

Table 3.7.6.0(e₂). Design Mechanical and Physical Properties of 7075 Aluminum Alloy Die Forging—Continued

Specification	AMS 4141, AMS-A-22771, and AMS-QQ-A-367								AMS 4141		AMS 4147, AMS-A-22771, and AMS-QQ-A-367		
	Die forging												
	T73 ^{a,b}										T7352		
	≤1.000		1.001- 2.000		2.001- 3.000		3.001- 4.000		4.001- 5.000	5.001- 6.000	≤3.000		3.001- 4.000
	A	B	A	B	A	B	A	B	S	S	A	B	S
Mechanical Properties ^d :													
<i>F_{tu}</i> , ksi:													
L	66 ^d	71	66 ^d	71	66	69	64 ^d	69	62	61	66 ^c	69	64
T ^f	62 ^g	...	62 ^g	...	62 ^g	...	61 ^g	...	59	58	62 ^g	...	61
<i>F_{ty}</i> , ksi:													
L	56 ^d	61	56	59	56	59	55 ^d	59	53	51	56	59	53
T ^f	53 ^g	...	53 ^g	...	53 ^g	...	52 ^g	...	51	50	51 ^g	...	49
<i>F_{cy}</i> , ksi:													
L	58	63	58	61	58	61	57	61	...	...	56	59	53
T ^f	55	60	55	59	55	59	54	58	...	...	55	60	53
<i>F_{su}</i> , ksi	39	42	39	42	39	41	38	41	...	...	39	41	38
<i>F_{bru}</i> ^h , ksi:													
(e/D = 1.5)	96	103	96	103	96	100	93	100	...	...	96	100	93
(e/D = 2.0)	125	135	125	135	125	131	122	131	...	...	125	131	122
<i>F_{bry}</i> ^h , ksi:													
(e/D = 1.5)	78	85	78	83	78	83	77	83	...	...	78	83	74
(e/D = 2.0)	90	98	90	94	90	94	88	94	...	...	90	94	85
<i>e</i> , percent (S-basis):													
L	7	...	7	...	7	...	7	...	7	6	7	...	7
T ^f	3	...	3	...	3	...	2	...	2	2	3	...	2
<i>E</i> , 10 ³ ksi	10.0												
<i>E_c</i> , 10 ³ ksi	10.4												
<i>G</i> , 10 ³ ksi	3.8												
<i>μ</i>	0.33												
Physical Properties:													
<i>ω</i> , lb/in. ³	0.101												
<i>C</i> , <i>K</i> , and <i>α</i>	See Figure 3.7.6.0												

- a When die forgings are machined before heat treatment, the mechanical properties are applicable, provided the as-forged thickness is not greater than twice the thickness at the time of heat treatment.
- b Design allowables were based upon data obtained from testing die forgings, heat treated by suppliers, and supplied in T73 temper.
- c Thickness at the time of heat treatment.
- d Rounded *T₉₉* values for T73 temper ≤1.000 in., *F_{tu}* = 68 ksi, for *F_{ty}* = 57 ksi; 1.001-2.000 in., *F_{tu}* = 68 ksi; 3.001-4.000 in., *F_{tu}* = 66 ksi, for *F_{ty}* = 56 ksi.
- e Rounded *T₉₉* values for T7352 temper, *F_{tu}* ≤1.000 inch = 67 ksi.
- f When AMS-A-22771 or AMS-QQ-A-367 apply, T indicates any grain direction not within ±15° of being parallel to the forging flow lines. *F_{cy}* (T) values are based upon short transverse (ST) test data. When AMS 4141 applies, T indicates any grain direction within ±15° of being perpendicular to the forging flow lines.
- g Specification value. T tensile properties are presented on an S basis only.
- h Bearing values are “dry pin” values per Section 1.4.7.1.