Table VII Ligand abbreviations

Guidelines for the construction and use of ligand abbreviations are given in Section IR-4.4.4 and their use in the formulae of coordination complexes is described in Section IR-9.2.3.4. Abbreviations are listed in alphabetical order but those beginning with a numeral are listed by the first letter of the abbreviation (*e.g.* 2,3,2-tet appears under the letter 't').

Structural formulae of selected ligands are shown in Table VIII (numbered according to the present Table).

Number and abbreviation	*Systematic name*	*Other name (from which abbreviation derived)*
1. 4-abu	4-aminobutanoato	
2. Ac	acetyl	
3. acac	2,4-dioxopentan-3-ido	acetylacetonato
4. acacen	2,2'-[ethane-1,2-diylbis(azanylylidene)]bis(4-oxopentan-3-ido)	bis(acetylacetonato)ethylenediamine
5. ade	1*H*-purin-6-amine	adenine
6. ado	9-β-D-ribofuranosyl-9*H*-purin-6-amine	adenosine
7. adp	adenosine 5'-diphosphato(3–)	
8. aet	2-aminoethanethiolato	
9. ala	2-aminopropanoato	alaninato
10. ama	2-aminopropanedioato	aminomalonato
11. amp	adenosine 5'-phosphato(2–)	adenosine monophosphato

12. [9]aneN_3 (also tacn)	1,4,7-triazonane	1,4,7-triazacyclononane
13. [12]aneN_4 (also cyclen)	1,4,7,10-tetraazacyclododecane	
14. [l4]aneN_4 (also cyclam)	1,4,8,11-tetraazacyclotetradecane	
15. [18]aneP_4O_2	1,10-dioxa-4,7,13,16-tetraphosphacyclooctadecane	
16. [9]aneS_3	1,4,7-trithionane	1,4,7-trithiacyclononane
17. [12]aneS_4	l,4,7,10-tetrathiacyclododecane	
18. arg	2-amino-5-carbamimidamidopentanoato	argininato
19. asn	2,4-diamino-4-oxobutanoato	asparaginato
20. asp	2-aminobutanedioato	aspartato
21. atmp	[nitrilotris(methylene)]tris(phosphonato)(6–)	aminotris(methylenephosphonato)
22. atp	adenosine 5'-triphosphato(4–)	
23. 2,3-bdta	2,2',2",2'"-(butane-2,3-diyldinitrilo)tetraacetato	
24. benzo-15-crown-5	2,3,5,6,8,9,11,12-octahydro-1,4,7,10,13-benzopentaoxacyclo-pentadecine	
25. big	bis(carbamimidoyl)azanido	biguanid-3-ido
26. biim	2,2'-bi(1*H*-imidazole)-1,1'-diido	2,2'-biimidazolato
27. binap	1,1'-binaphthalene-2,2'-diylbis(diphenylphosphane)	
28. bn	butane-2,3-diamine	
29. bpy	2,2'-bipyridine	

30. 4,4'-bpy	4,4'-bipyridine	
31. Bu	butyl	
32. bzac	1,3-dioxo-1-phenylbutan-2-ido	benzoylacetonato
33. bzim	benzimidazol-2-ido	
34. Bz	benzyl	
35. bztz	1,3-benzothiazole	
36. cat	benzene-1,2-diolato	catecholato
37. cbdca	cyclobutane-l,l-dicarboxylato	
38. cdta	2,2',2",2'"-(cyclohexane-1,2-diyldinitrilo)tetraacetato	
39. C_5H_4Me	methylcyclopentadienyl	
40. chxn (also, dach)	cyclohexane-1,2-diamine	
41. cit	2-hydroxypropane-l,2,3-tricarboxylato	citrato
42. C_5Me_5 [1]	pentamethylcyclopentadienyl	
43. cod	cycloocta-1,5-diene	
44. cot	cycloocta-1,3,5,7-tetraene	
45. Cp	cyclopentadienyl	
46. cptn	cyclopentane-1,2-diamine	
47. 18-crown-6	1,4,7,10,13,16-hexaoxacyclooctadecane	

