

GT ZIRKON

A R 9

About

GT Zirkon is an extravagant sans serif workhorse. By applying techniques used to optimize type for small sizes in a refined way, this American Gothic typeface family blends the worlds of rational tool and ornamentation.

Designed by

Tobias Rechsteiner

With help from

Reto Moser & Noël Leu

Details

Released in 2018

Available in 16 Styles

For Desktop, Web, App Licensing

Grilli Type

GT Zirkon

Roman

Italic

Ultra Light

Aa Aa

Thin

Bb Bb

Light

Cc Cc

Book

Dd Dd

Regular

Ee Ee

Medium

Ff Ff

Bold

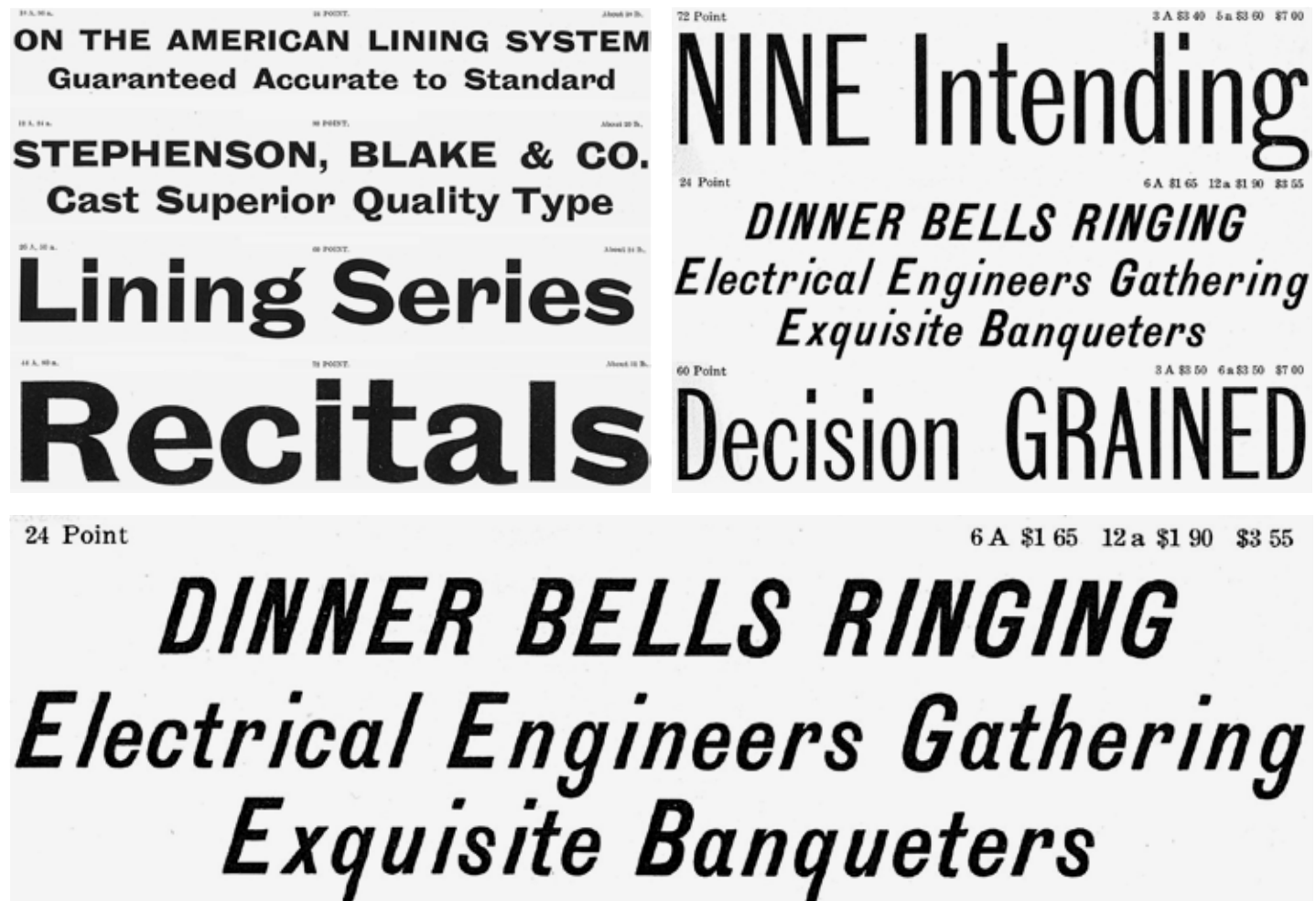
Gg Gg

Black

Hh Hh

GT Zirkon mixes historical and contemporary ideas in this sans serif design. Created by Tobias Rechsteiner over a nine year period, this typeface may sparkle like a gem stone – but we think of it more like a heavy-duty tool with exquisite utility.

It unites aspects typically associated with typefaces optimized for body copy sizes with more exuberant details usually found in display type.



