

KARBON / KÜKÜRT ANALİZÖRÜ

ELEMENTRAC CS-r

For the safe, precise and reliable elemental analysis of carbon (C) and sulfur (S) in predominantly organic matrices such as soils, waste, wood, oil, coal and coke, ELTRA offers the combustion analyzer ELEMENTRAC CS-r with IR detection.

The CS-r with up to 4 infrared cells is designed for carbon and sulfur measurement over a very wide concentration range. It uses a horizontal resistance furnace with ceramic tube, which operates in a range from 600 °C to 1550 °C.

The CS-r elemental analyzer meets or exceeds the requirements of all common ASTM, DIN, EN or ISO standards for elemental analysis.



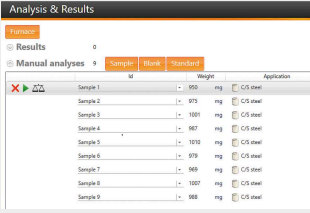
KARBON / KÜKÜRT ANALİZÖRÜ ELEMENTRAC CS- R

- | Fast, simultaneous measurement of carbon and sulfur
- | High sample weight possible
- | Optimized (low blank) sample port
- | IR path made of solid gold for extended lifetime
- | Wide measuring range from 20 ppm to 100%

KARBON / KÜKÜRT ANALİZÖRÜ ELEMENTRAC CS-R OPERASYON VE ANALİZ SÜRECİ

The ELEMENTRAC CS-r analyzer determines the elements carbon and sulfur by combustion of the sample in an oxygen stream and subsequent measurement of the combustion gases CO₂, SO₂ and H₂O in selective infrared measuring cells. A high sample weight of up to 500 mg ensures excellent reproducibility of the elemental analysis results, even for heterogeneous samples.

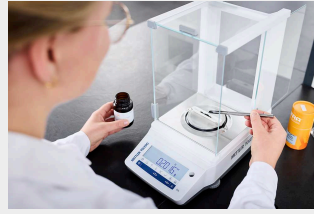
The high combustion temperatures and electronic monitoring of the oxygen flow allow complete oxidation of the sample and help to avoid too low results even with challenging materials like cement. Regardless of the selected configuration (carbon – sulfur - carbon and sulfur), operation is identical in all analyzer versions.



Sample	Weight (mg)	Application
Sample 1	950	CS steel
Sample 2	975	CS steel
Sample 3	1001	CS steel
Sample 4	1007	CS steel
Sample 5	1030	CS steel
Sample 6	979	CS steel
Sample 7	969	CS steel
Sample 8	1007	CS steel
Sample 9	988	CS steel

1. Adım: Örneği ELEMENTS yazılımına kaydetme

Numune kimliği yazılıma kaydedilir ve ağırlık otomatik olarak aktarılır (bkz. Adım 2).



Adım 2: Hızlandırıcıların tartılması ve eklenmesi

Volumes of 50 mg to 500 mg are typical for elemental analysis of carbon and sulfur. The sample is directly applied to a carrier (ceramic or Inconel boat) and analyzed without addition of accelerators.



3. Adım: Analiz

The sample is placed in front of the furnace opening and the measurement is started in the software. Subsequently, the shutter opens, and the material can be introduced into the hot furnace. At the same time, the ELEMENTS software continuously records measured values during combustion. Closing the furnace during the measurement is optional and can improve reproducibility.



Adım 4: Veri çıkışı ve dışa aktarma

60 to 240 seconds after the analysis has started, the measured carbon and sulfur concentrations are available for export as a report or via LIMS. Depending on the selected configuration, carbon and sulfur values are available for the individual sample.

KARBON / KÜKÜRT ANALİZÖRÜ ELEMENTRAC CS-R
SOLUTIONS & OPTIONS IN DETAIL

The ELEMENTRAC CS-r analyzer comes with various solutions for reliable and precise carbon and sulfur analysis.

Included: Two Anhydron Columns

For reliable carbon and sulfur analysis, the combustion gases must be freed from water vapor prior to IR detection. The CS-r elemental analyzer is equipped with two drying columns filled with magnesium perchlorate to reliably prevent absorption effects in large sample volumes. In the case of TOC analysis, a chemical tube can also be used as a halogen trap to reliably absorb acid residues and halogens.



