



- Hard Copper Alloys
- Bronzes
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- SERT BAKIR ALAŞIMLARI
- BRONZLAR
- PİRİNÇLER
- TAKIM ÇELİKLERİ



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SANAYİ VE TİCARET A.Ş.

www.apakmetal.com
info@apakmetal.com

Merkez: İkitelli Org. San. Böl. Demirciler San. Sit. D3 Bl. No 329 Başakşehir - İstanbul | TR
T 0212 671 10 46 **F** 0212 671 10 47

SERT BAKIR ALAŞIMLARI / HARD COPPER ALLOYS

DIN EN 12163-12167/12420/12449/1652/1654

Malzeme Kodu/Material Code	Benzer Kodlar/Comparable Specs.	Kimyasal İçerik/Chemical Comp. (%) - Cu:kalan/rest	d (g/cm3)	
CuCr1Zr	CW106C	DIN17666, C18150UNS, 2.1293	Cr:0,5-1,2 Zr:0,03-0,3	8,9
CuNi2Si	CW111C	DIN17666, C64700, C18000UNS	Ni:1,6-2,5 Si:0,4-0,8	8,8
CuCo1Ni1Be	CW103C	C82200 UNS, 2.0850	Co:0,8-1,3 Ni:0,8-1,3 Be:0,4-0,7	8,8
CuCo2Be	CW104C	DIN17666, C17500UNS, 2.1285	Co:2,0-2,8 Be:0,4-0,7	8,8
CuBe2	CW101C	DIN17666, C17200UNS, 2.1247	Be:1,8-2,1	8,3
CuTeP	CW118C	DIN17666, C14500UNS	Te:0,4-0,7 P:0,003-0,012	8,9

ÖZEL ÜRETİM SERT BAKIR ALAŞIMLARI (DÖKÜM+DÖVME+İŞLEME) / SPECIALTY HARD COPPER ALLOYS (CAST+FORGED+MACHINED)

APAK Kodu APAK Code APAK	Yakl. Sertlik Approx.Hardness HB10/30	Yakl. Kimyasal İçerik - Cu:kalan App.Chem.Comp. - Cu:rest %	Yakl. Çekme Muk. App.Tensile Str. Rm Mpa	Yakl. Akma Muk. App.Yield Str. Rp0,2 Mpa	Yakl. Uzama App.Elongation A5%	Yakl.İsıl İlet. App.Thermal Cond. W/m.K
APAK-CCZ	150	Cr:1,0 Zr:0,12	520	470	18	330
APAK-CNS	210	Cr:0,4 Ni:2,5 Si:0,7	690	520	12	205
APAK-CNB	240	Be:0,5 Ni:1,0 Co:1,0	800	700	9	205
APAK-CCB	220	Be:0,5 Co:2,0	830	550	9	220
APAK-CB2	380	Be:2,0 Co:0,5	1300	1000	4	105
APAK-CNSM	290	Cr:1,0 Ni:7,0 Si:2,0	940	730	5	155

BAKIR-NİKEL ALAŞIMLARI / COPPER-NICKEL ALLOYS

DIN EN 12163/12420/12449/1652/1653

Malzeme Kodu/Material Code	Benzer Kodlar/Comparable Specs.	Kimyasal İçerik/Chemical Comp. (%) - Cu:kalan/rest	d (g/cm3)	
CuNi10Fe1Mn	CW352H	DIN17664, C70600UNS	Ni:9,0-11,0 Fe:1,0-2,0 Mn:0,5-1,0	8,9
CuNi14Al3	2.1504		Ni:13,0-16,0 Al:2,0-3,0	8,5
CuNi30Mn1Fe	CW354H	DIN17664, C71500UNS	Ni:30,0-32,0 Fe:0,4-1,0 Mn:0,5-1,5	8,9

ALÜMİNYUM BRONZLARI (DÖKÜM) / CAST ALUMINIUM BRONZES

Malzeme Kodu/Material Code	Benzer Kodlar/Comparable Specs.	Kimyasal İçerik/Chemical Comp. (%) - Cu:kalan/rest	d (g/cm3)	
CuAl8Mn	2.0962	DIN1714	Al:7,0-9,0 Mn:5,0-6,5 Ni:1,0-2,0	7,5
CuAl10Fe2-C	CC331G	DIN1714, C95200UNS	Al:8,5-10,5 Fe:1,5-3,5	7,5
CuAl10Ni3Fe2-C	CC332G	DIN1714	Al:8,5-10,0 Ni:1,5-4,0 Fe:1,0-3,0	7,5
CuAl10Ni5Fe5-C	CC333G	DIN1714, C95800, C95500UNS	Al:8,5-10,5 Ni:4,0-6,0 Fe:4,0-5,5	7,6
CuAl11Ni6Fe6-C	CC334G	DIN1714	Al:10,0-12,0 Ni:4,0-7,5 Fe:4,0-7,0	7,6

