630:ILE:HG23	1.91	0.70
1:A:428:LEU:HD22	1:A:486:SER:HB3	1.74	0.70
1:A:107:THR:HG21	1:A:229:VAL:HG11	1.74	0.70
1:A:714:TRP:N	1:A:715:PRO:HD2	2.06	0.70
1:A:144:ILE:HG22	1:A:148:LEU:HD23	1.73	0.69
1:B:626:ILE:HG22	1:B:693:LEU:HG	1.74	0.69
1:A:501:GLU:HG3	1:A:698:VAL:CG2	2.22	0.69
1:B:191:LYS:HE2	1:B:191:LYS:HA	1.73	0.69
1:A:227:GLY:O	1:A:232:MET:HG2	1.92	0.69
1:B:8:LEU:HG	1:B:154:LEU:CD2	2.23	0.69
1:B:470:SER:HB2	1:B:652:LYS:HG2	1.75	0.69
1:B:266:LEU:HD21	1:B:315:THR:HG21	1.74	0.68
1:A:262:GLU:O	1:A:266:LEU:HD13	1.94	0.68
1:B:630:ILE:HG22	1:B:690:ILE:CG2	2.23	0.68
1:A:184:VAL:HB	1:A:599:PHE:CE2	2.28	0.68
1:B:441:TYR:OH	1:B:468:LEU:HD22	1.93	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:266:LEU:O	1:A:270:LEU:HD13	1.94	0.68
1:B:178:VAL:O	1:B:181:PHE:HB2	1.92	0.68
1:A:426:VAL:O	1:A:430:VAL:HG13	1.94	0.67
1:A:662:THR:HG23	1:A:665:HIS:H	1.58	0.67
1:B:156:PHE:CD2	1:B:168:LEU:HB3	2.29	0.67
1:A:700:PHE:O	1:A:704:ILE:N	2.21	0.67
1:B:60:LEU:HD21	1:B:178:VAL:HG11	1.77	0.67
1:A:171:LEU:HD22	1:A:241:ILE:HD11	1.77	0.67
1:B:320:SER:O	1:B:324:LEU:HD13	1.93	0.67
1:A:250:LEU:O	1:A:254:LEU:HD13	1.93	0.67
1:A:700:PHE:HB3	1:A:704:ILE:HG12	1.76	0.67
1:B:662:THR:HG23	1:B:665:HIS:H	1.58	0.67
1:B:422:ALA:O	1:B:426:VAL:HG23	1.95	0.67
1:A:256:LEU:HD13	1:A:260:PHE:HE2	1.60	0.67
1:A:611:LEU:CD1	1:A:704:ILE:HD11	2.24	0.67
1:B:630:ILE:HG22	1:B:690:ILE:HG21	1.76	0.66
1:A:531:ASN:ND2	1:A:713:ILE:O	2.28	0.66
1:A:38:MET:HE2	1:A:457:LEU:HD21	1.77	0.66
1:A:152:PHE:HD2	1:A:171:LEU:HD12	1.60	0.66
1:A:517:MET:CE	1:A:521:SER:HB3	2.24	0.66
1:B:611:LEU:CD1	1:B:704:ILE:HD11	2.25	0.66
1:B:499:ILE:O	1:B:502:ILE:HG13	1.94	0.66
1:B:107:THR:HG21	1:B:229:VAL:HG11	1.77	0.66
1:A:165:ALA:O	1:A:169:VAL:HG23	1.96	0.66
1:B:191:LYS:HG3	1:B:677:PRO:HA	1.78	0.66
1:B:426:VAL:O	1:B:430:VAL:HG13	1.96	0.66
1:A:256:LEU:HD13	1:A:260:PHE:CE2	2.31	0.66
1:A:164:TRP:O	1:A:167:PRO:HD2	1.95	0.65
1:A:184:VAL:HB	1:A:599:PHE:CD2	2.31	0.65
1:B:210:ASP:HA	1:B:217:VAL:HG23	1.79	0.65
1:B:156:PHE:HD2	1:B:168:LEU:HB3	1.62	0.65
1:A:86:ALA:O	1:A:90:ILE:HG13	1.97	0.65
1:A:243:THR:CG2	1:A:429:LEU:HD21	2.27	0.65
1:B:143:SER:HA	1:B:272:LEU:HD21	1.79	0.65
1:B:316:LEU:HD21	1:B:318:LEU:HD11	1.79	0.65
1:B:560:GLU:HG2	1:B:594:ARG:HD3	1.79	0.65
1:A:299:TYR:HA	1:A:302:ILE:HG22	1.79	0.65
1:B:543:VAL:CG2	1:B:686:LEU:HD22	2.26	0.65
1:B:672:ASP:O	1:B:676:ASP:HB2	1.97	0.64
1:A:263:ALA:HB2	1:A:316:LEU:HD22	1.77	0.64
1:A:672:ASP:O	1:A:676:ASP:HB2	1.97	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:270:LEU:HD13	1:B:308:LEU:HA	1.80	0.64
1:B:263:ALA:HB2	1:B:316:LEU:HD22	1.79	0.64
1:A:210:ASP:HA	1:A:217:VAL:HG23	1.78	0.64
1:B:243:THR:CG2	1:B:429:LEU:HD21	2.28	0.64
1:B:517:MET:SD	1:B:521:SER:HB3	2.37	0.64
1:A:291:LEU:HD23	1:A:291:LEU:O	1.97	0.64
1:B:106:VAL:HG21	1:B:136:VAL:HG11	1.80	0.64
1:B:299:TYR:HA	1:B:302:ILE:HG22	1.80	0.64
1:A:505:SER:OG	1:A:705:VAL:HG11	1.98	0.63
1:A:499:ILE:O	1:A:502:ILE:HG13	1.98	0.63
1:B:626:ILE:O	1:B:630:ILE:HG23	1.98	0.63
1:A:183:ARG:NH2	1:A:232:MET:SD	2.72	0.63
1:B:171:LEU:HD23	1:B:171:LEU:O	1.99	0.63
1:B:227:GLY:O	1:B:232:MET:HG2	1.99	0.63
1:B:259:GLN:HB3	1:B:316:LEU:CD1	2.28	0.63
1:B:552:GLU:O	1:B:556:ARG:HG2	1.98	0.63
1:A:256:LEU:HB3	1:A:257:PRO:HD2	1.81	0.62
1:A:552:GLU:O	1:A:556:ARG:HG2	1.99	0.62
1:B:128:LEU:O	1:B:132:ARG:HG2	1.99	0.62
1:B:685:SER:C	1:B:688:PRO:HD2	2.20	0.62
1:A:358:ILE:HG21	1:A:373:GLY:HA2	1.79	0.62
1:A:527:LEU:HD13	1:B:627:MET:HE3	1.81	0.62
1:B:337:ALA:HB3	1:B:338:PRO:HD3	1.82	0.62
1:A:627:MET:HE3	1:B:527:LEU:HD13	1.82	0.62
1:B:24:LEU:HD13	1:B:135:ALA:HB3	1.80	0.62
1:A:403:VAL:HG13	1:A:416:ALA:HB1	1.80	0.62
1:A:644:GLY:C	1:A:679:LYS:HD3	2.20	0.62
1:B:487:ALA:HB2	1:B:691:LYS:HD3	1.81	0.62
1:B:714:TRP:N	1:B:715:PRO:HD2	2.14	0.62
1:A:422:ALA:O	1:A:426:VAL:HG23	2.00	0.62
1:B:228:ASP:O	1:B:232:MET:HB2	2.00	0.62
1:A:143:SER:HA	1:A:272:LEU:HD21	1.82	0.61
1:B:291:LEU:O	1:B:291:LEU:HD23	2.00	0.61
1:B:630:ILE:HA	1:B:690:ILE:HD13	1.82	0.61
1:A:501:GLU:HB3	1:A:701:THR:OG1	1.99	0.61
1:B:184:VAL:HB	1:B:599:PHE:HE2	1.65	0.61
1:A:24:LEU:HD13	1:A:135:ALA:HB3	1.82	0.61
1:A:191:LYS:HG3	1:A:677:PRO:HA	1.81	0.61
1:A:218:ILE:HG21	1:A:584:TYR:CG	2.35	0.61
1:A:337:ALA:HB3	1:A:338:PRO:HD3	1.82	0.61
1:B:501:GLU:HG3	1:B:698:VAL:HG23	1.81	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:425:SER:HB3	1:A:489:LEU:HB3	1.83	0.61
1:B:183:ARG:CG	1:B:688:PRO:HG2	2.30	0.61
1:B:8:LEU:HG	1:B:154:LEU:HD22	1.82	0.61
1:B:199:LEU:HD12	1:B:200:VAL:N	2.15	0.61
1:A:374:TYR:CE2	1:A:378:LEU:HD11	2.36	0.61
1:B:392:LEU:HB2	1:B:421:THR:HG23	1.83	0.61
1:A:65:VAL:O	1:A:69:VAL:HG23	2.01	0.60
1:B:467:VAL:O	1:B:471:VAL:HG23	2.00	0.60
1:A:56:GLN:O	1:A:60:LEU:HB2	2.01	0.60
1:B:229:VAL:HG22	1:B:440:SER:HA	1.82	0.60
1:A:191:LYS:CG	1:A:677:PRO:HA	2.31	0.60
1:A:106:VAL:HG21	1:A:136:VAL:HG11	1.83	0.60
1:B:461:VAL:O	1:B:464:ILE:HG12	2.01	0.60
1:B:713:ILE:CB	1:B:715:PRO:HD2	2.31	0.60
1:A:274:ALA:CB	1:A:304:LEU:HB2	2.32	0.60
1:A:697:SER:O	1:A:701:THR:HG23	2.02	0.60
1:A:191:LYS:HD2	1:A:680:ASP:HB2	1.83	0.60
1:A:378:LEU:HG	1:A:639:LEU:HD11	1.82	0.60
1:B:123:MET:CE	1:B:464:ILE:HB	2.31	0.60
1:B:431:VAL:O	1:B:434:ILE:HG22	2.02	0.60
