

James M. Gere

Mechanics of Materials

FIFTH EDITION



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BOREALIS EXHIBIT 1061

CONVERSIONS BETWEEN U.S. CUSTOMARY UNITS AND SI UNITS

U.S. Customary unit		Times conversion factor		Equals SI unit	
		Accurate	Practical		
Acceleration (linear) foot per second squared inch per second squared	ft/s ²	0.3048*	0.305	meter per second squared	m/s ²
	in./s ²	0.0254*	0.0254	meter per second squared	m/s ²
Area square foot square inch	ft ²	0.09290304*	0.0929	square meter	m ²
	in. ²	645.16*	645	square millimeter	mm ²
Density (mass) slug per cubic foot	slug/ft ³	515.379	515	kilogram per cubic meter	kg/m ³
Density (weight) pound per cubic foot pound per cubic inch	lb/ft ³	157.087	157	newton per cubic meter	N/m ³
	lb/in. ³	271.447	271	kilonewton per cubic meter	kN/m ³
Energy; work foot-pound inch-pound kilowatt-hour British thermal unit	ft-lb	1.35582	1.36	joule (N·m)	J
	in.-lb	0.112985	0.113	joule	J
	kWh	3.6*	3.6	megajoule	MJ
	Btu	1055.06	1055	joule	J
Force pound kip (1000 pounds)	lb	4.44822	4.5	newton (kg·m/s ²)	N
	k	4.44822	4.5	kilonewton	kN
Force per unit length pound per foot pound per inch kip per foot kip per inch	lb/ft	14.5939	14.6	newton per meter	N/m
	lb/in.	175.127	175	newton per meter	N/m
	k/ft	14.5939	14.6	kilonewton per meter	kN/m
	k/in.	175.127	175	kilonewton per meter	kN/m
Length foot inch mile	ft	0.3048*	0.305	meter	m
	in.	25.4*	25.4	millimeter	mm
	mi	1.609344*	1.61	kilometer	km
Mass slug	lb-s ² /ft	14.5939	14.6	kilogram	kg
Moment of a force; torque pound-foot pound-inch kip-foot kip-inch	lb-ft	1.35582	1.36	newton meter	N·m
	lb-in.	0.112985	0.113	newton meter	N·m
	k-ft	1.35582	1.36	kilonewton meter	kN·m
	k-in.	0.112985	0.113	kilonewton meter	kN·m

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Cover Photo: The Gateway Arch, St. Louis, Missouri U.S.A.
Located in the riverfront area on the west bank of the Mississippi River in downtown St. Louis, the arch symbolizes the role of St. Louis as the historic "gateway to the West." The arch has an inverted catenary shape and reaches a height of 192 meters (630 feet). Its cross sections are equilateral triangles and its outer surface is constructed of stainless steel. Visitors may ride a tram inside the arch, starting from a boarding area below ground level and rising to a viewing room at the top. The windows in the 20-meter (65-foot) long viewing room are barely visible in the photo.

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