ALÜMİNYUM BRONZLARI / WROUGHT ALUMINIUM BRONZES

DIN EN 12163/12167/12420/12451/1652/1653

Malzeme Kodu/Material Code	Benzer Kodlar/Comparable Specs.	Kimyasal İçerik/Chemical Comp. (%) - Cu:kalan/rest	d (g/cm3)	
CuAl5As	CW300G	DIN17665, C60800UNS	Al:4,0-6,5 As:0,1-0,4	8,2
CuAl7Si2	CW302G	C64200UNS	Al:6,3-7,6 Si:1,5-2,2	7,7
CuAl8Fe3	CW303G	DIN17665, C61400UNS	Al:6,5-8,5 Fe:1,5-3,5	7,7
CuAl8	2.0920	DIN17665, C61000UNS	Al:7,0-9,0	7,7
CuAl9Mn2	2.0960	DIN17665	Al:8,0-10,0 Mn:1,5-3,0	7,5
CuAl9Ni3Fe2	CW304G	DIN17665	Al:8,0-9,5 Ni:2,0-4,0 Fe:1,0-3,0	7,4
CuAl10Fe3Mn2	CW306G	DIN17665, C62300, C62500UNS	Al:9,0-11,0 Fe:2,0-4,0 Mn:1,5-3,5	7,6
CuAl10Ni5Fe4	CW307G	DIN17665, C63200, C63000UNS	Al:8,5-11,0 Ni:4,0-6,0 Fe:3,0-5,0	7,6
CuAl11Ni6Fe6	CW308G	DIN17665	Al:10,5-12,5 Ni:5,0-7,0 Fe:5,0-7,0	7,4

ÖZEL ÜRETİM ALÜMİNYUM BRONZLARI (DÖKÜM) / SPECIALTY CAST ALUMINIUM BRONZES

APAK Kodu APAK Code APAK	Yakl. Sertlik Approx.Hardness HB10/30	Yakl. Kimyasal İçerik - Cu:kalan App.Chem.Comp. - Cu:rest %	Yakl. Çekme Muk. App.Tensile Str. Rm Mpa	Yakl. Akma Muk. App.Yield Str. Rp0,2 Mpa	Yakl. Uzama App.Elongation A5%	Yakl.İsıl İlet. App.Thermal Cond. W/m.K
APAK-150	150	Al:6,5 Fe:2,5 Sn:0,25	550	280	40	55
APAK-190	190	Al:10,5 Fe:3,5	720	360	14	65
APAK-320	320	Al:13,1 Fe:3,5 Mn:2,0	720	430	0,5	40
APAK-360	360	Al:14,1 Fe:4,5 Mn:2,0 Co:1,0	min.500	min.500	0	35
APAK-420	420	Al:14,1 Fe:4,5 Mn:2,0 Co:2,0	min.440	min.440	0	35
APAK290Ni	290	Al:10,5 Fe:4,8 Mn:1,5 Ni:5,0	1000	790	8	40