Design Features

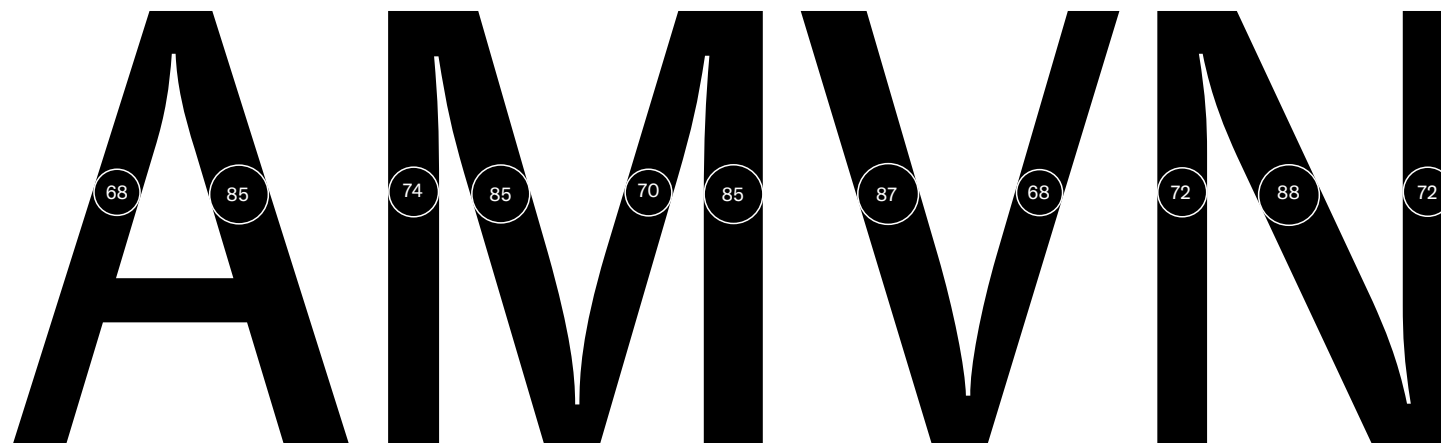
Inktraps

The typeface uses ink traps in both expected and unexpected places – for horizontal curves in the “R”, in the “K” and “8”, to make the ear of the “g” stand out, and so on. As such, ink traps are used both to aid performance in small sizes and as a stylistic device in general. And it turns out that ink traps, originally used to improve performance at small print sizes, work just as well on screens with their pixel grid.



Contrast

GT Zirkon sports a very high contrast between thin and thick strokes for a gothic typeface. Supporting the sparkling effect introduced by the tapered curves and ink traps, this feature leads to a light texture.



Design Features

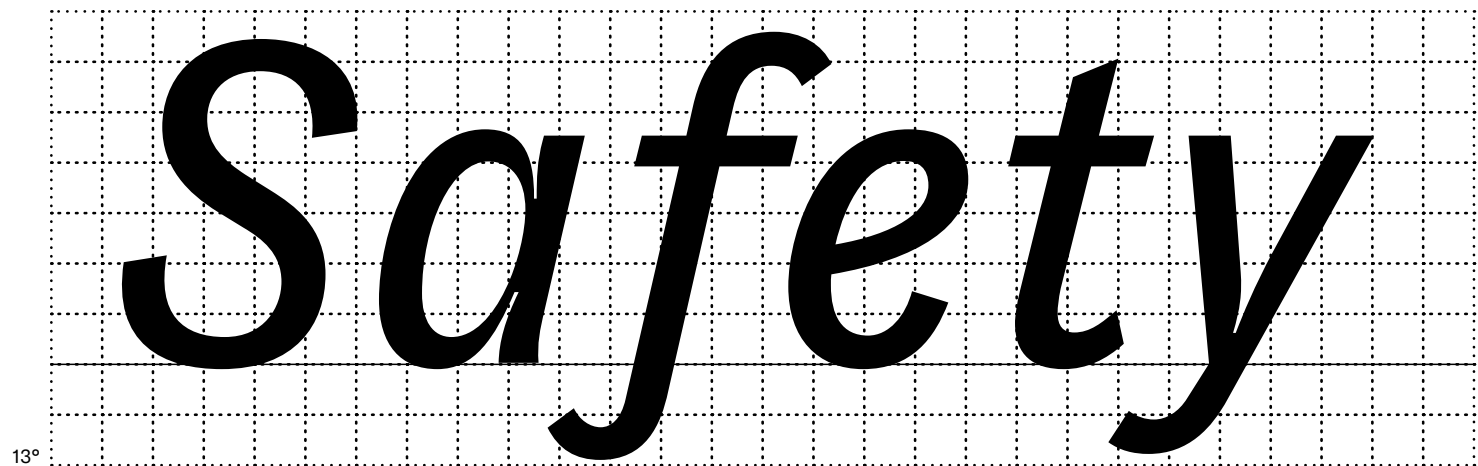
Metrics

Across the typeface, traditionally wide letters are more narrow and narrow characters are wider, which leads to relatively uniform character widths and a very regular rhythm. This differs markedly from more common sans serif designs that allow for much more variety in their horizontal proportions. The graphic shows GT Zirkon compared to the more traditional grotesk horizontal proportions.



R	e	f	i	t	m	e	n	t
628	519	396	270	405	801	519	558	405
R	e	f	i	t	m	e	n	t
722	556	278	222	278	801	556	556	278

Italic

The roman styles are complemented with the more free-flowing approach of the italic. However, designing italic counterparts for sans serifs can be tricky. With a design that comfortably sits between a mechanical slanting of an oblique and the calligraphic nature of a true italic. GT Zirkon sports a 13° italic angle – a feature rarely seen in sans serifs.