48. crypt-211	4,7,13,18-tetraoxa-1,10-diazabicyclo[8.5.5]icosane	cryptand 211
49. crypt-222	4,7,13,16,21,24-hexaoxa-1,10-diazabicyclo[8.8.8]hexacosane	cryptand 222
50. Cy	cyclohexyl	
cyclam (see [14]aneN_4, No. 14)		
cyclen (see [12]aneN_4, No. 13)		
51. cys	2-amino-3-sulfanylpropanoato	cysteinato
52. cyt	4-aminopyrimidin-2(1*H*)-one	cytosine
53. dabco	1,4-diazabicyclo[2.2.2]octane	
dach (see chxn, No. 40)		
54. dbm	1,3-dioxo-1,3-diphenylpropan-2-ido	dibenzoylmethanato
55. dea	2,2'-azanediylbis(ethanolato)	diethanolaminato
56. depe	ethane-1,2-diylbis(diethylphosphane)	1,2-bis(diethylphosphino)ethane
57. diars	benzene-1,2-diylbis(dimethylarsane)	
58. dien	*N*-(2-aminoethyl)ethane-1,2-diamine	diethylenetriamine
59. [14]1,3-dieneN$_4$	1,4,8,11-tetraazacyclotetradeca-1,3-diene	
60. diop	[2,2-dimethyl-1,3-dioxolane-4,5-diylbis(methylene)]bis(diphenylphosphane)	
61. diox	1,4-dioxane	
62. dipamp	ethane-1,2-diylbis[(2-methoxyphenyl)phenylphosphane]	'dimer of phenylanisylmethylphosphine'

63. dma	*N*,*N*-dimethylacetamide	dimethylacetamide
64. dme	1,2-dimethoxyethane	
65. dmf	*N*,*N*-dimethylformamide	
66. dmg	butane-2,3-diylidenebis(azanolate)	dimethylglyoximato
67. dmpe	ethane-1,2-diylbis(dimethylphosphane)	1,2-bis(dimethylphosphino)ethane
68. dmpm	methylenebis(dimethylphosphane)	bis(dimethylphosphino)methane
69. dmso	(methanesulfinyl)methane	dimethyl sulfoxide
70. dpm	2,2,6,6-tetramethyl-3,5-dioxoheptan-4-ido	dipivaloylmethanato
71. dppe	ethane-1,2-diylbis(diphenylphosphane)	1,2-bis(diphenylphosphino)ethane
72. dppf	1,1'-bis(diphenylphosphanyl)ferrocene	
73. dppm	methylenebis(diphenylphosphane)	bis(diphenylphosphino)methane
74. dppp	propane-1,3-diylbis(diphenylphosphane)	1,3-bis(diphenylphosphino)propane
75. dtmpa	[(phosphonatomethyl)azanediylbis(ethane-2,1-diyl)dinitrilobis(methylene)]tetrakis(phosphonato)(10–)	diethylenetriaminepentakis(methylenephosphonato)
76. dtpa	2,2',2",2'"-[(carboxylatomethyl)azanediylbis(ethane-2,1-diyl)dinitrilo]tetraacetato	diethylenetriaminepentaacetato
77. ea	2-aminoethanolato	ethanolaminato
78. edda	2,2'-[ethane-1,2-diylbis(azanediyl)]diacetato	ethylenediaminediacetato
79. edta	2,2',2",2'"-(ethane-1,2-diyldinitrilo)tetraacetato	ethylenediaminetetraacetato
80. edtmpa	[ethane-1,2-diyldinitrilotetrakis(methylene)]tetrakis(phosphonato)(8–)	ethylenediaminetetrakis(methylenephosphonato)

81. egta	2,2',2",2'"-[ethane-1,2-diylbis(oxyethane-2,1-diylnitrilo)]tetraacetato	ethylene glycol-bis(2-aminoethyl)-*N*,*N*,*N*',*N*'-tetraacetic acid
82. en	ethane-1,2-diamine	
83. Et	ethyl	
84. Et_2dtc	*N*,*N*-diethylcarbamodithioato	*N*,*N*-diethyldithiocarbamato
85. fod	6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-dioxooctan-4-ido	
86. fta	l,1,l-trifluoro-2,4-dioxopentan-3-ido	trifluoroacetylacetonato
87. gln	2,5-diamino-5-oxopentanoato	glutaminato
88. glu	2-aminopentanedioato	glutamato
89. gly	aminoethanoato, or 2-aminoacetato	glycinato
90. gua	2-amino-9*H*-purin-6(*1H*)-one	guanine
91. guo	2-amino-9-β-D-ribofuranosyl-9*H*-purin-6(1*H*)-one	guanosine
92. hdtmpa	[(hexane-1,6-diyldinitrilo)tetrakis(methylene)]tetrakis(phosphonato)(8–)	hexamethylenediaminetetrakis(methylenephosphonato)
93. hedp	1-hydroxyethane-1,1-bis(phosphonato)(4–)	1-hydroxyethane-1,1-diphosphonato
94. hfa	1,1,1,5,5,5-hexafluoropentane-2,4-dioxopentan-3-ido	hexafluoroacetylacetonato
95. his	2-amino-3-(imidazol-4-yl)propanoato	histidinato
96. hmpa	*N*,*N*,*N*',*N*',*N*",*N*"-hexamethylphosphoric triamide	
97. hmta	1,3,5,7-tetraazatricyclo[3.3.1.1^{3,7}]decane	hexamethylenetetraamine
98. ida	2,2'-azanediyldiacetato	iminodiacetato