1:B:250:LEU:CD1	1:B:493:VAL:HG13	2.32	0.60
1:A:250:LEU:HD11	1:A:493:VAL:HG13	1.84	0.60
1:B:225:ASN:O	1:B:229:VAL:HB	2.02	0.60
1:B:6:TYR:CB	1:B:266:LEU:HD11	2.32	0.59
1:A:435:ILE:CG2	1:A:479:THR:HG22	2.33	0.59
1:A:228:ASP:HA	1:A:232:MET:CG	2.32	0.59
1:B:160:LEU:O	1:B:164:TRP:HB3	2.02	0.59
1:B:92:GLY:HA2	1:B:148:LEU:HD21	1.82	0.59
1:B:425:SER:HB3	1:B:489:LEU:HB3	1.84	0.59
1:B:615:LEU:HD12	1:B:616:LEU:N	2.17	0.59
1:B:118:ALA:HB1	1:B:464:ILE:HD11	1.84	0.59
1:B:250:LEU:HD11	1:B:493:VAL:HG13	1.85	0.59
1:B:619:TRP:NE1	1:B:711:LEU:O	2.26	0.59
1:A:160:LEU:O	1:A:164:TRP:HB3	2.03	0.59
1:B:403:VAL:HG13	1:B:416:ALA:CB	2.25	0.59
1:A:228:ASP:HA	1:A:232:MET:HG2	1.85	0.58
1:B:262:GLU:O	1:B:266:LEU:HD13	2.03	0.58
1:A:308:LEU:HD21	1:A:327:ALA:HA	1.84	0.58
1:A:211:ASP:OD1	1:A:212:PRO:HD2	2.03	0.58
1:A:148:LEU:HD21	1:A:237:TYR:OH	2.03	0.58
1:A:517:MET:HE3	1:A:521:SER:HB3	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:501:GLU:HG3	1:A:698:VAL:HG22	1.84	0.58
1:B:318:LEU:HB2	1:B:323:ALA:HB2	1.86	0.58
1:A:222:VAL:O	1:A:226:VAL:HG23	2.03	0.58
1:A:291:LEU:O	1:A:294:ILE:HG22	2.03	0.58
1:B:713:ILE:C	1:B:715:PRO:HD2	2.24	0.58
1:A:714:TRP:CD1	1:A:715:PRO:HD3	2.39	0.58
1:B:15:ILE:O	1:B:19:ILE:HG12	2.04	0.58
1:A:645:GLY:N	1:A:679:LYS:HD3	2.19	0.57
1:B:146:LEU:HD23	1:B:272:LEU:HD22	1.86	0.57
1:B:270:LEU:HD22	1:B:307:VAL:HG12	1.86	0.57
1:A:199:LEU:HD12	1:A:200:VAL:N	2.20	0.57
1:B:38:MET:SD	1:B:116:GLN:HG2	2.45	0.57
1:B:498:LEU:HD23	1:B:498:LEU:O	2.04	0.57
1:B:270:LEU:HD11	1:B:311:ILE:CB	2.34	0.57
1:B:319:ASP:O	1:B:322:LYS:N	2.36	0.57
1:B:543:VAL:HG23	1:B:686:LEU:HD22	1.85	0.57
1:B:564:GLU:O	1:B:567:ARG:HG2	2.03	0.57
1:A:135:ALA:O	1:A:139:LEU:HG	2.04	0.57
1:A:161:PRO:HA	1:A:164:TRP:HE3	1.69	0.57
1:B:289:HIS:ND1	1:B:290:PRO:HD2	2.19	0.57
1:B:21:ALA:HB2	1:B:139:LEU:HD11	1.86	0.57
1:B:675:GLY:O	1:B:679:LYS:HB2	2.04	0.57
1:B:290:PRO:CB	1:B:471:VAL:HG21	2.35	0.57
1:B:291:LEU:O	1:B:294:ILE:HG22	2.05	0.57
1:A:392:LEU:HB2	1:A:421:THR:HG23	1.86	0.57
1:B:627:MET:O	1:B:630:ILE:HG12	2.04	0.56
1:A:100:GLY:O	1:A:104:MET:HG2	2.05	0.56
1:A:164:TRP:C	1:A:167:PRO:HD2	2.25	0.56
1:A:399:GLY:O	1:A:403:VAL:HG12	2.05	0.56
1:A:467:VAL:O	1:A:471:VAL:HG23	2.05	0.56
1:B:256:LEU:HB3	1:B:257:PRO:HD2	1.87	0.56
1:B:298:ILE:HG12	1:B:338:PRO:HB3	1.87	0.56
1:B:341:VAL:HG22	1:B:478:THR:HG21	1.88	0.56
1:B:207:ILE:HD13	1:B:211:ASP:CB	2.34	0.56
1:B:211:ASP:OD1	1:B:212:PRO:HD2	2.05	0.56
1:A:611:LEU:HD11	1:A:704:ILE:HD11	1.87	0.56
1:B:183:ARG:HD3	1:B:183:ARG:C	2.25	0.56
1:A:183:ARG:NH1	1:A:680:ASP:O	2.38	0.56
1:A:627:MET:O	1:A:630:ILE:HG12	2.06	0.56
1:B:114:VAL:HG13	1:B:448:ALA:HB2	1.88	0.56
1:B:161:PRO:HA	1:B:164:TRP:HE3	1.71	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:201:GLY:HA2	1:B:205:ALA:HB3	1.87	0.56
1:B:435:ILE:CG2	1:B:479:THR:HG22	2.35	0.56
1:A:165:ALA:O	1:A:168:LEU:HG	2.06	0.56
1:A:183:ARG:HD3	1:A:183:ARG:C	2.26	0.56
1:A:615:LEU:HD12	1:A:616:LEU:N	2.20	0.56
1:B:270:LEU:HD11	1:B:311:ILE:CG2	2.36	0.56
1:B:696:LEU:HD12	1:B:697:SER:N	2.21	0.56
1:A:292:SER:O	1:A:296:LEU:HD13	2.05	0.55
1:A:665:HIS:O	1:A:669:VAL:HG23	2.06	0.55
1:B:345:ASP:OD2	1:B:352:TYR:HE2	1.89	0.55
1:A:114:VAL:HG13	1:A:448:ALA:HB2	1.88	0.55
1:A:173:PHE:HD1	1:A:695:THR:HG22	1.72	0.55
1:A:270:LEU:HD21	1:A:311:ILE:CB	2.34	0.55
1:A:24:LEU:HD22	1:A:132:ARG:HD2	1.89	0.55
1:A:191:LYS:CD	1:A:677:PRO:HA	2.36	0.55
1:B:46:ALA:N	1:B:108:THR:OG1	2.40	0.55
1:A:431:VAL:O	1:A:434:ILE:HG22	2.07	0.55
1:B:24:LEU:HD22	1:B:132:ARG:HD2	1.89	0.55
1:B:124:GLY:CA	1:B:287:VAL:HG21	2.37	0.55
1:A:218:ILE:HG21	1:A:584:TYR:HB3	1.88	0.55
1:A:549:ARG:CG	1:A:602:PRO:HG3	2.36	0.55
1:B:709:ILE:O	1:B:709:ILE:HG22	2.06	0.55
1:A:98:LEU:O	1:A:102:LEU:HG	2.07	0.55
1:B:100:GLY:O	1:B:104:MET:HG2	2.07	0.55
1:B:714:TRP:N	1:B:715:PRO:CD	2.69	0.55
1:A:374:TYR:O	1:A:378:LEU:HD13	2.07	0.55
1:A:253:ILE:HG21	1:A:500:PHE:CD2	2.42	0.54
1:B:228:ASP:HA	1:B:232:MET:CG	2.37	0.54
1:B:161:PRO:HA	1:B:164:TRP:CE3	2.42	0.54
1:B:480:LYS:NZ	1:B:679:LYS:HG2	2.23	0.54
1:A:315:THR:HG22	1:A:316:LEU:HD12	1.88	0.54
1:A:336:ILE:HD11	1:A:388:ILE:HG22	1.90	0.54
1:A:709:ILE:HG22	1:A:709:ILE:O	2.07	0.54
1:A:183:ARG:HG2	1:A:688:PRO:HG3	1.89	0.54
1:B:135:ALA:O	1:B:139:LEU:HG	2.07	0.54
1:B:164:TRP:O	1:B:167:PRO:HD2	2.07	0.54
1:B:256:LEU:HD13	1:B:260:PHE:CE2	2.42	0.54
1:A:139:LEU:HD12	1:A:140:SER:N	2.23	0.54
1:B:665:HIS:O	1:B:669:VAL:HG23	2.08	0.54
1:A:63:LEU:CD2	1:A:177:LEU:HD21	2.38	0.53
1:A:112:SER:O	1:A:116:GLN:HG3	2.08	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:92:GLY:HA3	1:B:171:LEU:HG	1.90	0.53
1:B:139:LEU:HD12	1:B:140:SER:N	2.23	0.53
1:B:549:ARG:HG3	1:B:602:PRO:HG3	1.90	0.53
1:A:215:PRO:O	1:A:218:ILE:HG22	2.09	0.53
1:A:498:LEU:HD23	1:A:498:LEU:O	2.08	0.53
1:A:685:SER:C	1:A:688:PRO:HD2	2.28	0.53
1:B:124:GLY:HA2	1:B:287:VAL:HG21	1.90	0.53
1:B:361:GLN:HG3	1:B:372:THR:HG21	1.89	0.53
1:A:235:ASP:OD1	1:A:687:ASN:ND2	2.40	0.53
1:A:374:TYR:CZ	1:A:378:LEU:HD11	2.44	0.53
1:B:399:GLY:O	1:B:403:VAL:HG12	2.08	0.53
1:B:165:ALA:O	1:B:168:LEU:HG	2.09	0.53
1:B:191:LYS:CG	1:B:677:PRO:HA	2.37	0.53
1:A:171:LEU:HD23	1:A:171:LEU:O	2.08	0.53
1:A:218:ILE:O	1:A:222:VAL:HG23	2.08	0.53