Grilli Type

OpenType Features	OFF	ON	OFF	ON
Case sensitive Forms	ȚiQUE?! (HEIGHT)	ȚiQUE?! (HEIGHT)	Capital spacing	CAPITAL CAPITAL
Language Feature Romanian Moldavian	și societății ȘI SOCIETĂȚII	și societății ȘI SOCIETĂȚII	Small Caps	Pearl 123 PEARL 123
Tabular Figures	29.11.1789	29.11.1789	Small Caps from Capitals	Pearl 123 PEARL 123
Old Style Figures	29.11.1789	29.11.1789	Discretionary Ligatures	www.test.com www.test.com
Slashed Zero	1,000,000	1,000,000	SS01 Alternate Arrows	→ ↗ ↖ ↘ ↙ ↚ ↛ 
Automatic Fractions	5/32 kg	5/32 kg	SS02 Alternate "f"	frequency frequency 
Superscript Subscript Superior	Note ¹ H ₂ O 13 ⁽²⁺⁸⁾ H ^{abc}	Note ¹ H ₂ O 13 ⁽²⁺⁸⁾ H ^{abc}		
Ordinal Indicator	1o primo 1a prima	1 ^o primo 1 ^a prima		

Upper case latin

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
P	Q	R	S	T	U	V	W	X	Y	Z	Á	Ă	Â	Ä
P	Q	R	S	T	U	V	W	X	Y	Z	Aacute	Abreve	Acircumflex	Adieresis
Æ	Æ	À	Ā	Ą	Å	Ã	Ć	Č	Ç	Ĉ	Ċ	Ǿ	Ð	É
AE	AEacute	Agrave	Amacron	Aogonek	Aring	Atilde	Cacute	Ccaron	Ccedilla	Ccircumflex	Cdotaccent	Dcaron	Dcroat	Eacute
Ě	Ě	Ê	Ë	È	È	Ē	Ę	Ð	Ǧ	Ĝ	Ğ	Ġ	Ĥ	Ħ
Ebreve	Ecaron	Ecircumflex	Edieresis	Edotaccent	Egrave	Emacron	Eogonek	Eth	Gbreve	Gcircumflex	Gcommaac	Gdotaccent	Hbar	Hcircumflex
Í	Ĭ	Î	Ï	İ	Ì	IJ	Ī	Ĵ	Ĩ	Ĵ	Ɔ	Ł	Ł'	Ł
Iacute	Ibreve	Icircumflex	Idieresis	Idotaccent	Igrave	IJ	Imacron	Iogonek	Itilde	Jcircumflex	Kcomma	Lacute	Lcaron	Lcommaac
Ł	Ł	Ń	Ň	Ņ	Ñ	Ŋ	Ó	Ŏ	Ô	Ö	Œ	Ò	Ó	Ō
Ldot	Lslash	Nacute	Ncaron	Ncomma	Ntilde	Eng	Oacute	Obreve	Ocircumflex	Odieresis	OE	Ograve	Ohungarum	Omacron
Ø	Ø	Õ	Ŕ	Ř	Ŗ	Ś	Š	Ş	Ŝ	Ş	Ʀ	Ť	Ț	Ț
Oslash	Oslashacute	Otilde	Racute	Rcaron	Rcommaac	Sacute	Scaron	Scedilla	Scircumflex	Scommaac	Tbar	Tcaron	Tcedilla	Tcommaac
Þ	Ú	Û	Û	Ü	Ù	Ú	Ū	Ů	Ů	Ũ	Ŵ	Ŷ	Ÿ	Ŷ
Thorn	Uacute	Ubreve	Ucircumflex	Udieresis	Ugrave	Uhungarum	Umacron	Uogonek	Uring	Utilde	Wacute	Wcircumfle	Wdieresis	Wgrave
Ý	ÿ	ÿ	ÿ	Ž	Ž	Ž								
Yacute	Ycircumflex	Ydieresis	Ygrave	Zacute	Zcaron	Zdotaccent								

Lower case latin

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
p	q	r	s	t	u	v	w	x	y	z	á	ă	â	ä
p	q	r	s	t	u	v	w	x	y	z	aacute	abreve	acircumflex	adieresis
æ	æ	à	ā	ą	å	ã	ć	č	ç	ĉ	ċ	d'	đ	é
ae	aacute	agrave	amacron	aogonek	aring	atilde	cacute	ccaron	ccedilla	ccircumflex	cdotaccent	dcaron	dcroat	eacute
ě	ě	ê	ë	è	è	ē	ę	ğ	ğ	ğ	ğ	ħ	ĥ	í
ebreve	ecaron	ecircumflex	edieresis	edotaccent	egrave	emacron	eogonek	gbreve	gcircumflex	gcommaac	gdotaccent	hbar	hcircumflex	iacute
ï	î	ï	ı	ı	ì	ij	ī	ı	ĩ	ĵ	ĵ	ķ	κ	í
ibreve	icircumflex	idieresis	idotaccent	idotless	igrave	ij	imacron	iogonek	itilde	jcircumflex	jdotless	kcommaac	kgreenland	lacute
l'	l,	l.	ł	ń	ň	ň	ŋ	ñ	ŋ	ó	ö	ô	ö	œ
lcaron	lcommaac	ldot	lslash	nacute	napostrophe	ncaron	ncommaac	ntilde	eng	oacute	obreve	ocircumflex	odieresis	oe
ò	ő	ō	ø	ø	õ	í	ř	ŕ	ś	š	ş	ș	ş	ț
ograve	ohungarum	omacron	oslash	oslashacute	otilde	racute	rcaron	rcommaac	sacute	scaron	scedilla	scircumflex	scommaac	tbar
ţ	ţ	ţ	þ	ú	ů	û	ü	ù	ú	ū	ų	ű	ũ	wacute
tcaron	tcedilla	tcommaac	thorn	uacute	ubreve	ucircumflex	udieresis	ugrave	uhungarum	umacron	uogonek	uring	utilde	wacute
ŵ	ẅ	ẁ	ý	ÿ	ÿ	ÿ	ž	ž	ž					
wcircumflex	wdieresis	wgrave	yacute	ycircumflex	ydieresis	ygrave	zacute	zcaron	zdotaccent					