99. ile	2-amino-3-methylpentanoato	isoleucinato
100. im	imidazol-1-ido	
101. isn	pyridine-4-carboxamide	isonicotinamide
102. leu	2-amino-4-methylpentanoato	leucinato
103. lut	2,6-dimethylpyridine	lutidine
104. lys	2,6-diaminohexanoato	lysinato
105. mal	2-hydroxybutanedioato	malato
106. male	(*Z*)-butenedioato	maleato
107. malo	propanedioato	malonato
108. Me	methyl	
109. 2-Mepy	2-methylpyridine	
110. met	2-amino-4-(methylsulfanyl)butanoato	methioninato
111. mnt	1,2-dicyanoethene-1,2-dithiolato	maleonitriledithiolato
112. napy	1,8-naphthyridine	
113. nbd	bicyclo[2.2.1]hepta-2,5-diene	norbornadiene
114. nia	pyridine-3-carboxamide	nicotinamide
115. nmp	*N*-methylpyrrolidine	
116. nta	2,2',2"-nitrilotriacetato	

117. oep	2,3,7,8,12,13,17,18-octaethylporphyrin-21,23-ido	
118. ox	ethanedioato	oxalato
119. pc	phthalocyanine-29,31-diido	
120. 1,2-pdta	2,2',2",2'"-(propane-1,2-diyldinitrilo)tetraacetato	1,2-propylenediaminetetraacetato
121. 1,3-pdta	2,2',2",2'"-(propane-1,3-diyldinitrilo)tetraacetato	1,3-propylenediaminetetraacetato
122. Ph	phenyl	
123. phe	2-amino-3-phenylpropanoato	phenylalaninato
124. phen	1,10-phenanthroline	
125. pip	piperidine	
126. pn	propane-1,2-diamine	
127. pmdien	2,2'-(methylazanediyl)bis(*N*,*N*-dimethylethanamine)	*N*,*N*,*N*',*N*",*N*"-pentamethyldiethylenetriamine
128. ppIX	2,18-bis(carboxyethyl)-3,7,12,17-tetramethyl-8,13-divinylporphyrin-21,23-diido	protoporphyrinato IX
129. pro	pyrrolidine-2-carboxylato	prolinato
130. ptn	pentane-2,4-diamine	
131. py	pyridine	
132. pyz	pyrazine	
133. pz	1*H*-pyrazol-1-ido	
134. qdt	quinoxaline-2,3-dithiolato	

135. quin	quinolin-8-olato	
136. sal	2-hydroxybenzoato	salicylato
137. salan	2-[(phenylimino)methyl]phenolato	salicylideneanilinato
138. saldien	2,2'-[azanediylbis(ethane-2,1-diylazanylylidenemethanylylidene)]diphenolato	bis(salicylidene)diethylenetriaminato
139. salen	2,2'-[ethane-1,2-diylbis(azanylylidenemethanylylidene)]diphenolato	bis(salicylidene)ethylenediaminato
140. salgly	*N*-(2-oxidobenzylidene)glycinato	salicylideneglycinato
141. salpn	2,2'-[propane-1,2-diylbis(azanylylidenemethanylylidene)]diphenolato	bis(salicylidene)propylenediaminato
142. saltn	2,2'-[propane-1,3-diylbis(azanylylidenemethanylylidene)]diphenolato	bis(salicylidene)trimethylenediaminato
143. sdta	2,2',2",2'"-(1,2-diphenylethane-1,2-diyldinitrilo)tetraacetato	stilbenediaminetetraacetato
144. sep [2]	1,3,6,8,10,13,16,19-octaazabicyclo[6.6.6]icosane	
145. ser	2-amino-3-hydroxypropanoato	serinato
146. stien [3]	1,2-diphenylethane-1,2-diamine	
tacn (see [9]aneN_3, No. 12)		
147. tap	propane-1,2,3-triamine	1,2,3-triaminopropane
148. tart	2,3-dihydroxybutanedioato	tartrato
149. tcne	ethenetetracarbonitrile	tetracyanoethylene
150. tcnq	2,2'-(cyclohexa-2,5-diene-1,4-diylidene)bis(propane-1,3-dinitrile)	tetracyanoquinodimethane
151. tdt	4-methylbenzene-1,2-dithiolato	