KALAY BRONZLARI VE BAKIR KALAY ÇİNKÜ ALAŞIMLARI (DÖKÜM) / COPPER-TIN AND COPPER-TIN-ZINC CAST BRONZES

DIN EN 1982

Malzeme Kodu/Material Code	Benzer Kodlar/Comparable Specs.	Kimyasal İçerik/Chemical Comp. (%) - Cu:kalan/rest	d (g/cm3)	
CuSn10-C	CC480K	DIN1705 (SnBz10), C90700UNS	Cu:88,0-90,0 Sn:9,0-11,0	8,7
CuSn11Pb2-C	CC482K	DIN1705 (CuSn12Pb), C92500UNS	Cu:83,5-87,0 Sn:10,5-12,5 Pb:0,7-2,5	8,9
CuSn12-C	CC483K	DIN1705 (SnBz12), C90800UNS	Cu:85,0-89,0 Sn:10,5-13,0	8,8
CuSn12Ni2-C	CC484K	DIN1705 (CuSn12Ni), C91700UNS	Cu:84,5-87,5 Sn:11,0-13,0 Ni:1,5-2,5	8,6
CuSn5Zn5Pb5-C	CC491K	DIN1705 (Rg5), C83600UNS	Sn:4,0-6,0 Zn:4,0-6,0 Pb:4,0-6,0	8,7
CuSn7Zn4Pb7-C	CC493K	DIN1705 (Rg7), C93200UNS	Sn:5,2-8,0 Zn:2,0-5,0 Pb:5,0-8,0	8,8
CuSn10Zn	2.1086	DIN1705 (Rg10), C90500UNS	Sn:9,0-11,0 Zn:1,0-3,0	8,7

KURŞUNLU BRONZ (BAKIR-KURŞUN-KALAY) (DÖKÜM) / CAST LEADED BRONZE (COPPER-LEAD-TIN)

DIN EN 1982

Malzeme Kodu/Material Code	Benzer Kodlar/Comparable Specs.	Kimyasal İçerik/Chemical Comp. (%) - Cu:kalan/rest	d (g/cm3)	
CuSn10Pb10-C	CC495K	CuPb10Sn, DIN 1716, C93700	Sn:9,0-11,0 Pb:8,0-11,0	9,0
CuSn7Pb15-C	CC496K	CuPb15Sn, DIN 1716, C93800	Pb:13,0-17,0 Sn:6,0-8,0 Ni:0,5-2,0	9,1
CuSn5Pb20-C	CC497K	CuPb20Sn, DIN 1716, C94100	Pb:18,0-23,0 Sn:4,0-6,0 Ni:0,5-2,5	9,3

FOSFOR BRONZLARI (BAKIR-KALAY) / WROUGHT PHOSPHOR BRONZES (COPPER-TIN)

DIN EN 12163-12167/12449/1652/1654

Malzeme Kodu/Material Code	Benzer Kodlar/Comparable Specs.	Kimyasal İçerik/Chemical Comp. (%) - Cu:kalan/rest	d (g/cm3)	
CuSn4Pb4Zn4	CW456K	C54400UNS	Sn:3,5-4,5 Zn:Pb:3,5-4,5 P:0,01-0,4	8,9
CuSn6	CW452K	DIN17662, C51900UNS	Sn:5,5-7,0 P:0,01-0,4	8,8
CuSn8	CW453K	DIN17662, C52100UNS	Sn:7,5-8,5 P:0,01-0,4	8,8
CuSn8P	CW459K		Sn:7,5-8,5 P:0,2-0,4	8,8

PİRİNÇLER (BAKIR-ÇİNKÜ) / WROUGHT BRASSES (COPPER-ZINC)

DIN EN 12163-12168/12420/12449/1652

Malzeme Kodu/Material Code	Benzer Kodlar/Comparable Specs.	Kimyasal İçerik/Chemical Comp. (%) - Zn:kalan/rest	d (g/cm3)	
CuZn37	CW508L	DIN17660, C27200, C27400UNS	Cu:62,0-64,0	8,4
CuZn40	CW509L	DIN17660, C28000UNS	Cu:59,5-61,5	8,4
CuZn39Pb3	CW614N	DIN17660, C38500UNS	Cu:57,0-59,0 Pb:2,5-3,5	8,4
CuZn35Pb1	CW600N	DIN17660, C34500, C34700UNS	Cu:62,5-64,0 Pb:0,8-1,6	8,5
CuZn36Pb2As	CW602N	C35330UNS	Cu:61,0-63,0 Pb:1,7-2,8 As:0,02-0,15	8,4

ÖZEL PİRİNÇLER / WROUGHT SPECIAL BRASSES

DIN EN 12163-12168/12420/12449/12451/1652/1653

Malzeme Kodu/Material Code	Benzer Kodlar/Comparable Specs.	Kimyasal İçerik/Chemical Comp. (%) - Zn:kalan/rest
CuZn35Ni3Mn2AlPb	CW710R	CuZn35Ni2, DIN17660
CuZn37Mn3Al2PbSi	CW713R	CuZn40Al2, DIN17660, C67400UNS
CuZn40Mn2Fe1	CW723R	CuZn40Mn2, DIN17660
CuZn38Sn1As	CW717R	CuZn38Sn1, DIN17660, C46400UNS
CuZn31Si1	CW708R	DIN17660
CuZn20Al2As	CW702R	CuZn20Al2, DIN 17660, C68700UNS
CuZn23Al6Mn4Fe3Pb	CW704R	DIN17660, C67000UNS