Other

ß	&	`	´	ˆ	˜	ˇ	¨	ˉ	˘	◊	“	▪	¸	˘
germandbls	ampersand	grave	acute	circumflex	tilde	caron	dieresis	macron	breve	ring	hungarumlaut	dotaccent	cedilla	ogonek
,	;	:	-	!	¡	?	¿	‘	’	“	”	,
comma	semicolon	colon	period	ellipsis	hyphen	exclam	exclamdown	question	questiondown	quoteleft	quoteright	quotedblleft	quotedblright	quotesingl
„	<	>	/		–	—	•	()	[]	*	†	~
quotedblbase	guilsinglleft	guilsinglright	slash	bar	endash	emdash	bullet	parenleft	parenright	bracketleft	bracketright	asterisk	dagger	asciitilde
¡	\	_	'	"	@	©	®	™	\$	¢	£	f	¥	€
brokenbar	backslash	underscore	quotesingle	quotedbl	at	copyright	registered	trademark	dollar	cent	sterling	florin	yen	euro
₩	¤	/	¼	½	¾	%	‰	∅	0	1	2	3	4	5
won	currency	fraction	onequarter	onehalf	threequarte	percent	perthousan	zero.zero	zero	one	two	three	four	five
6	7	8	9	μ	'	ð	Δ	Ω	π	·	{	}	«	»
six	seven	eight	nine	mu	apostrophe	eth	Delta	Omega	pi	periodcent	braceleft	braceright	guillemetlef	guillemetri
+	-	±	×	÷	=	<	>	°	≈	≥	∞	≤	¬	≠
plus	minus	plusminus	multiply	divide	equal	less	greater	degree	approx equ	greaterequ	infinity	lessequal	logicalnot	notequal
∫	∂	∏	√	∑	◊	¶	§	^	‡	f	ℬ	₿	₺	₹
integral	partialdiff	product	radical	summation	lozenge	paragraph	section	asciicircum	daggerdbl	f.ss02	bath	bitcoin	liraTurkish	ruble
₹	∅	Ω	Δ	μ	↑	↗	→	↘	↓	↙	←	↖	↔	↕
rupeeIndian	emtyset	Ohm	increment	micro	upArrow	northEastA	rightArrow	southEastA	downArrow	southWestA	leftArrow	northWestA	leftRightA	upDownA

Other

#	N _o	●	○	🚩	ℓ	e	∅	0	1	2	3	4	5	6
numersign	numero	blackCircle	whiteCircle	apple	literSign	estimated	zero.osf.zero	zero.osf	one.osf	two.osf	three.osf	four.osf	five.osf	six.osf
7	8	9	0	1	2	3	4	5	6	7	8	9	()
seven.osf	eight.osf	nine.osf	zero.sups	one.sups	two.sups	three.sups	four.sups	five.sups	six.sups	seven.sups	eight.sups	nine.sups	parenleft.s	parenright.s
=	+	-	0	1	2	3	4	5	6	7	8	9	()
equal.sups	plus.sups	minus.sups	zero.subs	one.subs	two.subs	three.subs	four.subs	five.subs	six.subs	seven.subs	eight.subs	nine.subs	parenleft.s	parenright.s
=	+	-	0	1	2	3	4	5	6	7	8	9	()
equal.subs	plus.subs	minus.subs	zero.numr	one.numr	two.numr	three.numr	four.numr	five.numr	six.numr	seven.numr	eight.numr	nine.numr	parenleft.s	parenright.s
=	+	-	0	1	2	3	4	5	6	7	8	9	()
equal.numr	plus.numr	minus.numr	zero.dnom	one.dnom	two.dnom	three.dnom	four.dnom	five.dnom	six.dnom	seven.dnom	eight.dnom	nine.dnom	parenleft.s	parenright.s
=	+	-	0	1	2	3	4	5	6	7	8	9	0	1
equal.dnom	plus.dnom	minus.dnom	zero.blackC	one.blackC	two.blackC	three.black	four.blackC	five.blackC	six.blackC	seven.black	eight.black	nine.blackC	zero.circled	one.circled
2	3	4	5	6	7	8	9	1/3	2/3	1/8	3/8	5/8	7/8	a
two.circled	three.circled	four.circled	five.circled	six.circled	seven.circled	eight.circled	nine.circled	onethrid	twothrids	oneeighths	threeeighths	fiveeighths	seveineighths	ordfeminine
0	A	B	C	D	E	F	G	H	I	J	K	L	M	N
ordmasculi	A.sc	B.sc	C.sc	D.sc	E.sc	F.sc	G.sc	H.sc	I.sc	J.sc	K.sc	L.sc	M.sc	N.sc
O	P	Q	R	S	T	U	V	W	X	Y	Z	Á	Ă	Â
O.sc	P.sc	Q.sc	R.sc	S.sc	T.sc	U.sc	V.sc	W.sc	X.sc	Y.sc	Z.sc	Aacute.sc	Abreve.sc	Acircumflex

