







# IDAC Materials Property Database Release01 Contents

ANSYS Workbench V9.0 and V10.0 Materials Database (See 250 materials list detailed on next page)

Example of a typical data entry below:

Aluminium 2090-T3		
<input type="checkbox"/> <b>Structural</b>		Add/Remove Properties
<input type="checkbox"/> Young's Modulus	76000 MPa	
<input type="checkbox"/> Poisson's Ratio	0.34	
<input type="checkbox"/> Density	2.59e-006 kg/mm	
<input type="checkbox"/> Thermal Expansion	2.3e-005 1/°C	
<input type="checkbox"/> Tensile Yield Strength	210. MPa	
<input type="checkbox"/> Compressive Yield Strength	210. MPa	
<input type="checkbox"/> Tensile Ultimate Strength	320. MPa	
<input type="checkbox"/> Compressive Ultimate Strength	0. MPa	
<input type="checkbox"/> <b>Thermal</b>		Add/Remove Properties
<input type="checkbox"/> Thermal Conductivity	8.8e-002 W/mm·°C	
<input type="checkbox"/> Specific Heat	1203. J/kg·°C	

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1. Aluminium - 201-T4 Sand Cast	69. Diamond - Natural	135. Mercury	189. Silicon Nitride
2. Aluminium - 1100-H12	70. Diamond - Synthetic	136. Molybdenum	190. Silver - Sterling Cold Drawn
3. Aluminium - 1145-O	71. Duranickel(R) 301	137. Monel(R) 400	191. Silver
4. Aluminium - 1199-H18	72. Gold - Fine Commercial Cast	138. Nickel - 200	192. Steel - AISI 1006
5. Aluminium - 1350-H12	73. Gold	139. Nickel - 899A High Purity Strip	193. Steel - AISI 1010 Cold Draw
6. Aluminium - 2011-T3	74. Incoloy Alloy 020	140. Nickel - Annealed	194. Steel - AISI 1020
7. Aluminium - 2024-O	75. Incoloy Alloy 028	141. Nickel Alloy - K300 Permannickel	195. Steel - AISI 302 Stainless
8. Aluminium - 2090-T3	76. Incoloy Alloy 25-6MO	142. Nickel Silver	196. Steel - AISI 303 Stainless
9. Aluminium - 2117-T4	77. Incoloy Alloy 27-7MO	143. Nickel	197. Steel - AISI 304 Stainless
10. Aluminium - 2219-T31	78. Incoloy Alloy 330	144. Palladium	198. Steel - AISI 304
11. Aluminium - 2618-T61	79. Incoloy Alloy 800	145. Perspex - GS Acrylic Cast Sheet	199. Steel - AISI 309 Stainless
12. Aluminium - 3005-O	80. Incoloy Alloy 803	146. Perspex - XT Acrylic Sheet 0X00	200. Steel - AISI 330 Stainless
13. Aluminium - 3105-H12	81. Incoloy Alloy 825	147. Pewter - Annealed Sheet	201. Steel - AISI 347 Stainless
14. Aluminium - 355 - T71 Cast	82. Incoloy Alloy 832	148. Pewter - Cold Rolled Sheet	202. Steel - AISI 409
15. Aluminium - 4032-T6	83. Incoloy Alloy 864	149. Plastics - ABS Polycarbonate	203. Steel - AISI 420
16. Aluminium - 5005-H12	84. Incoloy Alloy 890	150. Plastics - ABS	204. Steel - AISI 440
17. Aluminium - 5154-O	85. Incoloy Alloy 903	151. Plastics - Acrylic (High Impact)	205. Steel - AISI Type 651 Stainless
18. Aluminium - 5254-H112	86. Incoloy Alloy 907	152. Plastics - Acrylic Cast	206. Steel - AISI Type O2Oil Hard
19. Aluminium - 5454-H112	87. Incoloy Alloy 908	153. Plastics - Acrylic Extruded	207. Steel - Alloy Steel
20. Aluminium - 5652-O	88. Incoloy Alloy 909	154. Plastics - Acrylic Polycarbonate	208. Steel - Austenitic Stainless
21. Aluminium - 6101-T6	89. Incoloy Alloy 925	155. Plastics - Delrin(R)	209. Steel - Austenitic Stainless
22. Aluminium - 6201-T6	90. Incoloy Alloys 800H 800HT	156. Plastics - Fluorocarbon PFA	210. Steel - Carpenter 20Cb-3 Stainless
23. Aluminium - 6463-T5	91. Inconel Alloy 050	157. Plastics - HDPE Molded	211. Steel - Cast Alloy Steel
24. Aluminium - 7001-T75	92. Inconel Alloy 22	158. Plastics - LDPE	212. Steel - Cast Carbon Steel
25. Aluminium - 7076-T61	93. Inconel Alloy 230	159. Plastics - Nylon 12	213. Steel - Chrome Stainless
26. Aluminium - 7175-T66	94. Inconel Alloy 600	160. Plastics - Nylon 46 Unreinforced	214. Steel - Gall-Tough Stainless
27. Aluminium - 7475-T61	95. Inconel Alloy 601	161. Plastics - Nylon 6;10	215. Steel - High Strength Stainless