Included: Low blank sample port

The ELEMENTRAC CS-r and CHS-r analyzer series ensures safe and precise elemental analysis even of samples with low carbon content in the resistance furnace. Due to the optimized geometry of the sample port with reduced diameter, as well as an oxygen purge at the sample inlet, the CO₂ blank value of the atmosphere during sample introduction is drastically reduced, thus enabling reliable carbon analysis in the low measuring range.



Option: Second Furnace (ELTRA Dual Furnace Concept)

The CS-r elemental analyzer can be connected in any configuration to an additional furnace without detectors. This principle, known from the ELEMENTRAC CS-d, allows fast fractionated analysis by applying different temperatures and provides



safety for high sample throughput.

Option: Monitor Holder

To make the most of available laboratory space, the ELEMENTRAC CS-r analyzer offers various operating options:

- | External monitor and keyboard
- | Monitor holder, wireless keyboard
- | Operation via touchscreen



Option: TIC Module

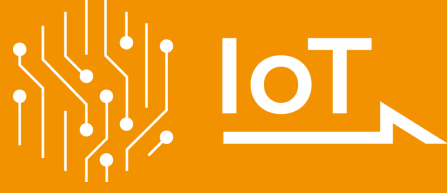
Depending on the sample, carbon can also be present in the two different fractions TOC (Total Organic Carbon) or TIC (Total Inorganic Carbon). The CS-r elemental analyzer can be combined with ELTRA's TIC module to determine the TIC content via acidification. This combination enables reliable, direct TIC analysis in soils, building materials and other products in compliance with DIN EN 15936.



IOT - INTERNET OF THINGS

THE PLATFORM FOR REMOTE ACCESS TO YOUR DEVICES

All ELTRA analyzers seamlessly integrate with the Verder Scientific IoT platform, providing enhanced functionality, seamless connectivity, and additional benefits:



- | **Real-time Monitoring:** Gain insight into the status of your machines at any time thanks to immediate access to important data.
- | **Live Notifications:** Stay up to date on the status of your devices with instant notifications.
- | **Effortless Backup:** Whether you need to back up a single device or an entire fleet, back up your data effortlessly and minimize downtime.
- | **Automatic Software Updates:** Verder Scientific IoT keeps your device software up to date, optimizing performance and reliability.
- | **Access to Analysis Data:** ELTRA analyzers offer remote access to analysis data. This allows you to conveniently access important data while on the move.
- | **Autoloader Efficiency:** Get the most out of remote analysis preparation with our autoloader feature, which ensures uninterrupted operation and increased productivity for all instruments equipped with it.

Experience the power of the Verder Scientific IoT platform today and unlock the full potential of your ELTRA analyzers!



**FREE SOFTWARE
DOWNLOAD**

KARBON / KÜKÜRT ANALİZÖRÜ ELEMENTRAC CS-R
ELEMENTS YAZILIMI

Kapsamlı Windows tabanlı ELEMENTS yazılımı, tüm ELEMENTRAC nesil element analizörlerinin önemli bir parçasıdır.

Merkezi bir pencere (analiz ve sonuçlar), günlük rutin için gerekli tüm işlemlere kolayca erişilebilen başlangıç noktasıdır. Buradan analiz edilen numuneleri gruplamak ve dışa aktarmak veya yeni numuneleri kaydetmek ve analiz etmek mümkündür. Kullanıcı, uygulama ayarları, kalibrasyon, teşhis veya durum gibi çeşitli alt işlemleri çağırabilir.



KARBON / KÜKÜRT ANALİZÖRÜ ELEMENTRAC CS-R
TIPIK ÖRNEK MALZEMELER

biokütle, Yapı malzemeleri, coal/Kok, fuels, Yağ, Cevher, Planlama malzemeleri, Plastik maddeler, Kauçuk, Toprak, Kurum, Tütün, Atık, ...



coal



Toprak



plastic

KARBON / KÜKÜRT ANALİZÖRÜ ELEMENTRAC CS-R FONKSİYON PRENSİBİ

In the elemental analyzer CS-r the sample is burnt in an oxygen atmosphere at temperatures up to 1,550 °C. The furnace temperature can be freely selected in steps of 1 °C. The combustion gasses (CO₂, H₂O, SO₂) coming from the furnace and pass through a dust filter. After the water vapor is chemically absorbed, the dried CO₂ and SO₂ gas is detected in the additional infrared cells. Depending on the configuration, it is possible to combine up to four (for C, S analyzers) infrared cells with different sensitivities.