Other

Ä	Æ	É	À	Ā	Ą	Å	Ã	Ć	Č	Ç	Ĉ	Ċ	Ď	Đ
Adieresis.sc	AE.sc	AEacute.sc	Agrave.sc	Amacron.sc	Aogonek.sc	Aring.sc	Atilde.sc	Cacute.sc	Ccaron.sc	Ccedilla.sc	Ccircumflex	Cdotaccent	Dcaron.sc	Dcroat.sc
É	Ě	Ě	Ê	Ë	È	È	Ē	Ę	Đ	Ǧ	Ĝ	Ğ	Ġ	Ĥ
Eacute.sc	Ebreve.sc	Ecaron.sc	Ecircumflex	Edieresis.sc	Edotaccent	Egrave.sc	Emacron.sc	Eogonek.sc	Eth.sc	Gbreve.sc	Gcircumflex	Gcommaac	Gdotaccent	Hbar.sc
Ĥ	Í	Ĭ	Î	İ	İ	Ì	IJ	Ī	Ĵ	Ĩ	Ĵ	Ꞥ	Í	Ľ
Hcircumflex	Iacute.sc	Ibreve.sc	Icircumflex	Idieresis.sc	Idotaccent	Igrave.sc	IJ.sc	Imacron.sc	Iogonek.sc	Itilde.sc	Jcircumflex	Kcommaac.sc	Lacute.sc	Lcaron.sc
Ł	Ł	Ł	Ń	Ń	Ń	Ñ	Ñ	Ó	Ŏ	Ô	Ö	Œ	Ò	Õ
Lcommaac	Ldot.sc	Lslash.sc	Nacute.sc	Ncaron.sc	Ncommaac.sc	Ntilde.sc	Eng.sc	Oacute.sc	Obreve.sc	Ocircumflex	Odieresis.sc	OE.sc	Ograve.sc	Ohungarum
Ō	Ø	Ø	Õ	Ŕ	Ř	Ŗ	Ś	Š	Ş	Ŝ	Ş	Ʀ	Ť	Ț
Omacron	Oslash.sc	Oslashacute	Otilde.sc	Racute.sc	Rcaron.sc	Rcommaac	Sacute.sc	Scaron.sc	Scedilla.sc	Scircumflex	Scommaac	Tbar.sc	Tcaron.sc	Tcedilla.sc
Ț	Þ	Ú	Û	Û	Ü	Ù	Ú	Ū	Ů	Ů	Ů	Ŵ	Ŷ	Ÿ
Tcommaac	Thorn.sc	Uacute.sc	Ubreve.sc	Ucircumflex	Udieresis.sc	Ugrave	Uhungarum	Umacron.sc	Uogonek.sc	Uring.sc	Utilde.sc	Wacute.sc	Wcircumfle	Wdieresis.sc
Ẁ	Ý	ÿ	ÿ	ÿ	Ẑ	Ž	Ž	0	1	2	3	4	5	6
Wgrave.sc	Yacute.sc	Ycircumflex	Ydieresis.sc	Ygrave.sc	Zacute.sc	Zcaron.sc	Zdotaccent	zero.sc	one.sc	two.sc	three.sc	four.sc	five.sc	six.sc
7	8	9	a	b	c	d	e	f	g	h	i	j	k	l
seven.sc	eight.sc	nine.sc	a.sups	b.sups	c.sups	d.sups	e.sups	f.sups	g.sups	h.sups	i.sups	j.sups	k.sups	l.sups
m	n	o	p	q	r	s	t	u	v	w	x	y	z	
m.sups	n.sups	o.sups	p.sups	q.sups	r.sups	s.sups	t.sups	u.sups	v.sups	w.sups	x.sups	y.sups	z.sups	

Technical Specifications

Supported Languages	Afrikaans, Albanian, Basque, Bosnian, Breton, Catalan, Croatian, Czech, Danish, Dutch, English, Esperanto, Estonian, Faroese, Fijian, Finnish, Flemish, French, Frisian, German, Greenlandic, Hawaiian, Hungarian, Icelandic, Indonesian, Irish, Italian, Latin, Latvian, Lithuanian, Malay, Maltese, Maori, Moldavian, Norwegian, Polish, Portuguese, Provençal, Romanian, Romany, Sámi (Inari), Sámi (Luli), Sámi (Northern), Sámi (Southern), Samoan, Scottish Gaelic, Slovak, Slovenian, Sorbian, Spanish, Swahili, Swedish, Tagalog, Turkish, Welsh	File Formats	Desktop: OTF Web: WOFF2, WOFF, TTF, EOT App: OTF
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GT Zirkon Ultra Light 9pt

History records the use of crystals as both functional and ornamental. The Gods of ancient myth wore them in their breastplates. Priests of many societies and brotherhoods, as keepers and preservers of lost prehistoric wisdom, often wore bejeweled amulets and plates, which acted as “*oracles*” and “*voicepieces*” from which advice was obtained. The Urim and Thummim stones of the Hebrew high priests were a prime example. *The Atlanteans* used crystals for healing, communication, weather control, record keepers, among other things. Tibetans used them to produce light. Mayans,

among others, used crystals in their statues.