28. Aluminium - Pure	96. Inconel Alloy 601GC	162. Plastics - Nylon 6;6	216. Steel - Mild Steel
29. Aluminum - 1060 Alloy	97. Inconel Alloy 603XL	163. Plastics - Nylon Flexible Alloy	217. Steel - Tool Oil Hardening
30. Aluminum - 1100 - H12	98. Inconel Alloy 617	164. Plastics - Nylon Super Tough Grade	218. Steel - Plain Carbon Steel
31. Aluminum - 1345 Alloy	99. Inconel Alloy 625	165. Plastics - PA Type 6	219. Steel - SIRIUS HeatRes
32. Aluminum - 2014 Alloy	100. Inconel Alloy 625LCF	166. Plastics - PBT Unreinforced	220. Steel - SOLEIL A2 13% Cr Martensitic
33. Aluminum - 2024 Alloy	101. Inconel Alloy 686	167. Plastics - PBT	221. Steel - Stainless Steel 440
34. Aluminum - 3003 Alloy	102. Inconel Alloy 690	168. Plastics - PC High Viscosity	222. Steel - Structural Steel
35. Aluminum - 6061 Alloy	103. Inconel Alloy 693	169. Plastics - PE High Density	223. Steel - URANUS 35N 23.04 Duplex
36. Amalgam - Dental	104. Inconel Alloy 706	170. Plastics - PE Low-Medium Density	224. Steel - VIRGO 39 Martensitic
37. Bone - Cortical	105. Inconel Alloy 718SPF	171. Plastics - Phenolic	225. Steel - Wrought Stainless Steel
38. Bone - Dentin	106. Inconel Alloy 725	172. Plastics - Polycarb PET Polyester	226. Tin - Antimonial Solder
39. Bone - Enamel	107. Inconel Alloy 740	173. Plastics - Polyester Film	227. Tin - ASTM B23 Alloy 1
40. Bone - Human - Long Axis	108. Inconel Alloy 751	174. Plastics - Polyether Ester	228. Tin - Pure
41. Bone - Trabecular	109. Inconel Alloy 783	175. Plastics - POM Acetal Copolymer	229. Titanium Alloy
42. Brass	110. Inconel Alloy C276	176. Plastics - POM	230. Titanium Grade 1 Annealed
43. Bronze - Aluminum	111. Inconel Alloy G-3	177. Plastics - PP Copolymer	231. Titanium Grade 2
44. Bronze - Leaded	112. Inconel Alloy HX	178. Plastics - PS Medium	232. Titanium Grade 3
45. Bronze - Manganese	113. Iridium - Cold Drawn	179. Plastics - PTFE Molded	233. Titanium Grade 4
46. Bronze - SAE 40	114. Iron - Ductile Iron	180. Plastics - PVC 0.007 Plasticized	234. Titanium Grade 7
47. Bronze - Tin Bronze	115. Iron - Gray Cast Iron	181. Plastics - PVC High Impact	235. Titanium Grade 8
48. Ceramic - A-Glass Fibre	116. Iron - Malleable Cast Iron	182. Plastics - PVC Plasticized	236. Titanium
49. Ceramic - Alumina AD85	117. Iron	183. Plastics - PVC Rigid	237. Tungsten - CMW 1000
50. Ceramic - Alumina AD90	118. Lead UNS 51120 Chemical	184. Plastics - Thermoplas Polyurethane	238. Tungsten - CMW ELKON
51. Ceramic - Alumina AD94	119. Lead UNS L50042 Sand Cast	185. Platinum CP Grade Anneal Drawn	239. Tungsten
52. Ceramic - Alumina AD96	120. Lead UNS L51123	186. Platinum CP Grade Hard Drawn	240. Wood - African Mahogany
53. Ceramic - Alumina AD995	121. Lead	187. Rubber	241. Wood - American Beech
54. Ceramic - Alumina AD998	122. Lexan(R)	188. Silica Glass	242. Wood - American Spruce
55. Ceramic - Alumina FG995	123. Magnesium Alloy		243. Wood - White Ash
56. Ceramic - Corning Glass	124. Magnesium AM100A-F Cast		244. Zinc - Alloy General
57. Ceramic - Limestone	125. Magnesium AM50A		245. Zinc Alloy - Die Cast
58. Ceramic - Mullite S2	126. Magnesium Annealed Sheet		246. Zinc Alloy - Hot Rolled
59. Ceramic - Sandstone	127. Magnesium AS21X1 Die Cast		247. Zinc Alloy - Zn-22Al - Superplastic
60. Ceramic - Zirconia TTZ	128. Magnesium AZ10A-F Extruded		248. Zinc Alloy - Zn-4Al-0.015Mg
61. Ceramic - Zirconia YZTP	129. Magnesium AZ80A-T5		249. Zinc
62. Ceramic - Zirconia ZTA	130. Magnesium AZ91D-F Cast		250. Zirconium
63. Ceramic Alumina	131. Magnesium Extruded		
64. Ceramic Porcelain	132. Magnesium HK31A-T6 Cast		
65. Cobalt	133. Magnesium HM31A-F		
66. Copper - O2 Free Silver Bearing	134. Magnesium ZC63-T6		
67. Copper- Silver Bearing			
68. Copper			