KARBON / KÜKÜRT ANALİZÖRÜ ELEMENTRAC CS-R

TEKNİK VERİ

Ölçülen elementler	karbon, kükürt
Numuneler	organik
fırın sıralama	horizontal (resistance furnace)
Numune taşıyıcı	seramik kayıklar
Uygulama alanı	biyoloji, kimya / plastik..., tarım
Fırın	rezistans fırını (seramik tüp)
Tespit metodu	katı kızıl ötesi absorpsiyonu
IR hücre sayısı	1 - 4
IR yolunun malzemesi	altın
Analiz süresi	60 - 180 s
Gerekli kimyasallar	magnezyum perklorat, sodyum hidroksit
Gerekli gaz	oksijen 99.5 % saflıkta (2 - 4 bar / 30 - 60 ...
Güç Gereksinimleri	230 V, 50/60 Hz Maksimum güç Akım
Ebatlar (G x Y x D)	58 x 52 x 75 cm
Ağırlık	~ 77 kg
Gerekli ekipmanlar	PC, monitör, terazi (hassasiyet 0.0001g...
Opsiyonel aksesuarlar	TIC modülü

www.eltra.com/cs-r






SIPARIŞ BİLGİSİ

ELTRA ELEMENTRAC CS-R

(Lütfen PC, monitör, terazi ve sarf malzemelerini (başlangıç kiti, anhidron, sodyum hidroksit) ayrıca sipariş edin)

Measuring ranges at 350 mg sample weight
(alternative configurations on request)

2)

88200-3006		CS-r	2xC	0.004 – 100 % C
88200-3008		CS-r	2xS	0.001 – 31.4 % S
88200-3015		CS-r	1xC + 2xS	0.03 – 100 % C 0.001 – 31.4 % S
88200-3016		CS-r	2xC + 1xS	0.004 – 100 % C 0.001 – 1.14 % S
88200-3017		CS-r	2xC + 2xS	0.004 – 100 % C 0.001 – 31.4 % S

Talep üzerine diğer ölçüm aralığı kombinasyonları mevcuttur.

(Lütfen PC, monitör, terazi ve sarf malzemelerini (başlangıç kiti, anhidron, sodyum hidroksit) ayrıca sipariş edin)

GEREKLI AKSESUARLAR

PC, MONİTÖR, TERAZI

71015-1000	Intel Core i5-8400 İşlemci, 256 GB SSD olan bilgisayar; 8 GB RAM; Windows 10 işletim sistemi; klavye; mouse
88400-0584	Monitor, TFT (23.8 inch)
88400-0645	Terazi (çözünürlük 0.0001 g)

İLK İŞLEMLER İÇİN GEREKLI SARF MALZEMELERİ / KİMYASALLAR

88500-0003	ELEMENTRAC CS-r Starter-kit for 500 analyses (500 disposable porcelain boats, 50 g glass wool, 50 re-usable boats, 100 g Combsolid)
90200	Anhidron (magnezyum perklorat), 454 g 1)

90210



Sodyum hidroksit, 500 g l)

DIĞER SEÇENEKLER VE SARF MALZEMELERİ

KİMYASALLAR (CAM VE KUVERS TÜPLER İÇİN DOLGULAR)

90200



Anhidron (magnezyum perklorat), 454 g l)

90210



Sodyum hidroksit, 500 g l)

90331



Cam yünü, 454 g

90332



Cam yünü, 50 gr

92610



Yüksek vakum gres tüp, 35 g

88600-0008



Combsolid, 100 g l)