1:A:586:ARG:O	1:A:590:ILE:HG12	2.09	0.53
1:B:212:PRO:HD3	1:B:454:MET:HA	1.90	0.53
1:B:378:LEU:HG	1:B:639:LEU:CD1	2.39	0.53
1:B:611:LEU:HD11	1:B:704:ILE:HD11	1.89	0.53
1:A:24:LEU:CD2	1:A:132:ARG:HD2	2.39	0.53
1:A:218:ILE:HG21	1:A:584:TYR:CD1	2.44	0.53
1:A:675:GLY:O	1:A:679:LYS:HB2	2.08	0.53
1:B:17:GLY:O	1:B:21:ALA:N	2.40	0.53
1:B:274:ALA:HB1	1:B:304:LEU:HB2	1.91	0.53
1:A:228:ASP:O	1:A:232:MET:HB2	2.08	0.53
1:A:473:ASN:HA	1:A:476:LYS:HE3	1.90	0.52
1:B:162:ASP:O	1:B:163:ASP:HB2	2.09	0.52
1:A:266:LEU:HD21	1:A:315:THR:HG21	1.91	0.52
1:A:378:LEU:HB2	1:B:548:SER:HB3	1.91	0.52
1:A:457:LEU:HB3	1:A:458:PRO:HD2	1.91	0.52
1:B:266:LEU:CD2	1:B:315:THR:HG21	2.39	0.52
1:B:341:VAL:HG22	1:B:478:THR:CG2	2.40	0.52
1:A:330:THR:HG23	1:A:423:MET:HG3	1.91	0.52
1:A:698:VAL:HA	1:A:701:THR:HG23	1.91	0.52
1:B:35:ASN:HB3	1:B:38:MET:CG	2.40	0.52
1:B:123:MET:HE1	1:B:464:ILE:HB	1.91	0.52
1:B:685:SER:O	1:B:688:PRO:HD2	2.08	0.52
1:A:281:LEU:O	1:A:281:LEU:HG	2.09	0.52
1:B:270:LEU:CD1	1:B:311:ILE:HB	2.38	0.52
1:B:586:ARG:O	1:B:590:ILE:HG12	2.09	0.52
1:A:353:GLY:O	1:A:356:ARG:N	2.42	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:464:ILE:O	1:A:467:VAL:HG22	2.09	0.52
1:A:516:ASP:OD1	1:A:516:ASP:N	2.41	0.52
1:A:560:GLU:HG2	1:A:594:ARG:HD3	1.90	0.52
1:A:210:ASP:HA	1:A:217:VAL:CG2	2.40	0.52
1:A:428:LEU:HD22	1:A:486:SER:CB	2.39	0.52
1:A:687:ASN:OD1	1:A:691:LYS:HE2	2.10	0.52
1:B:86:ALA:O	1:B:90:ILE:HG13	2.10	0.52
1:B:152:PHE:HD2	1:B:171:LEU:HD12	1.74	0.52
1:B:60:LEU:HD21	1:B:178:VAL:CG1	2.40	0.52
1:B:229:VAL:HG23	1:B:443:PRO:HG2	1.90	0.52
1:A:392:LEU:HD12	1:A:393:GLY:N	2.25	0.51
1:B:374:TYR:CE2	1:B:378:LEU:HD11	2.45	0.51
1:B:374:TYR:O	1:B:378:LEU:HD13	2.09	0.51
1:B:457:LEU:HB3	1:B:458:PRO:HD2	1.92	0.51
1:A:169:VAL:HG22	1:A:245:THR:HB	1.93	0.51
1:A:281:LEU:HA	1:A:296:LEU:HD21	1.92	0.51
1:A:24:LEU:HB2	1:A:136:VAL:HG22	1.93	0.51
1:A:480:LYS:NZ	1:A:679:LYS:HG2	2.25	0.51
1:B:421:THR:HG21	1:B:492:LEU:HD21	1.93	0.51
1:B:549:ARG:CG	1:B:602:PRO:HG3	2.41	0.51
1:A:60:LEU:HG	1:A:181:PHE:CD2	2.46	0.51
1:A:461:VAL:O	1:A:464:ILE:HG12	2.11	0.51
1:A:682:VAL:O	1:A:686:LEU:HD13	2.10	0.51
1:A:611:LEU:HD12	1:A:704:ILE:HD11	1.92	0.51
1:B:378:LEU:HD12	1:B:639:LEU:HG	1.92	0.51
1:A:146:LEU:HD23	1:A:272:LEU:HD22	1.93	0.51
1:B:243:THR:OG1	1:B:429:LEU:HD11	2.11	0.51
1:B:516:ASP:N	1:B:516:ASP:OD1	2.41	0.51
1:A:378:LEU:HG	1:A:639:LEU:CD1	2.41	0.51
1:B:274:ALA:CB	1:B:304:LEU:HB2	2.41	0.51
1:B:626:ILE:HG22	1:B:693:LEU:CG	2.41	0.51
1:B:330:THR:HG23	1:B:423:MET:HG3	1.92	0.50
1:B:655:GLU:O	1:B:659:LEU:HA	2.11	0.50
1:A:225:ASN:HA	1:A:229:VAL:HB	1.92	0.50
1:A:544:TYR:OH	1:A:636:ARG:NH2	2.44	0.50
1:A:714:TRP:N	1:A:715:PRO:CD	2.74	0.50
1:B:337:ALA:O	1:B:341:VAL:HG23	2.10	0.50
1:A:161:PRO:HA	1:A:164:TRP:CE3	2.46	0.50
1:B:698:VAL:HA	1:B:701:THR:HG23	1.92	0.50
1:A:243:THR:OG1	1:A:429:LEU:HD11	2.12	0.50
1:A:633:GLY:CA	1:A:686:LEU:HD23	2.40	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:212:PRO:HD3	1:B:454:MET:CB	2.41	0.50
1:A:678:MET:HA	1:A:682:VAL:HG22	1.94	0.50
1:B:438:ALA:HB1	1:B:475:THR:HG21	1.94	0.50
1:A:64:LEU:HD21	1:A:90:ILE:HG23	1.94	0.50
1:A:439:ASP:CG	1:A:479:THR:HG21	2.32	0.50
1:A:501:GLU:HG3	1:A:698:VAL:HG23	1.92	0.50
1:A:111:ALA:HB2	1:A:447:ASN:HB3	1.94	0.50
1:A:294:ILE:O	1:A:298:ILE:HG13	2.12	0.50
1:A:601:ILE:HB	1:A:602:PRO:CD	2.33	0.50
1:B:191:LYS:HE2	1:B:191:LYS:CA	2.41	0.50
1:A:542:LEU:HD23	1:A:542:LEU:C	2.32	0.50
1:B:228:ASP:HA	1:B:232:MET:HG2	1.92	0.50
1:A:17:GLY:O	1:A:21:ALA:N	2.39	0.49
1:A:438:ALA:HB1	1:A:475:THR:CG2	2.41	0.49
1:B:171:LEU:HD22	1:B:241:ILE:CD1	2.38	0.49
1:B:644:GLY:C	1:B:679:LYS:HD3	2.31	0.49
1:A:549:ARG:HG3	1:A:602:PRO:HG3	1.94	0.49
1:A:633:GLY:HA3	1:A:690:ILE:HD11	1.94	0.49
1:A:644:GLY:HA3	1:A:679:LYS:HB2	1.94	0.49
1:B:378:LEU:HG	1:B:639:LEU:HD11	1.92	0.49
1:B:687:ASN:CG	1:B:691:LYS:HE2	2.32	0.49
1:A:428:LEU:CD2	1:A:486:SER:HB3	2.42	0.49
1:B:192:ALA:HA	1:B:558:ALA:HB2	1.93	0.49
1:B:542:LEU:C	1:B:542:LEU:HD23	2.33	0.49
1:B:304:LEU:CD1	1:B:431:VAL:HG22	2.42	0.49
1:A:250:LEU:CD1	1:A:493:VAL:HG13	2.42	0.49
1:A:325:ALA:HB2	1:A:402:THR:HG21	1.93	0.49
1:B:240:TYR:O	1:B:240:TYR:HD1	1.96	0.49
1:A:495:PHE:CZ	1:A:630:ILE:HD13	2.47	0.49
1:A:502:ILE:HD12	1:A:503:VAL:N	2.28	0.49
1:A:598:GLU:O	1:A:602:PRO:HD2	2.13	0.49
1:B:164:TRP:C	1:B:167:PRO:HD2	2.33	0.49
1:A:63:LEU:HD22	1:A:177:LEU:HD21	1.95	0.49
1:B:123:MET:HE2	1:B:464:ILE:HB	1.95	0.49
1:B:601:ILE:HB	1:B:602:PRO:CD	2.35	0.49
1:A:266:LEU:HD21	1:A:315:THR:CB	2.43	0.49
1:A:281:LEU:HB2	1:A:296:LEU:CD2	2.43	0.49
1:A:337:ALA:O	1:A:341:VAL:HG23	2.13	0.49
1:A:651:LYS:O	1:A:655:GLU:N	2.44	0.49
1:B:109:ARG:O	1:B:113:ARG:HG2	2.12	0.49
1:B:382:ILE:HG13	1:B:383:PRO:HD3	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:707:THR:O	1:B:709:ILE:HG13	2.12	0.49
1:A:687:ASN:HD22	1:A:688:PRO:HD3	1.78	0.48
1:A:703:VAL:O	1:A:707:THR:HG23	2.13	0.48
1:B:56:GLN:O	1:B:60:LEU:HB2	2.11	0.48
1:B:218:ILE:O	1:B:222:VAL:HG23	2.12	0.48
1:B:8:LEU:HG	1:B:154:LEU:HD21	1.93	0.48
1:B:148:LEU:HD23	1:B:237:TYR:OH	2.13	0.48
1:B:182:MET:O	1:B:186:GLY:N	2.46	0.48
1:B:673:THR:HA	1:B:676:ASP:HB2	1.96	0.48
1:A:364:ILE:HD12	1:A:364:ILE:N	2.28	0.48
1:A:660:LYS:HG2	1:A:661:LYS:N	2.29	0.48
