

THAT'S WHAT ALLOYS ARE MADE OF ?

Something's wrong with this infographic...
See if you can puzzle it out

Key to Elements			
Al	Aluminum	Co	Cobalt
Mg	Magnesium	Mn	Manganese
Si	Silicon	K	Potassium
Cu	Copper	Ag	Silver
Cr	Chromium	Al	Aluminum
Sn	Tin	Au	Gold
Pb	Lead	N	Nitrogen
Zn	Zinc	V	Vanadium
Fe	Iron	O	Oxygen
C	Carbon	Mo	Molybdenum
P	Phosphorus	S	Sulfur
Ni	Nickel	Nb	Niobium
Ti	Titanium	Ta	Tantalum
Be	Beryllium		
Metals		Nonmetals	
Metalloids		Other	

6061 Aluminum (T6)

Al	98%	Mg	1%	Developed in 1935. Originally called "Alloy 61S"
Si		Cu	<1%	

Excellent corrosion resistance, workability, and joining characteristics

Marine Bronze

Cu	85%	Sn	5%	Used in industrial bushings, frames, struts, gears, valve stems, and cams
Pb	5%	Zn	5%	

Corrosion resistant, thermally conductive, produces little friction

Stainless Steel

Fe	89%	Cr	10%-30%	Mechanical properties can be enhanced by adding Ni, Mb, Ti, Nb, Mn
C	<1.2%			

Infinitely recyclable, environmentally neutral, does not leach compounds, over 150 unique alloys available

Nickel PTFE (Plating)

P	2%-14%	Used in applications ranging from aerospace to healthcare and culinary				
Ni	Alloyed with	Ti	Cu	Al	Fe	Cr

Co-deposition coating on metal substrate. Low friction, solves sticking, galling, and drag problems

Beryllium Copper

Cu	98%	Be	2%	Used in springs, cryogenic equipment, and percussion instruments
Co		Ni	<1%	

High-strength, non-magnetic, non-sparking. Ductile, weldable, and machinable.

(High) Carbon Steel

Fe	98%	Used in cutting tools, springs, high-strength wires, and dies			
C		Mn	Si	Cu	<2%

Hard, high-strength, wear-resistant

Diecast Aluminum (A380)

Al	80%-89.5%	Si	7.5%-9.5%	Cu	3%-4%	Mg, Mn, Ni <1%
Sn	<3.5%	Zn	<3%	Fe	<1.3%	

Versatile, corrosion-resistant, temperature-tolerant, lightweight and strong

Solder

Sn	60%	Pb	39%	Alloys	1%
----	-----	----	-----	--------	----

Useful in electronics and plumbing. Lead-free options use Tin, Silver, and Copper and other materials.

Used to create a permanent bond between metal workpieces

Silver Plating

K	Ag	(CN) ₂	In high-humidity environments, "red plague" galvanic corrosion can occur
---	----	-------------------	--

Primary material has the highest known electrical and thermal conductivity of all metals

Gold Plating

C ₂	Au	K	N ₂	Au 68.2%
----------------	----	---	----------------	----------

A barrier material, usually Nickel, is deposited over a copper substrate before plating with this material.

Primary material has high electrical conductivity, is workable, and corrosion-resistant

Titanium Alloy

Ti	90%	Al	6%	V	4%
Fe	.25% max	O	.2% max	As strong as steel, half the weight	

Lightweight, high strength, low-corrosion, low electrical/thermal conductivity, paramagnetic

Chromoly Steel

Fe	98%	Cr	0.8%-1.1%	Its name comes from two of its major alloying elements		
Mo	Mn	C	Si	P	S	<2%

Excellent strength-to-weight ratio, used in aircraft parts

Super Duplex

Fe	60%	Cr	24%-26%	Ni	6%-8%
Mo	3%-5%	Mn	1.2% max	First developed for use in the paper industry	

High corrosion resistance and mechanical strength

Inconel (X-750)

Ni	>70%	Cr	14%-17%	Fe	5%-9%
Ti	2.25%-2.75%	Nb & Ta	0.7%-1.2%	Co, Mn, Cu, Al, Si, C, S ≤ 1%	

Oxidation corrosion resistant, suited for extreme pressure and heat environments

Kovar

Fe	54%	Ni	29%	Co	17%
Si	Cr	C	<1%	Thermal expansion similar to glass	

Invented to meet the need for reliable glass-to-metal sealing

FR4

Glass Fiber	Glass fiber epoxy resin laminate with Bromine added to make the material flame-retardant.
Epoxy Resin	

Strong, lightweight, flame-retardant, good electrical properties and low moisture absorption

Puzzle answers published at:
www.glenair.com/qwikconnect