ÖZEL PİRİNÇLER (DÖKÜM) / CAST SPECIAL BRASSES

DIN EN 1982

Malzeme Kodu/Material Code	Benzer Kodlar/Comparable Specs.	Kimyasal İçerik/Chemical Comp. (%) - Zn:kalan/rest
CuZn34Mn3Al2Fe1-C	CC764S	DIN1709, C86200UNS
CuZn35Mn2Al1Fe1-C	CC765S	DIN1709, C86400UNS
CuZn25Al5Mn4Fe3-C	CC762S	DIN1709, C86300UNS
CuZn16Si4-C	CC761S	DIN1709, C87400, C87500UNS
CuZn37Al1-C	CC766S	DIN1709

REFRAKTER METALLER / REFRACTORY METALS

APAK Kodu APAK Code APAK	Yakl. Sertlik Approx.Hardness HV	Yakl. Kimyasal İçerik App.Chem.Comp. %	Yakl. Çekme Muk. App.Tensile Str. Rm Mpa	Elastisite Modülü Modulus of Elasticity kN/mm2	Yoğunluk Density g/cm3	Yakl.İsıl İlet. App.Thermal Cond. W/m.K
APAK-W	min.460	W:min.99,95	1300	410	19,3	125
APAK-WCu	230	W:80 Cu:20	490	230	15,3	130
APAK-MoTiZr	240	Ni:7 Ti:0,5 Zr:0,08 C:0,03 Mokalın	900	300	10,8	130

Direnç kaynağı uygulamaları için

SERT BAKIR

ALAŞIMLARI

[RWMA Class 1]

C15000 (Cu-Zr) Bakır Zirkonyum
EN: CW120C 12163 12167
DIN: 17666 2.1580
İletkenlik: 86% IACS
Sertlik: Rb 65 Hb 120

[RWMA Class 2]

C18200 (Cu-Cr1) Bakır Krom
EN: CW105C 12167
DIN: 2.1293

C18150 (Cu-Cr1-Zr) Bakır Krom Zirkonyum

EN: CW106C 12163 12167
DIN: 17666-2, 1293 17672 44759
İletkenlik: 80% IACS
Sertlik: Rb 75 Hb 140

[RWMA Class 3]

C17500 (Cu-Co2-Ni-Be) Bakır Berilyum Kobalt
EN: CW104C
DIN: 17666-2, 1285 17672 44759

C17510 (Cu-Ni-Be) Bakır Berilyum Nikel

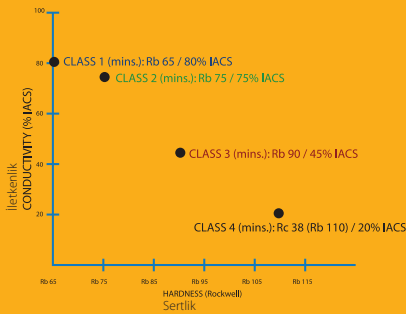
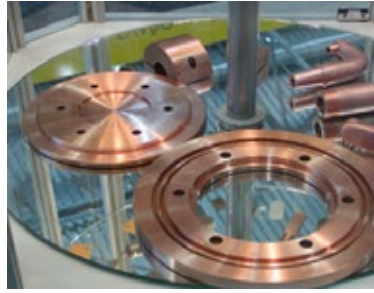
ASTM: B441 / B534
EN: CW110C
DIN: 17666-2, 0850 17672
İletkenlik: 45% IACS
Sertlik: Hb 210

C18000 (Cu-Ni-Si-Cr) Bakır Nikel Silis Krom

EN: CW110C 12163
İletkenlik: 45% IACS
Sertlik: Rb 90 Hb 190

[RWMA Class 4]

C17200 (Cu-Be2) Bakır Berilyum
EN: CW101C
NFL: 14709
DIN: 17672 2,1247
AMS 4533B 4535C
İletkenlik: 28% IACS
Sertlik: Rc 38 Hb 360



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SANAYİ VE TİCARET A.Ş.

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info@apakmetal.com

Merkez: İkitelli Org. San. Böl. Demirciler San. Sit. D3 Bl. No 329 Başakşehir - İstanbul | TR
T 0212 671 10 46 F 0212 671 10 47