1:A:152:PHE:CD2	1:A:171:LEU:HD12	2.46	0.48
1:A:540:VAL:HG11	1:B:635:PRO:HG2	1.95	0.48
1:A:630:ILE:HA	1:A:690:ILE:HD13	1.96	0.48
1:B:366:PRO:HA	1:B:369:VAL:HG12	1.95	0.48
1:B:532:VAL:HG23	1:B:620:ASN:HB3	1.95	0.48
1:A:239:SER:O	1:A:429:LEU:HD22	2.14	0.48
1:A:438:ALA:HB1	1:A:475:THR:HG21	1.94	0.48
1:A:696:LEU:HD12	1:A:697:SER:N	2.28	0.48
1:B:256:LEU:HD13	1:B:260:PHE:HE2	1.79	0.48
1:B:634:VAL:HB	1:B:635:PRO:HD3	1.94	0.48
1:B:35:ASN:HB3	1:B:38:MET:HB2	1.96	0.48
1:B:530:ALA:HB3	1:B:714:TRP:HB2	1.95	0.48
1:B:270:LEU:HD21	1:B:311:ILE:CG1	2.38	0.48
1:A:75:ILE:HB	1:A:85:THR:HG22	1.95	0.47
1:A:128:LEU:O	1:A:132:ARG:HG2	2.13	0.47
1:B:303:GLY:O	1:B:307:VAL:HB	2.14	0.47
1:B:408:PHE:CD2	1:B:412:SER:HB3	2.49	0.47
1:A:673:THR:O	1:A:673:THR:HG22	2.14	0.47
1:B:281:LEU:CA	1:B:296:LEU:HD21	2.41	0.47
1:B:679:LYS:HG2	1:B:680:ASP:OD1	2.14	0.47
1:A:191:LYS:HE2	1:A:191:LYS:CA	2.43	0.47
1:A:530:ALA:HB3	1:A:714:TRP:HB2	1.95	0.47
1:B:422:ALA:HA	1:B:493:VAL:HG21	1.96	0.47
1:B:611:LEU:HD12	1:B:704:ILE:HD11	1.96	0.47
1:A:303:GLY:O	1:A:307:VAL:HB	2.14	0.47
1:B:487:ALA:HB2	1:B:687:ASN:HD21	1.78	0.47
1:A:707:THR:O	1:A:709:ILE:HG12	2.15	0.47
1:B:382:ILE:N	1:B:383:PRO:CD	2.78	0.47
1:A:9:LEU:HD12	1:A:12:ILE:HB	1.96	0.47
1:B:428:LEU:HD22	1:B:486:SER:CB	2.42	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:608:VAL:O	1:B:611:LEU:N	2.47	0.47
1:B:645:GLY:N	1:B:679:LYS:HD3	2.30	0.47
1:B:673:THR:HA	1:B:676:ASP:CB	2.45	0.47
1:A:70:LEU:O	1:A:70:LEU:HD23	2.15	0.47
1:A:258:THR:HG22	1:A:258:THR:O	2.15	0.47
1:A:322:LYS:NZ	1:A:402:THR:O	2.46	0.47
1:A:495:PHE:CE1	1:A:626:ILE:HD12	2.50	0.47
1:A:701:THR:O	1:A:705:VAL:HG12	2.15	0.47
1:B:65:VAL:O	1:B:69:VAL:HG23	2.15	0.47
1:A:304:LEU:CD2	1:A:431:VAL:HG22	2.45	0.47
1:A:319:ASP:O	1:A:322:LYS:N	2.46	0.47
1:A:476:LYS:O	1:A:480:LYS:HG3	2.14	0.47
1:A:549:ARG:HG2	1:A:602:PRO:HG3	1.96	0.47
1:A:647:TRP:HE3	1:A:675:GLY:HA3	1.80	0.47
1:A:24:LEU:HD12	1:A:139:LEU:HD21	1.96	0.47
1:A:218:ILE:HG21	1:A:584:TYR:CB	2.45	0.47
1:A:253:ILE:HG21	1:A:500:PHE:CG	2.49	0.47
1:A:270:LEU:O	1:A:274:ALA:N	2.40	0.47
1:B:317:GLY:O	1:B:318:LEU:HD23	2.15	0.46
1:A:178:VAL:O	1:A:181:PHE:HB2	2.14	0.46
1:A:517:MET:SD	1:A:521:SER:HB3	2.56	0.46
1:B:364:ILE:N	1:B:364:ILE:HD12	2.30	0.46
1:B:633:GLY:HA3	1:B:690:ILE:HD11	1.97	0.46
1:A:382:ILE:HG13	1:A:383:PRO:HD3	1.96	0.46
1:A:495:PHE:HZ	1:A:630:ILE:HD13	1.80	0.46
1:B:258:THR:O	1:B:258:THR:HG22	2.15	0.46
1:B:392:LEU:HD12	1:B:393:GLY:N	2.30	0.46
1:B:600:LEU:O	1:B:604:LEU:HD13	2.15	0.46
1:A:392:LEU:HD12	1:A:392:LEU:C	2.36	0.46
1:A:600:LEU:O	1:A:604:LEU:HD13	2.15	0.46
1:B:673:THR:HG22	1:B:673:THR:O	2.15	0.46
1:A:382:ILE:N	1:A:383:PRO:CD	2.78	0.46
1:B:710:ALA:HB3	1:B:713:ILE:HD13	1.96	0.46
1:A:627:MET:CE	1:B:527:LEU:HD13	2.46	0.46
1:A:348:THR:HG21	1:A:474:THR:HA	1.96	0.46
1:A:600:LEU:O	1:A:604:LEU:HB2	2.16	0.46
1:B:304:LEU:C	1:B:304:LEU:HD23	2.36	0.46
1:B:374:TYR:CZ	1:B:378:LEU:HD11	2.51	0.46
1:B:438:ALA:HB1	1:B:475:THR:CG2	2.45	0.46
1:A:181:PHE:HA	1:A:599:PHE:CZ	2.50	0.46
1:A:435:ILE:HG22	1:A:479:THR:HG22	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:439:ASP:CG	1:B:479:THR:HG21	2.36	0.46
1:B:431:VAL:HG12	1:B:434:ILE:HG22	1.97	0.46
1:B:629:ALA:O	1:B:690:ILE:HD11	2.16	0.46
1:B:687:ASN:HB3	1:B:688:PRO:HD3	1.98	0.46
1:A:182:MET:O	1:A:186:GLY:N	2.48	0.45
1:A:366:PRO:HA	1:A:369:VAL:HG12	1.98	0.45
1:A:378:LEU:HD21	1:B:636:ARG:NH2	2.31	0.45
1:A:304:LEU:O	1:A:308:LEU:N	2.47	0.45
1:A:396:TYR:CE1	1:A:417:GLY:HA3	2.52	0.45
1:B:118:ALA:HB2	1:B:126:ALA:CB	2.33	0.45
1:B:336:ILE:HD11	1:B:388:ILE:HG22	1.97	0.45
1:B:539:GLY:HA2	1:B:625:LEU:HG	1.98	0.45
1:A:452:VAL:HB	1:A:462:ARG:HB3	1.97	0.45
1:B:428:LEU:C	1:B:428:LEU:HD23	2.37	0.45
1:A:369:VAL:HA	1:A:372:THR:HG22	1.98	0.45
1:A:371:ILE:CG2	1:B:674:VAL:HA	2.47	0.45
1:B:70:LEU:HD23	1:B:70:LEU:O	2.17	0.45
1:B:199:LEU:O	1:B:203:VAL:HG23	2.16	0.45
1:B:35:ASN:HD22	1:B:38:MET:HG3	1.81	0.45
1:B:191:LYS:CD	1:B:677:PRO:HA	2.47	0.45
1:B:695:THR:O	1:B:699:VAL:HG23	2.16	0.45
1:B:183:ARG:CZ	1:B:684:PRO:HB2	2.47	0.45
1:B:532:VAL:CG2	1:B:620:ASN:HB3	2.47	0.45
1:B:301:THR:HG23	1:B:334:ALA:HB1	1.98	0.45
1:A:234:ALA:O	1:A:237:TYR:HB3	2.17	0.44
1:A:429:LEU:HA	1:A:482:TYR:OH	2.17	0.44
1:A:502:ILE:HD12	1:A:502:ILE:C	2.37	0.44
1:B:92:GLY:CA	1:B:171:LEU:HG	2.47	0.44
1:A:162:ASP:O	1:A:163:ASP:HB2	2.16	0.44
1:A:89:PHE:HE2	1:A:173:PHE:CD2	2.35	0.44
1:A:608:VAL:O	1:A:611:LEU:N	2.50	0.44
1:B:466:ASP:HB3	1:B:652:LYS:HE2	1.93	0.44
1:A:699:VAL:HG13	1:A:700:PHE:CD1	2.53	0.44
1:A:289:HIS:ND1	1:A:290:PRO:HD2	2.32	0.44
1:A:526:GLN:HA	1:B:526:GLN:HA	2.00	0.44
1:A:15:ILE:HD12	1:A:16:SER:N	2.32	0.44
1:A:86:ALA:HA	1:A:89:PHE:HB3	2.00	0.44
1:A:190:THR:HG22	1:A:191:LYS:HE3	2.00	0.44
1:B:564:GLU:HG2	1:B:567:ARG:HE	1.83	0.44
1:B:606:ALA:HB1	1:B:689:LEU:HD11	2.00	0.44
1:A:15:ILE:HD12	1:A:15:ILE:C	2.38	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:647:TRP:HE3	1:B:675:GLY:HA3	1.82	0.44
1:B:684:PRO:O	1:B:688:PRO:HD3	2.17	0.44
1:A:144:ILE:O	1:A:148:LEU:HD23	2.18	0.44
1:B:42:SER:HB2	1:B:112:SER:CB	2.48	0.44
1:B:502:ILE:HD12	1:B:503:VAL:N	2.33	0.44
1:A:89:PHE:HE2	1:A:173:PHE:HD2	1.66	0.43
1:B:502:ILE:HD12	1:B:502:ILE:C	2.38	0.43