152. tea	2,2',2"-nitrilotris(ethanolato)	triethanolaminato
153. terpy	2,2':6',2"-terpyridine	terpyridine
154. 2,3,2-tet	*N*,*N*'-bis(2-aminoethyl)propane-1,3-diamine	1,4,8,11-tetraazaundecane
155. 3,3,3-tet	*N*,*N*' -bis(3-aminopropyl)propane-1,3-diamine	1,5,9,13-tetraazatridecane
156. tetren	*N*,*N*' -(azanediyldiethane-2,1-diyl)bis(ethane-1,2-diamine)	tetraethylenepentamine
157. tfa	trifluoroacetato	
158. thf	oxolane	tetrahydrofuran
159. thiox	1,4-oxathiane	thioxane
160. thr	2-amino-3-hydroxybutanoato	threoninato
161. tht	thiolane	tetrahydrothiophene
162. thy	5-methylpyrimidine-2,4(1*H*,3*H*)-dione	thymine
163. tmen	*N*,*N*,*N*',*N*' -tetramethylethane-1,2-diamine	
164. tmp	5,10,15,20-tetrakis(2,4,6-trimethylphenyl)porphyrin-21,23-diido	5,10,15,20-tetramesitylporphyrin-21,23-diido
165. tn	propane-1,3-diamine	trimethylenediamine
166. Tol (*o*-, *m*- or *p*-)	2-, 3- or 4-methylphenyl	tolyl (*o*-, *m*- or *p*-)
167. Tp	hydridotris(pyrazolido-*N*)borato(1–), or tris(1*H*-pyrazol-1-yl)boranuido	hydrotris(pyrazolyl)borato
168. Tp' [4]	hydridotris(3,5-dimethylpyrazolido-*N*)borato(1–)	hydrotris(3,5-dimethylpyrazolyl)borato
169. tpp	5,10,15,20-tetraphenylporphyrin-21,23-diido	

170. tren	*N*,*N*-bis(2-aminoethyl)ethane-1,2-diamine	tris(2-aminoethyl)amine
171. trien	*N*,*N*'-bis(2-aminoethyl)ethane-1,2-diamine	triethylenetetramine
172. triphos [5]	[(phenylphosphanediyl)bis(ethane-2,1-diyl)]bis(diphenylphosphane)	
173. tris	2-amino-2-(hydroxymethyl)propane-1,3-diol	aminotris(hydroxymethyl)methane
174. trp	2-amino-3-(1*H*-indol-3-yl)propanoato	tryptophanato
175. tsalen	2,2'-[ethane-1,2-diylbis(azanylylidenemethanylylidene)]dibenzenethiolato	bis(thiosalicylidene)ethylenediaminato
176. ttfa	4,4,4-trifluoro-1,3-dioxo-1-(2-thienyl)butan-2-ido	thenoyltrifluoroacetonato
177. ttha	[2,2',2",2"'-(ethane-1,2-diylbis{[(carboxylatomethyl)azanediyl]ethane-2,1-diyl}nitrilo)]tetraacetato	triethylenetetraminehexaacetato
178. ttp	5,10,15,20-tetrakis(4-methylphenyl)porphyrin-21,23-diido	5,10,15,20-tetra-*p*-tolylporphyrin-21,23-diido
179. tu	thiourea	
180. tyr	2-amino-3-(4-hydroxyphenyl)propanoato	tyrosinato
181. tz	1,3-thiazole	thiazole
182. ura	pyrimidine-2,4(1*H*,3*H*)-dione	uracil
183. val	2-amino-3-methylbutanoato	valinato

Footnotes

1. The use of the abbreviation Cp^* for pentamethylcyclopentadienyl is discouraged. It can lead to confusion because the asterisk, *, is also used to represent an excited state, an optically active substance, a radioactive substance, *etc*.

2. The abbreviation derives from the non-systematic name sepulchrate which incorrectly implies that the ligand is anionic.

3. The abbreviation derives from the non-systematic name stilbenediamine which incorrectly implies the presence of a C=C double bond in the ligand.

4. The use of Tp' is preferred to Tp^* for the reasons given in Note 1. A general procedure for abbreviating substituted hydridotris(pyrazolido-*N*)borate ligands has been proposed {see S. Trofimenko, *Chem. Rev.*, **93**, 943 (1993)}. For example, Tp' becomes Tp^{Me_2}, the superscript denoting the methyl groups at the 3- and 5-positions of the pyrazolyl rings.

5. The abbreviation triphos should not be used for the ligand $PhP(CH_2PPh_2)_3$.