John L. Stephens in his classic work on the Mayan civilization, *Incidents of Travel in Central America, Chiapas and Yucatan*, tells how in one small Mayan temple he discovered ‘a pedestal formed of a shining substance resembling glass’ around which he was told the ancient priests gathered and consulted pictures created in the ‘*black, transparent stone*.’ He wrote, ‘*A native informed me that their ancestors had known the gift of the vision stone, when his people were instructed in the arts of civilization.*’

GT Zirkon Ultra Light 14pt

A cut sliver of crystal can pick up a specified vibratory pattern; the silver can then be ‘*frozen*’ and subsequently ‘*unfrozen*’ later to playback the pattern. A complex sandwich of liquid crystal layers and mirrors act as light valves to create closed loops of light and moonlight signals, which correspond to a two alphabet system of information storage. *By such means, information can be stored with a density of 2,500-fold over that of conventional electrical-digital computers.* The first working model of the light and crystal computer is sched-

GT Zirkon Ultra Light 20pt

Author *George Hunt Williamson*, who believes that crystals played a significant role in past civilizations, expressed his opinion that crystals can think, and many standing stones have an ‘*intelligence within them*’. Masses of crystal flakes encased in a single stone may act as individual neurons passing along information from one flake to another and organize it, like a large crystal brain. Certain individual crystals, in particular diamonds and other precious stones, can hold conscious emotional energies from a bygone era, which may be triggered from time to time, affecting their owners. The best classic case of this is the famous *Hope*

GT Zirkon Ultra Light 80pt

MARSTON MARBLE

GT Zirkon Ultra Light Italic 147pt

Enstatite 9

GT Zirkon Ultra Light 260pt

AGGATE

GT Zirkon Thin 9pt

Cursed gems are the exception to the rule, however, for in most respects, gems and crystals are generally looked upon favorably, having properties for good luck, for healing, and in aiding in psychic abilities.

The positive magical quality of crystals impressed themselves upon humankind far back in antiquity, for we find among Neanderthal remains, dating back to 70,000 B.C., collections of quartz stones and stone balls made of quartz crystals. Pieces of crystal have also been found in megalithic cairns, and at *New Grange* in southern Ireland, tiny pebbles of

white granite quartz cover the entire mound above the energy-chamber. The Druids called certain colored crystal forms *ovus anguinum* or *glein neidr* - '*serpent eggs*' - who believed were created by etheric serpents of energy beneath the earth and conjugated together at the time of the midsummer sunrise. Such stones, worn about the neck, had the power of projecting one's auric field to favorably influence the aura and mind of anyone else who came within range. *Similarly*, they understood that wearing crystals over certain acupuncture points of the body aided in the

GT Zirkon Thin 14pt

On the Isle of *Skye near Ireland*, is a chapel dedicated to *St. Columbus*, and on the altar is a round crystalline blue stone held sacred to weather and health. Local fishermen, to appease contrary winds, bathe this stone with water and claim good results. The stone has also been applied to peoples' sides to relieve cramps. Among the *Australian* aborigines of north *Queensland* on the *Prosperine River*, quartz crystals are used by the shamans to cause rain to fall. At other times, in special initiation ceremonies the aboriginal shamans are sprinkled with quartz

GT Zirkon Thin 20pt

In crystal growth, combinations of light intensity, light color, electric current, sound, the direction of these, plus the shape and size (*frequency pattern*) of the container or room, will all affect the final characteristics and energy potentials of a desired stone. Recent experiments, for example, have shown that crystals grow five times faster when their supersaturated solution is subjected to frequencies of 10 to 100 cycles a second. *Manly P. Hall* and other students of esoteric wisdom have also noted that many ancient crystals were produced by '*zodiacal formulae*' grown at specific times, when the sun, moon and plan-

GT Zirkon Thin 80pt

MOQUI MARBLES

GT Zirkon Thin 147pt

Rhodonite

GT Zirkon Thin 260pt

TOPAZ

GT Zirkon Light 9pt

Writer and researcher *A.H. Fry* tells of his experience with a woman who produced a special copper alloy by alchemically subjecting the ore to solutions of carbon and electric current, and then grew a crystal from the results. The crystal, Fry reported, possessed electrical resistance factors quite different from ordinary copper, and seemed to have tiny microscopic 'wires' embedded within it. When he attached an electrometer to the crystal, he was surprised to find it was also alive; it produced a pattern similar to that of a living plant, and reacted to outside physical and mental

disturbances in the same way as Cleve Backster's experiments using a polygraph. Fry, commenting on the Ancients' use of crystals in general, stated: "*Legends occasionally mention crystals that could render invisibility (such as the one Apollonius of Tyana used before the Roman Emperor) and even cause weightlessness. They even used crystals to discover how to enter and escape time by negotiating a ninety degree angle phase shift. Was it all in the size and shape? Or did it involve mental forces and special 'live' qualities within the crystal?*" Fry also made this interesting observation, which

GT Zirkon Light 14pt

Researchers say that diamond fragments from the dawn of time may contain evidence that life began on Earth as early as 4.25 billion years ago, just a few hundred million years after the planet came into existence—although they also say that their findings aren't conclusive and that they may well be wrong.

Studying anything about the ancient earth is extremely difficult. Rocks that formed four billion years ago will long since have been beat up, metamorphosed, or melted [*Nobel Intent blog, Ars*

GT Zirkon Light 20pt

Radioactive dating shows that the zircon crystals were formed more than 4 billion years ago, implying that the diamond fragments are at least that old. Scientists then studied the diamonds' composition, looking specifically at their carbon isotopes (*forms of the carbon atom with different atomic masses*). One of the tell-tale signs of life is that the very process of living increases the levels of the lighter isotope of carbon. Oil and gas reserves are enriched in carbon 12 over carbon 13 because they were formed from the remains of living things [*Telegraph*]. Researchers found that same carbon 12 isotope in the diamond

GT Zirkon Light 80pt

SESAME & STONE

GT Zirkon Light 147pt

Tanzanite

GT Zirkon Light 260pt

RUBY

GT Zirkon Book 9pt

New York University chemists have created three-dimensional DNA structures, a breakthrough bridging the molecular world to the world where we live. The work, reported in the latest issue of the journal *Nature*, also has a range of potential industrial and pharmaceutical applications, such as the creation of nano-electronic components and the organization of drug receptor targets to enable illumination of their 3D structures.