1:B:42:SER:HB2	1:B:112:SER:HB2	2.00	0.43
1:A:310:PHE:CE2	1:A:311:ILE:HG12	2.53	0.43
1:A:659:LEU:HG	1:A:659:LEU:O	2.18	0.43
1:B:316:LEU:HD21	1:B:318:LEU:CD1	2.46	0.43
1:B:495:PHE:CZ	1:B:630:ILE:HD13	2.53	0.43
1:B:539:GLY:CA	1:B:625:LEU:HG	2.48	0.43
1:A:238:GLU:CD	1:A:691:LYS:HE3	2.39	0.43
1:A:392:LEU:HD23	1:A:489:LEU:CD1	2.49	0.43
1:B:215:PRO:O	1:B:218:ILE:HG22	2.19	0.43
1:B:682:VAL:O	1:B:686:LEU:HG	2.18	0.43
1:A:329:THR:OG1	1:A:423:MET:HG2	2.18	0.43
1:B:369:VAL:HA	1:B:372:THR:HG22	1.99	0.43
1:A:86:ALA:O	1:A:89:PHE:HB3	2.19	0.43
1:A:111:ALA:CB	1:A:447:ASN:HB3	2.48	0.43
1:B:250:LEU:HD12	1:B:493:VAL:HG13	2.01	0.43
1:B:525:LEU:HD12	1:B:525:LEU:O	2.19	0.43
1:B:535:GLY:O	1:B:625:LEU:HA	2.19	0.43
1:B:626:ILE:HG22	1:B:693:LEU:CD2	2.49	0.43
1:A:109:ARG:O	1:A:113:ARG:HG2	2.18	0.43
1:A:191:LYS:CD	1:A:680:ASP:HB2	2.47	0.43
1:A:619:TRP:NE1	1:A:711:LEU:O	2.37	0.43
1:A:632:ALA:O	1:A:635:PRO:HD2	2.19	0.43
1:B:60:LEU:HD23	1:B:60:LEU:O	2.19	0.43
1:B:292:SER:O	1:B:296:LEU:HD13	2.18	0.43
1:A:270:LEU:HD11	1:A:311:ILE:HG21	1.99	0.43
1:A:674:VAL:HA	1:B:371:ILE:CG2	2.49	0.43
1:A:301:THR:HG23	1:A:334:ALA:HB1	2.01	0.43
1:A:317:GLY:O	1:A:318:LEU:HD23	2.18	0.43
1:A:441:TYR:OH	1:A:468:LEU:HD22	2.18	0.43
1:A:534:ILE:HG23	1:B:389:VAL:HB	2.01	0.43
1:B:392:LEU:HD12	1:B:392:LEU:C	2.38	0.43
1:A:361:GLN:HG3	1:A:372:THR:HG21	2.01	0.42
1:A:428:LEU:C	1:A:428:LEU:HD23	2.39	0.42
1:B:9:LEU:HD12	1:B:12:ILE:HB	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:60:LEU:HG	1:B:181:PHE:CD2	2.54	0.42
1:B:684:PRO:O	1:B:688:PRO:CD	2.66	0.42
1:A:53:LEU:HD11	1:A:104:MET:HG3	2.01	0.42
1:A:166:VAL:HB	1:A:167:PRO:HD3	2.01	0.42
1:B:281:LEU:HD13	1:B:296:LEU:CD2	2.49	0.42
1:B:498:LEU:HD23	1:B:498:LEU:C	2.40	0.42
1:B:457:LEU:HB3	1:B:458:PRO:CD	2.50	0.42
1:A:688:PRO:O	1:A:692:VAL:HG12	2.20	0.42
1:B:166:VAL:HB	1:B:167:PRO:HD3	2.02	0.42
1:B:243:THR:HG21	1:B:429:LEU:CD2	2.41	0.42
1:B:304:LEU:HD13	1:B:431:VAL:HG22	2.00	0.42
1:B:627:MET:O	1:B:631:VAL:HG23	2.20	0.42
1:A:38:MET:CE	1:A:457:LEU:HD21	2.48	0.42
1:B:60:LEU:HD13	1:B:97:MET:SD	2.60	0.42
1:A:110:SER:OG	1:A:444:VAL:HG13	2.19	0.42
1:A:341:VAL:HG22	1:A:478:THR:CG2	2.49	0.42
1:B:237:TYR:O	1:B:241:ILE:HG22	2.19	0.42
1:B:296:LEU:O	1:B:300:ALA:N	2.38	0.42
1:A:243:THR:HB	1:A:426:VAL:HG22	2.00	0.42
1:A:431:VAL:HG12	1:A:434:ILE:HG22	2.01	0.42
1:A:710:ALA:CB	1:A:713:ILE:HG23	2.50	0.42
1:B:112:SER:O	1:B:116:GLN:HG3	2.19	0.42
1:A:281:LEU:HD13	1:A:296:LEU:CD2	2.50	0.42
1:B:250:LEU:O	1:B:254:LEU:HG	2.19	0.42
1:B:302:ILE:HG23	1:B:303:GLY:N	2.35	0.42
1:A:186:GLY:HA3	1:A:226:VAL:HG12	2.02	0.42
1:B:366:PRO:O	1:B:370:ILE:HG12	2.20	0.42
1:A:435:ILE:HG23	1:A:479:THR:HG22	2.01	0.41
1:A:505:SER:CB	1:A:705:VAL:HG11	2.49	0.41
1:A:529:ASN:OD1	1:A:530:ALA:N	2.52	0.41
1:A:679:LYS:HG2	1:A:680:ASP:OD1	2.20	0.41
1:B:330:THR:CG2	1:B:423:MET:HG3	2.50	0.41
1:B:333:GLY:O	1:B:336:ILE:HG22	2.20	0.41
1:A:183:ARG:CG	1:A:688:PRO:HG3	2.49	0.41
1:A:660:LYS:HG2	1:A:661:LYS:H	1.85	0.41
1:B:358:ILE:HG22	1:B:372:THR:HG23	2.01	0.41
1:A:630:ILE:O	1:A:634:VAL:HG23	2.21	0.41
1:B:622:LEU:O	1:B:626:ILE:HG23	2.20	0.41
1:B:659:LEU:O	1:B:659:LEU:HG	2.19	0.41
1:A:8:LEU:HG	1:A:154:LEU:CD2	2.50	0.41
1:A:281:LEU:HB2	1:A:296:LEU:HD21	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:310:PHE:CE2	1:B:311:ILE:HG12	2.56	0.41
1:B:484:ILE:HD13	1:B:637:ALA:HB3	2.02	0.41
1:A:266:LEU:CD2	1:A:315:THR:HB	2.51	0.41
1:B:207:ILE:HD12	1:B:207:ILE:O	2.20	0.41
1:B:218:ILE:HG21	1:B:584:TYR:CD1	2.55	0.41
1:B:687:ASN:ND2	1:B:691:LYS:HE2	2.35	0.41
1:A:302:ILE:HG23	1:A:303:GLY:N	2.35	0.41
1:A:148:LEU:HD13	1:A:171:LEU:HD11	2.03	0.41
1:A:350:TYR:HB2	1:A:653:TYR:HB2	2.01	0.41
1:A:669:VAL:O	1:A:672:ASP:HB3	2.21	0.41
1:A:457:LEU:HB3	1:A:458:PRO:CD	2.50	0.41
1:B:35:ASN:HD22	1:B:38:MET:CE	2.34	0.41
1:B:319:ASP:HB3	1:B:322:LYS:HG3	2.03	0.41
1:A:71:ILE:O	1:A:75:ILE:HG22	2.20	0.41
1:A:389:VAL:HB	1:B:534:ILE:HG23	2.03	0.41
1:A:584:TYR:O	1:A:588:VAL:HG23	2.21	0.41
1:A:651:LYS:HE2	1:A:651:LYS:HB3	1.85	0.41
1:B:212:PRO:HB3	1:B:454:MET:HB2	2.03	0.41
1:B:243:THR:OG1	1:B:429:LEU:HD21	2.21	0.41
1:A:168:LEU:O	1:A:171:LEU:HB3	2.21	0.41
1:A:171:LEU:HD23	1:A:171:LEU:C	2.41	0.41
1:A:281:LEU:CB	1:A:296:LEU:HD21	2.51	0.41
1:A:502:ILE:HD13	1:A:517:MET:HE2	2.01	0.41
1:B:487:ALA:CB	1:B:687:ASN:HD21	2.33	0.41
1:A:194:ASP:OD2	1:A:676:ASP:OD2	2.39	0.40
1:A:458:PRO:O	1:A:462:ARG:HG2	2.21	0.40
1:A:194:ASP:OD1	1:A:198:ASP:OD2	2.38	0.40
1:A:366:PRO:O	1:A:370:ILE:HG12	2.21	0.40
1:A:535:GLY:O	1:A:539:GLY:N	2.43	0.40
1:B:139:LEU:HD12	1:B:139:LEU:C	2.41	0.40
1:B:710:ALA:HB3	1:B:713:ILE:CD1	2.52	0.40
1:A:149:ILE:O	1:A:153:TYR:N	2.44	0.40
1:A:626:ILE:HD12	1:A:694:ASN:OD1	2.21	0.40
1:B:180:LEU:HD23	1:B:599:PHE:HZ	1.87	0.40
1:A:107:THR:HG21	1:A:229:VAL:CG1	2.49	0.40
1:A:151:GLY:O	1:A:155:VAL:HG23	2.21	0.40
1:A:673:THR:HA	1:A:676:ASP:CB	2.51	0.40
1:A:710:ALA:HB3	1:A:713:ILE:HG23	2.03	0.40
1:B:86:ALA:O	1:B:89:PHE:HB3	2.21	0.40
1:B:294:ILE:O	1:B:298:ILE:HG13	2.21	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	660/729 (90%)	645 (98%)	15 (2%)	0	100	100
1	B	667/729 (92%)	651 (98%)	15 (2%)	1 (0%)	51	83
All	All	1327/1458 (91%)	1296 (98%)	30 (2%)	1 (0%)	51	83