91000-1005



Bakır, pul, 25 g

90840



Quartz kumu, 100 g

88400-0508



Çelik yün

KAYIKÇIKLAR

90160



Tek kullanımlık porselen kayıkçıklar 86 x 13 x 10 mm, 1000 adet

90153



Yeniden kullanılabilir seramik kayıkçıklar, premium, 58 x 22 x 14 mm, 500 parça

88600-0011



Yeniden kullanılabilir seramik tekneler, 95 x 13 x 10 mm, 500 parça

88400-0502 Yeniden kullanılabilir inconel bot, 54 x 18 x 13,5 mm, 1 adet



88400-0503 Yeniden kullanılabilir inconel bot, 54 x 18 x 9 mm, 1 adet



YARDIMCI İŞLEM ARAÇLARI: SPATULA, CIMBIZ, MAŞA VE DİĞERLERİ

88400-0229 Cımbız (160 mm), kıvrımlı, 1 adet



88400-0472 Cımbız (145 mm), düz, 1 adet



88400-0475 Birden fazla tartım prosedürü için 6 spatula ve 1 cımbız-tırnaklı set



90145 Seramik potalar ve tekneler için maşa, 220 mm, 1 adet



88600-0009 Kenar korumalı ekran camı



88400-0499 Koruma gözlükleri



36216-2001 Yakma botu yerleştirme çubuğu, 1 adet

36218-2001 Yakma kayıkçığı çıkarma çubuğu, 600 mm, 1 adet

SAKLAMA, TAŞIMA VE TARTMA ARAÇLARI

88400-0477 Tartım teknesi, 1 adet tablet - granüllerin tartılması ve kullanılması için



BAKIM İÇİN ARAÇLAR

88400-0473 Toz hunisi (plastik), kimyasal tüplerin kolay doldurulması için 1 parça sekme



88400-0490 Rubber plug 29 x 35 x 30 mm, 1 piece for sealing big glass tubes like 09090



71010 Fırça, 16 mm, 1 adet tırnaklı - teraziye tozdan arındırmak için



88600-0026 Anhydrone filter tube glass tube filled with Anhydrone

1)

KALIBRASYON MALZEMELERİ

Kalibrasyon malzemeleri, mevcut partiye bağılı olarak küçük farklılıklar gösterebilir.

Mevcut sertifikayı görmek için lütfen www.ELTRA.com adresini ziyaret edin.

KÖMÜR: SERTİFİKALI KÜKÜRT İÇERİĞİ

92511-3005 Kömür, 50 g, <0.1 % S

92511-3010  Kömür, 50 g, 0.1 – 0.5 % S

92511-3020  Kömür, 50 g, 0.5 – 1.0 % S

92511-3030  Kömür, 50 g, 1.0 – 1.5 % S

92511-3040  Kömür, 50 g, 1.5 – 2.0 % S

92511-3050  Kömür, 50 g, 2.0 – 3.0 % S

92511-3060  Kömür, 50 g, 3.0 – 4.0 % S

92511-3070  Kömür, 50 g, 4.0 – 5.0 % S


92511-3080  Kömür, 50 g, >5.0 % S

KÖMÜR, PREMIUM, C / H / N / S, KÜL, UÇUCU İÇERİK, SERTİFİKALI

92550-3010 Kömür, premium, 50 g, > 1 % S

92550-3020  Kömür, premium, 50 g, > 1 % S

92550-3040  Kömür, premium, 50 g, 1.0 – 3.0 % S

92550-3060  Kömür, premium, 50 g, > 3.0 % S

KOK, PREMIUM, C / H / N / S, KÜL, UÇUCU İÇERİK, SERTİFİKALI

92560-3010



Kok, premium, 50 gr

PET KOK, PREMIUM, C / H / N / S, KÜL, UÇUCU İÇERİK SERTİFİKALI

92570-3020

Pet kok, premium, 50 g, > 1 % S

92570-3040

Pet kok, premium, 50 g, > 1 % S

DIĞER

90812-3001



Kireçtaşı, 25 g, 0.04 % S

90812-3002



Kireçtaşı, 25 g, 0.4 % S

90812-3003

Kireçtaşı, 25 g, < 5 % C

90812-3004

Kireçtaşı, 25 g, 5 – 10 % C

90817-3001

Toprak, 25 g, > 2 % C, S

90817-3002

Toprak, 25 g, < 1 % C, S

90817-3003

Toprak, 25 g, > 2 % C, S

90817-3004

Toprak, 25 g, < 2 % C, < 1 % S, < 2 % C; < 1 % S

91900-1001



Cevher, 30 g, ~1.4 % S

91900-1002



Cevher, 30 g, ~4.2 % S

91900-1003

Cevher, 30 g, ~3 % S

KALİBRASYON İÇİN BİRİNCİL MADDELER, 32 % S

90710-3010



EDTA, 50 g

90710-3030

Sucrose, 50 g

90810



Kalsiyum karbonat, 100 g

90821



Baryum sülfat, 50 g

90824



Sülfanilik asit, 50 g

91900-2001

Çinko sülfür, 50 g, 32 % S

SIVI KALIBRASYON MALZEMESİ

Lütfen dikkat: Her analizör için ayrı olarak sipariş edilmesi gereken PC, monitör, terazi ve bazı sarf malzemeleri (potalar, kimyasallar) gerekir.