While scientists, including those involved in this study, have previously designed and built crystal struc-

tures, these compositions have been two-dimensional—that is, their axes are on a single plane—and are not the most complete representation of crystals. To address this limitation, the research team, headed by *NYU Chemistry Professor Nadrian Seeman*, sought to design and build three-dimensional DNA crystals—a process that requires significant spatial control of the 3D structure of matter. The project also included researchers from *Purdue University's Department of Chemistry* and the *Argonne National Laboratory* in Illinois. To do this, the researchers created DNA crystals by

GT Zirkon Book 14pt

“With this technique we can organize more matter and work with it in many more ways than we could with 2D crystals,” Seeman observed.

A promising avenue for the application of this approach is in nanoelectronics, using components no bigger than single molecules. Currently, such products are built with 2D components. Given the enhanced flexibility that 3D components would yield, manufacturers could build parts that are smaller and closer together as well as more sophisticated in design. The scien-

GT Zirkon Book 20pt

Geologist Juan Manuel García-Ruiz calls it *“the Sistine Chapel of crystals,”* but Superman could call it home. A sort of south-of-the-border Fortress of Solitude, Mexico’s *Cueva de los Cristales (Cave of Crystals)* contains some of the world’s largest known natural crystals—translucent beams of gypsum as long as 36 feet (11 meters). How did the crystals reach such superheroic proportions? In the new issue of the journal *Geology*, *García-Ruiz* reports that for millennia the crystals thrived in the cave’s extremely rare and stable natural environment. Temperatures hovered consistently around a steamy 136 degrees Fahrenheit (58

GT Zirkon Book 80pt

RHODOCHROSITE

GT Zirkon Book 147pt

Brandberg

GT Zirkon Book 260pt

PEARL

GT Zirkon Regular 9pt

Sir William Crookes performed an analysis of the Cullinan diamond, ascertaining a weight of 3,106 carats (621.2 grams). The stone was immediately named after Sir Thomas Cullinan, the owner of the diamond mine, who had discovered the mine after many years of unsuccessful searching. Crookes mentioned its remarkable clarity, but also a black spot in the middle. The colours around the black spot were very vivid and changed as the analyser was turned. According to Crookes, this pointed to internal strain. Such strain is not uncommon in diamonds. Because one

side of the diamond was perfectly smooth, it was concluded that the stone had originally been part of a much larger diamond, that had been broken up by natural forces. Crookes pronounced the Cullinan *“a fragment, probably less than half, of a distorted octahedral crystal; the other portions still await discovery by some fortunate miner”*. The discovery became a global sensation, with the developments being followed avidly by the press.

Wells was awarded £3,500 for the find and the diamond was purchased by the Transvaal Colony government for £150,000 and insured

GT Zirkon Regular 14pt

The diamond was presented to the king on his birthday in the presence of a large party of guests, including the Queen of Norway, the Queen of Spain, the Duke of Westminster and Lord Revelstoke. The king asked his colonial secretary, Lord Elgin, to announce that he accepted the precious gift *“for myself and my successors”* and that he would ensure *“this great and unique diamond be kept and preserved among the historic jewels which form the heirlooms of the Crown”*. It was cut into three sections on 10 February 1908 by Asscher

GT Zirkon Regular 20pt

The rough diamond was split and cut into nine major stones, ninety-six minor ones, and 9 carats (1.8 g) of polished fragments. All but two of the largest stones – *Cullinans I and II belong to the Crown* – and the small brilliants remained in Amsterdam until the South African government bought them (*with the exception of Cullinan VI which Edward VII had purchased and given to his wife Queen Alexandra in 1907*) and the High Commissioner for Southern Africa presented them to *Queen Mary* on 28 June 1910. Mary also inherited *Cullinan VI from Alexandra*, and she left all the Cullinan diamonds to her granddaughter *Queen Eliza-*

GT Zirkon Regular 80pt

Preseli Bluestone

GT Zirkon Regular 147pt

Mariposite

GT Zirkon Regular 260pt

LAVA 8

GT Zirkon Medium 9pt

Cullinan IV, also referred to as the Lesser Star of Africa, is square-cut and weighs 63.6 carats (12.72 g). It was also set in the base of Queen Mary's Crown; however, it too was removed in 1914. On 25 March 1958, while she and Prince Philip were on a state visit to the Netherlands, the Queen Elizabeth II revealed that Cullinan III and IV are known in her family as "*Granny's Chips*". The couple visited the Asscher Diamond Company, where the Cullinan had been cut 50 years earlier. It was the first time the Queen had worn the brooch publicly. During her visit, she

unpinned the brooch and offered it for examination to Louis Asscher, the brother of Joseph Asscher who had originally cut the diamond. Elderly and almost blind, Asscher was deeply moved by the fact the Queen had brought the diamonds with her, knowing how much it would mean to him seeing them again after so many years.