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	714	TRP

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	475/554 (86%)	469 (99%)	6 (1%)	69	82
1	B	479/554 (86%)	475 (99%)	4 (1%)	81	89
All	All	954/1108 (86%)	944 (99%)	10 (1%)	76	86

All (10) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	20	TYR
1	A	181	PHE
1	A	240	TYR
1	A	289	HIS
1	A	309	PHE

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Mol	Chain	Res	Type
1	A	310	PHE
1	B	181	PHE
1	B	240	TYR
1	B	309	PHE
1	B	310	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	351	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 13 ligands modelled in this entry, 10 are monoatomic - leaving 3 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	2PN	A	806	2	8,8,8	2.60	6 (75%)	8,13,13	1.58	2 (25%)
4	SO4	B	807	-	4,4,4	0.15	0	6,6,6	0.08	0
3	2PN	B	806	2	8,8,8	2.67	6 (75%)	8,13,13	1.42	1 (12%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	2PN	A	806	2	-	1/2/6/6	-
3	2PN	B	806	2	-	1/2/6/6	-

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	806	2PN	P2-O4	3.52	1.51	1.46
3	A	806	2PN	P2-O4	3.42	1.51	1.46
3	A	806	2PN	P1-O1	3.32	1.51	1.46
3	B	806	2PN	P1-O1	3.28	1.51	1.46
3	B	806	2PN	P2-N1	3.06	1.71	1.63
3	B	806	2PN	P1-N1	2.89	1.70	1.63
3	A	806	2PN	P1-N1	2.87	1.70	1.63
3	A	806	2PN	P2-N1	2.78	1.70	1.63
3	B	806	2PN	P1-O3	-2.11	1.51	1.56
3	A	806	2PN	P1-O3	-2.08	1.51	1.56
3	A	806	2PN	P1-O2	-2.03	1.51	1.56
3	B	806	2PN	P2-O6	-2.02	1.51	1.56

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	806	2PN	O4-P2-N1	-2.08	108.70	111.77
3	A	806	2PN	O6-P2-O4	-2.06	108.28	113.45
3	B	806	2PN	O6-P2-O4	-2.05	108.29	113.45

There are no chirality outliers.

All (2) torsion outliers are listed below:

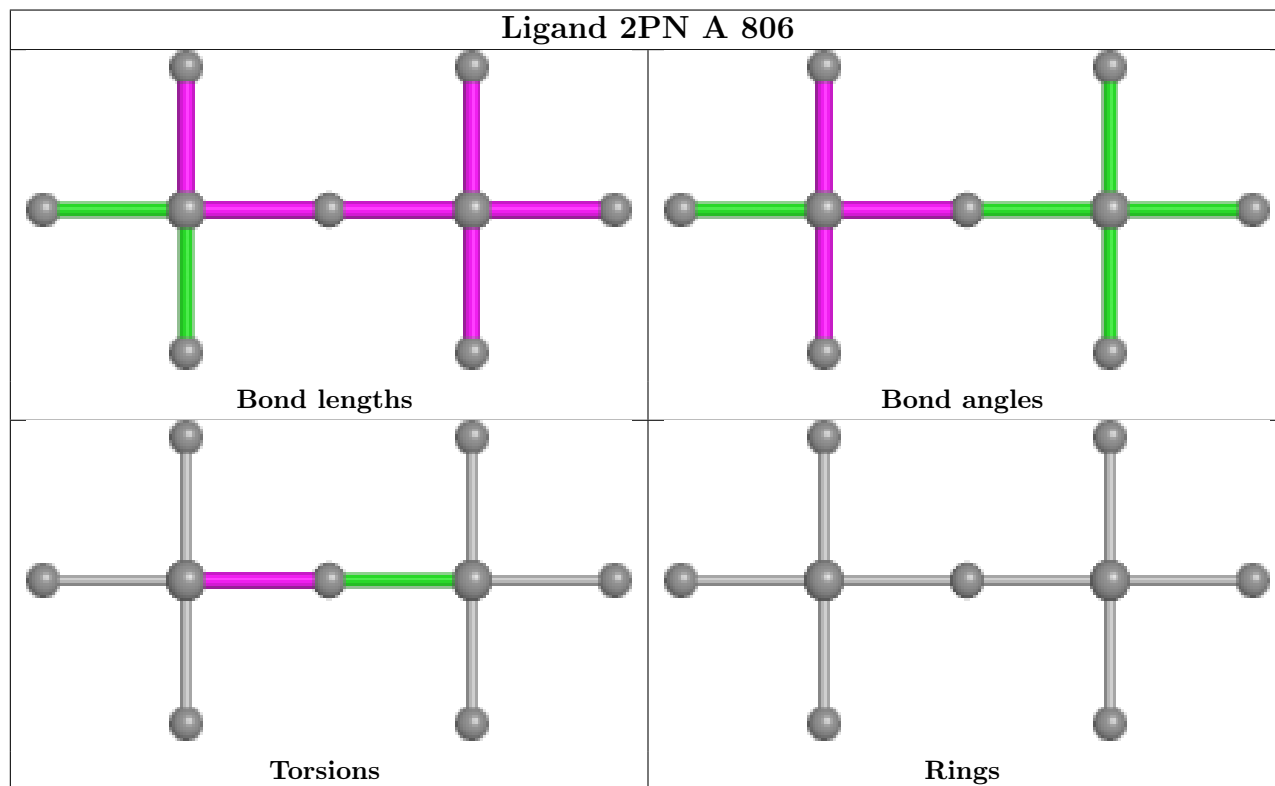
Mol	Chain	Res	Type	Atoms
3	A	806	2PN	P1-N1-P2-O4
3	B	806	2PN	P1-N1-P2-O4

