

MMPDS-01
31 January 2003

Table 6.3.5.0(c). Design Mechanical and Physical Properties of Inconel 718 Bar and Forging

Specification	AMS 5662 and AMS 5663							AMS 5664		
	Bar							Forging	Bar	Forging
Form	Solution treated and aged per indicated specification									
Condition										
Thickness, in.	0.250-1.000	1.001-1.500	1.501-2.000	2.001-2.500	2.501-3.000	3.001-4.000	4.001-5.000	≤5.000	≤10.000	≤10.000
Basis	S	S	S	S	S	S	S	S	S	S
Mechanical Properties:										
<i>F_m</i> , ksi:										
L	185	185	185	185	185	185	185	185	185	180
LT ^a	180	180	180	180	180	180	180	180	180	180
ST ^a .....	...	...	...	...	180	180	180	...	...	180
<i>F_{0.2}</i> , ksi:										
L	150	150	150	150	150	150	150	150	150	150
LT ^a	150	150	150	150	150	150	150	150	150	150
ST ^a .....	...	...	...	...	146	150	150	...	...	150
<i>F_{cy}</i> , ksi:										
L	156	156	156	156	156	156	156	...	...	...
ST .....	...	...	...	156	156	156	156	...	...	...
<i>F_{su}</i> , ksi:										
L	111	114	116	118	119	121	123	...	...	...
<i>F_{bru}</i> ^b , ksi:										
(e/D = 1.5)	309	309	309	309	309	309	309	...	...	...
(e/D = 2.0)	394	394	394	394	394	394	394	...	...	...
<i>F_{bry}</i> ^b , ksi:										
(e/D = 1.5)	216	216	216	216	216	216	216	...	...	...
(e/D = 2.0)	257	257	257	257	257	257	257	...	...	...
<i>e</i> , percent:										
L	12	12	12	12	12	12	12	12	10	12
LT ^b	6	6	6	6	6	6	6	10	10	12
ST ^b .....	...	...	...	...	6	6	6	...	10	12
<i>RA</i> , percent:										
L	15	15	15	15	15	15	15	15	12	15
LT ^b	8	8	8	8	8	8	8	12	12	15
ST ^b .....	...	...	...	...	8	8	8	...	12	15
<i>E</i> , 10 ³ ksi:										
						29.4				
<i>E_c</i> , 10 ³ ksi:										
						30.9				
<i>G</i> , 10 ³ ksi										
						11.4				
<i>μ</i>										
						0.29				
Physical Properties:										
<i>ω</i> , lb/in. ³										
						0.297				
<i>C</i> , <i>K</i> , and <i>α</i>										
						See Figure 6.3.5.0				

a Applicable providing LT or ST direction is ≥2.500 inches.

b Bearing values are “dry pin” values per Section 1.4.7.1.

Table 6.3.5.0(d). Design Mechanical and Physical Properties of Inconel 718 Investment Castings

Specification	AMS 5383
Form	Investment Casting
Condition	ST
Location within casting	Any
Thickness, in.	≤0.500
Basis	S
Mechanical Properties:	
F_{tu} , ksi	120
F_{ly} , ksi	105
F_{cy} , ksi	105
F_{su} , ksi	88 ^a
F_{bru}^b , ksi:	
(e/D = 1.5)	202
(e/D = 2.0)	248
F_{bry}^b , ksi:	
(e/D = 1.5)	161
(e/D = 2.0)	188
e , percent	3
RA , percent	8
E , 10 ³ ksi	29.4
E_c , 10 ³ ksi	30.9
G , 10 ³ ksi	11.4
μ	0.29
Physical Properties:	
ω , lb/in. ³	0.297
C , K , and α	See Figure 6.3.5.0

a Determined in accordance with ASTM Procedure B769.

b Bearing values are “dry pin” values per Section 1.4.7.1.