Cullinan V is an 18.8-carat (3.76 g) heart-shaped diamond set in the centre of a platinum brooch that formed a part of the stomacher made for *Queen Mary* to wear at the Delhi Durbar in 1911. The brooch was de-

GT Zirkon Medium 14pt

It was presented to *King Edward VII of the United Kingdom* for his 66th birthday and cut into several polished gems, the largest of which is named *Cullinan I* or the *Great Star of Africa*, and at 530.4 carats (106.08 g) it is the largest clear cut diamond in the world. It was the largest polished diamond of any colour until the discovery in 1985 of the *Golden Jubilee Diamond* (545.67 carats (109.13 g), also from the Premier Mine. *Cullinan I* is mounted in the head of the *Sovereign's Sceptre with Cross*. The second-largest is *Cullinan II* or the

GT Zirkon Medium 20pt

The obesity epidemic has focused attention on relationships of sugars and sugar-sweetened beverages (SSBs) to cardiovascular risk factors. Here we report cross-sectional associations of SSBs, diet beverages, and sugars with blood pressure (BP) for United Kingdom and US participants of the International Study of Macro/Micronutrients and Blood Pressure. Data collected include four 24-hour dietary recalls, two 24-hour urine collections, 8 BP readings, and questionnaire data for 2696 people ages 40 to 59 years of age from 10 US / United Kingdom population samples. Associations of SSBs,

GT Zirkon Medium 80pt

45 LAPIS LAZULI

GT Zirkon Medium 147pt

Oligoclase

GT Zirkon Medium 260pt

MICA

GT Zirkon Bold 9pt

The Crown Jewels of the United Kingdom are 141 historic ceremonial objects, including the regalia and vestments worn by kings and queens of the country at their coronations, as well as processional and anointing objects, plate, and christening fonts. A symbol of 800 years of monarchy, the sovereign's coronation regalia is the only working collection in Europe – other present-day monarchies have abandoned coronations in favour of inauguration or enthronement ceremonies – and is the largest set of regalia in the world. Objects used

to invest and crown the monarch variously denote his or her roles as Head of State, *Supreme Governor of the Church of England*, and *Commander-in-Chief of the British Armed Forces*. Wives of kings are crowned as queen consort with a plainer set of regalia. Since 1831, a new crown has been made specially for each queen consort.

The use of regalia by monarchs in Britain can be traced back to its early history. Most of the present collection as a whole dates from around 350 years ago when King Charles II ascended the throne. The

GT Zirkon Bold 14pt

By the 5th century, the Romans had withdrawn from Britain, and the Angles and the Saxons settled. A series of new kingdoms began to emerge. One of the methods used by regional kings to solidify their authority over their territories was the use of ceremony and insignia. The tomb of an unknown king – *evidence suggests it may be Rædwald of East Anglia* – at Sutton Hoo provides a unique insight into the regalia of a *pre-Christian Anglo-Saxon king*. Inside the early 7th-century tomb discovered

GT Zirkon Bold 20pt

In 1161, *Edward the Confessor* was made a saint, and objects connected with his reign became holy relics. The monks at his burial place *Westminster Abbey* claimed that Edward had asked them to look after his regalia in perpetuity and that they were to be used at the coronations of all future kings of England. A note to this effect is contained in an inventory of relics drawn up by *Richard Sporley*, a monk at the abbey from 1430 until 1480, recording a tunicle (and other vestments), a golden crown, comb and spoon, for the queen's coronation a crown and two rods, and for the commu-

GT Zirkon Bold 80pt

3 ROSE QUARTZ

GT Zirkon Bold 147pt

New Jade

GT Zirkon Bold 260pt

OPAL 1

GT Zirkon Black 9pt

A crown referred to as *St Edward's Crown* is first recorded as having been used for the coronation of Henry III in 1220, and it appears to be the same crown worn by *Edward*. Being crowned and invested with regalia owned by a previous monarch who was also a saint reinforced the king's authority. The crown would be used in many subsequent coronations until its eventual destruction 400 years later. One of the few descriptions of St Edward's Crown to survive, from Henry III's time, is a "*gold crown with diverse stones*". Also in the

Crown Jewels in this period was an item called a state crown. Together with other crowns, rings, and swords, it comprised the monarch's non-hereditary state regalia that was kept separate from the coronation regalia, mostly at the royal palaces. The Stone of Scone in the Coronation Chair at Westminster Abbey, 1855

Following the defeat in 1282 of the Welsh prince *Llewelyn ap Gruffydd* by *Edward I*, the Welsh regalia, including the crown of the legendary *King Arthur*, were surrendered to England. According to the

GT Zirkon Black 14pt

The traditions established in the medieval period continued later. By the middle of the 15th century, a crown was formally worn on six religious feasts every year: *Christmas, Epiphany, Easter, Whitsun, All Saints and one or both feasts of St Edward*. A crown was also displayed and worn at the annual State Opening of Parliament. Around this time, swords – *symbols of kingship since ancient times* – were introduced into the coronation ceremony. Three swords were used to represent the king's pow-

GT Zirkon Black 20pt

Following the death of James I in 1625, *Charles I* succeeded the throne. His many conflicts with Parliament, stemming from his belief in the divine right of kings and the many religious conflicts that pervaded his reign, triggered the English Civil War. After six years of war, *Charles* was defeated and executed by the Roundheads in 1649. Less than a week after the king's execution, the Rump Parliament voted to abolish the monarchy, and *Oliver Cromwell* would become *Lord Protector of England*. The newly created English Republic found itself short of money. In order to raise funds,

GT Zirkon Black 80pt

SHATTUCKITE &

GT Zirkon Black 147pt

Turquoise

GT Zirkon Black 260pt

ONYX