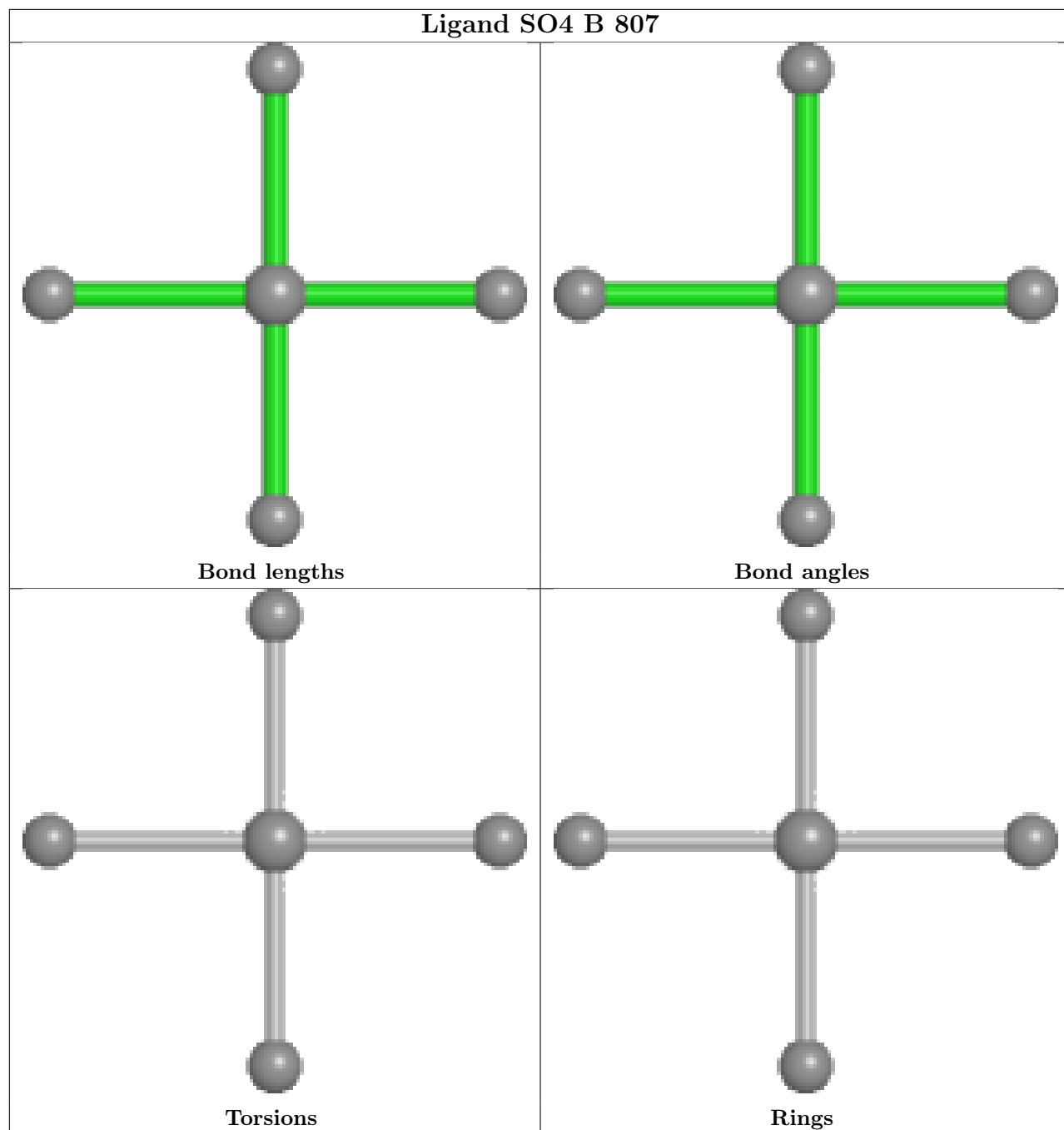
There are no ring outliers.

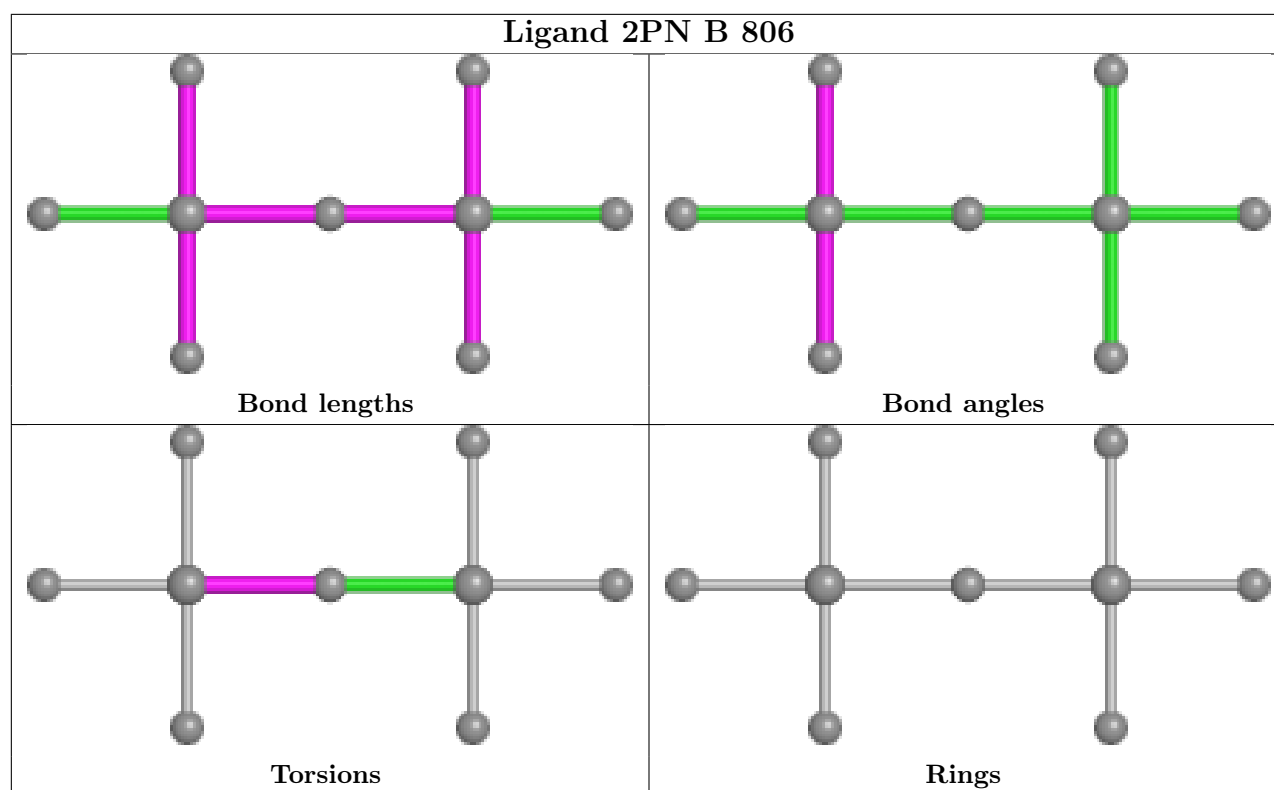
No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

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







5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	676/729 (92%)	-0.53	2 (0%) 94 91	64, 103, 128, 141	0
1	B	681/729 (93%)	-0.41	2 (0%) 94 91	68, 111, 138, 150	0
All	All	1357/1458 (93%)	-0.47	4 (0%) 94 91	64, 107, 135, 150	0

All (4) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	255	GLY	3.0
1	B	162	ASP	2.8
1	A	158	SER	2.8
1	A	320	SER	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
2	MG	B	803	1/1	0.86	0.17	95,95,95,95	0

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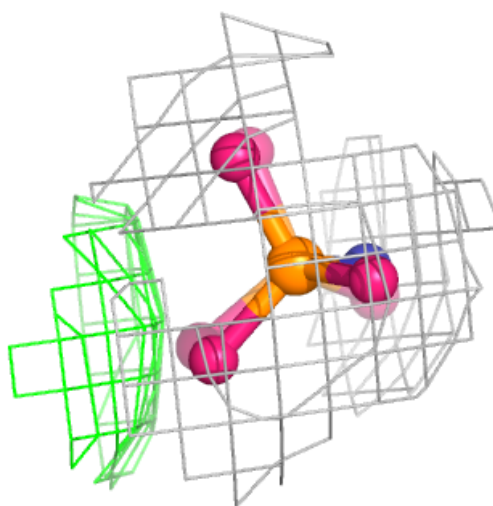
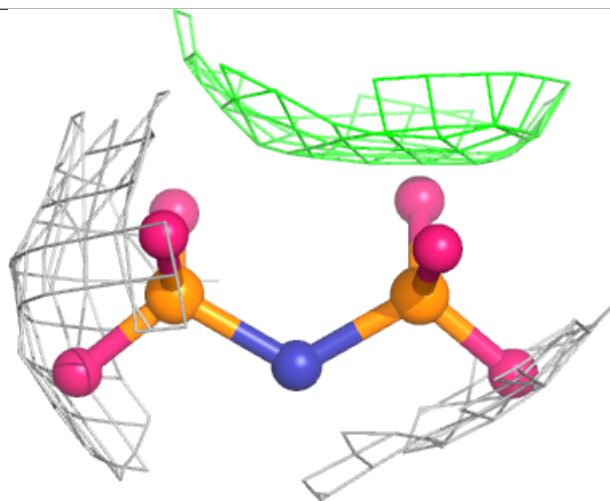
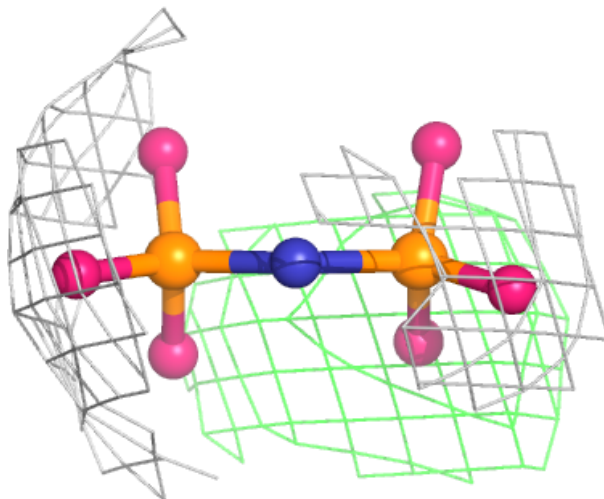
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	MG	B	801	1/1	0.87	0.25	88,88,88,88	0
2	MG	A	802	1/1	0.89	0.16	103,103,103,103	0
2	MG	A	805	1/1	0.90	0.22	91,91,91,91	0
2	MG	A	801	1/1	0.93	0.23	83,83,83,83	0
3	2PN	B	806	9/9	0.93	0.13	107,108,109,111	0
2	MG	B	804	1/1	0.94	0.10	106,106,106,106	0
2	MG	A	804	1/1	0.94	0.11	101,101,101,101	0
2	MG	B	802	1/1	0.95	0.07	108,108,108,108	0
3	2PN	A	806	9/9	0.96	0.15	96,98,100,100	0
2	MG	B	805	1/1	0.96	0.21	101,101,101,101	0
4	SO4	B	807	5/5	0.97	0.20	89,90,90,90	0
2	MG	A	803	1/1	0.98	0.14	87,87,87,87	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

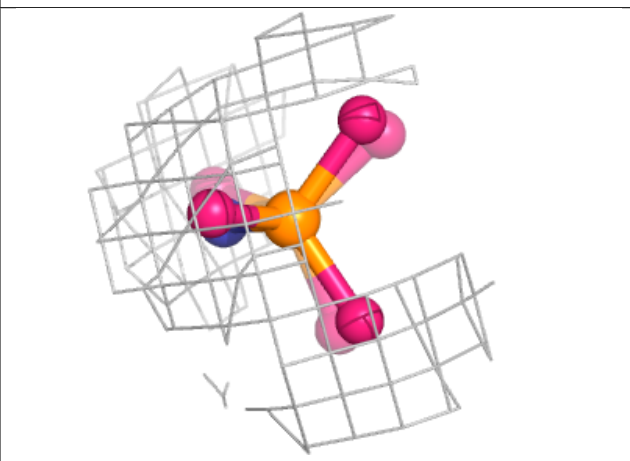
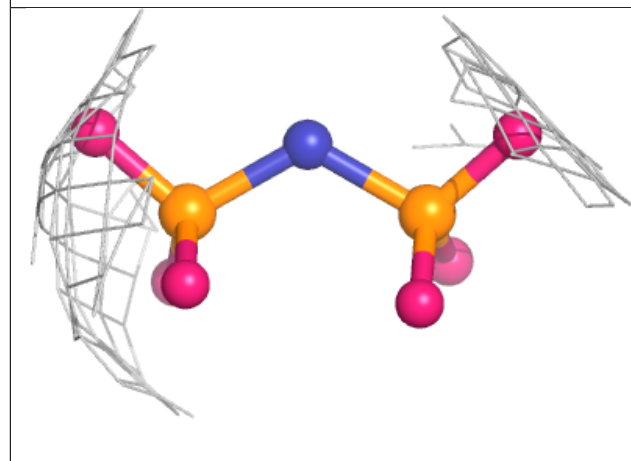
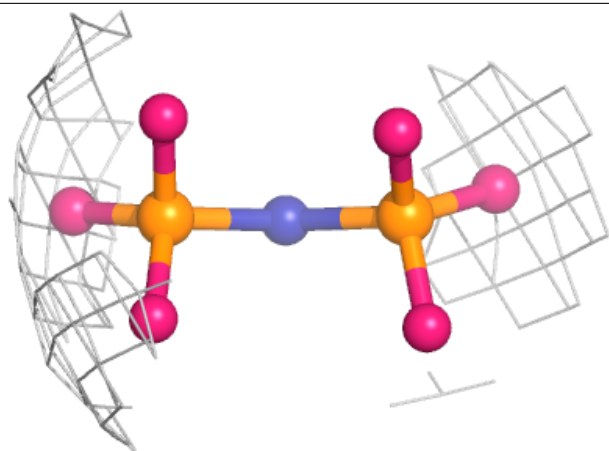
Electron density around 2PN B 806:

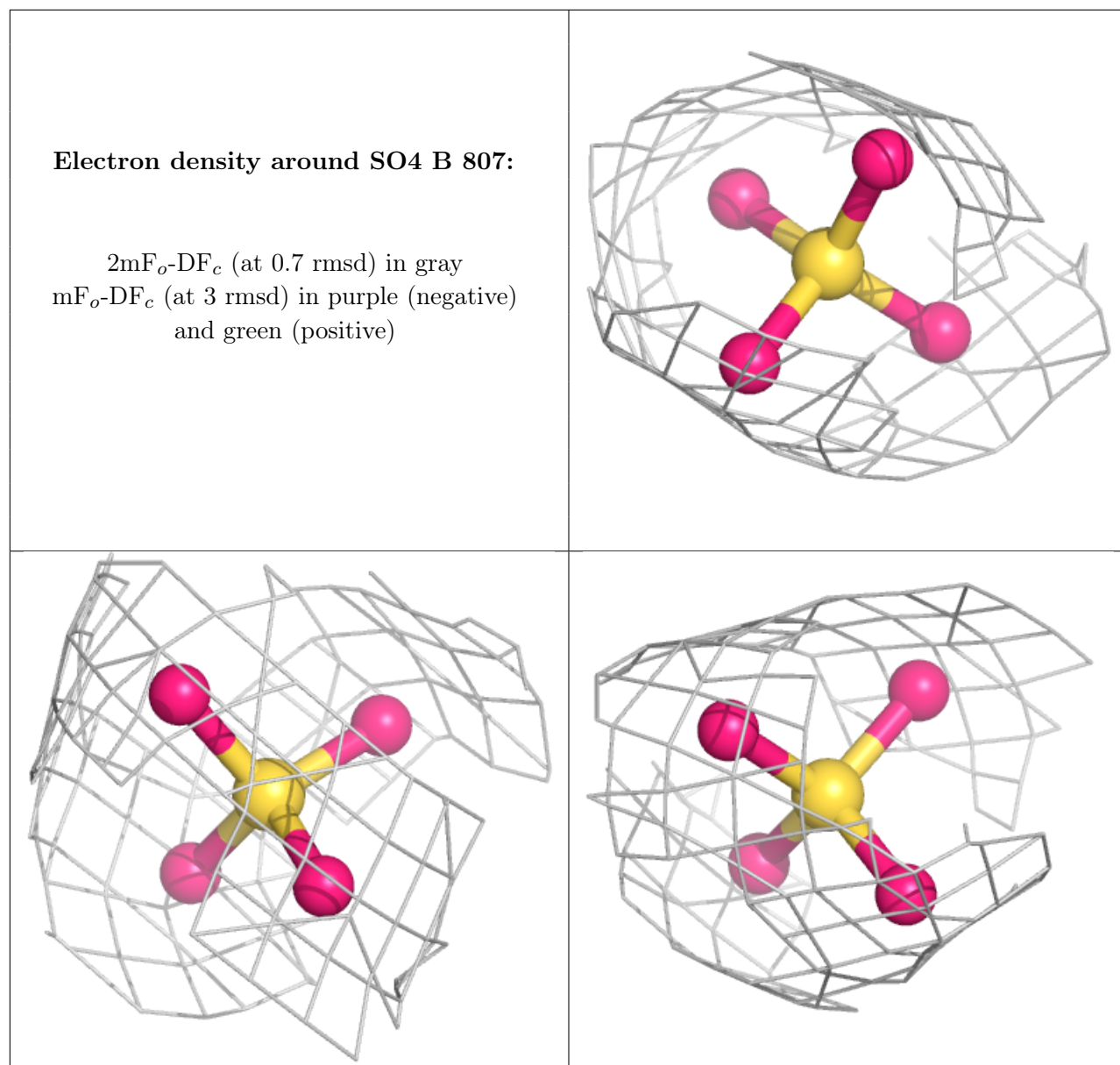
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around 2PN A 806:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





6.5 Other polymers [i](#)

There are no such residues in this entry.